Broadband as a catalyst for e-government
A Case Study of Five Rural Municipalities in Alberta

Smoky Lake County

County of Thorhild

Mountain View County

MD of Peace

Parkland County

DECEMBER 2009

Government of Alberta
Agriculture and Rural Development

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EXECUTIVE SUMMARY

Broadband technology is a key to enhancing competitiveness of an economy and sustaining economic growth. In the realm of government, broadband applications are promising to enhance the delivery of public services to citizens. Cognizant of broadband technology in enhancing competitiveness of an economy and sustaining economic growth, governments all over the world, including Canada, have been applying Information and Communication Technology (ICT) for e-government and e-management.

The Government of Alberta and its municipalities have also taken great strides to harness the implementation and the use of broadband technologies to enhance the delivery of public services to citizens. In this context a research project "*Broadband as a catalyst for e-government-A Case Study of Five Rural Municipalities in Alberta"* was conducted from June - December 2009.

The purpose of this research project was to collect information on broadband usage for e-government, its development stages, and best practices adopted by the rural municipalities of Alberta. The study provides information to devise a strategy for the deployment and promotion of the concept of modern and effective e-government in social and economic development of rural municipalities and placing them as leaders in e-government and broadband usage.

Five rural municipalities in Alberta, the Municipal District of Peace No.135, Smoky Lake County, the County of Thorhild, Mountain View County and Parkland County, were selected for this project. These rural municipalities were selected strategically to represent a range of social, economic, and geographical features. The research was based on information available on their websites and provided by municipal officials. A case study approach was used to conduct this research.

The literature cited reveals that e-government is the use of information and communication technologies by public administration associated with organizational changes and new skills in order to improve public services and democratic processes as well as to reinforce public policies. e-government provides access to information about public services via the internet and facilitates public transaction services, encouraging citizens to participate in the decision-making process and become a medium for democracy.

e-municipality development is an opportunity to regulate public administration processes, to visualize and simplify them and to realize them online. The Municipal E- Government Services Model formulated by Esteves (2005) identifies five phases of e-services such as applications, council/municipal newsletters, browser/search engines, maps, public transportation, email, telephone listings, mobile services, online transactions, follow up services, digital certificate, citizen folders and online services. Interactions with the government can either be one-way, from government to citizen/business, or two-way, which allows citizen/business to communicate to government.

The research found that the rural municipalities selected for this study are putting forth great effort to introduce the latest ICT to enhance the service delivery system for their citizens. The municipalities are at various stages of broadband development and e-government. The websites vary considerably in terms of their technological design as well as content. All have a web presence and include a substantial amount of basic information about the municipality, the council and the services they provide. All five municipalities provide information to their residents in a user-friendly manner. Parkland and Mountain View clearly had more developed websites. Links to other government services is another important feature present on almost all of the websites.

All websites included e-service features to assist residents to find information about municipal services available electronically. Parkland County achieved Esteves's third developmental stage of e-government that refers to full electronic case handling. The websites also provide e-decision, e-democracy and e-council. Mountain View County's e-council has allowed the county to replace paper documents with digital documents. The councilors are equipped with laptops, have access to agendas and can communicate with municipal residents and with each other through the internet. Smoky Lake County is also working on digital meetings.

Some of the leading practices adopted by municipalities include:

- Intelligent Community Project (Parkland County)
- Partnership with internet service providers (Parkland County)
- Mapping county broadband access and service levels (Parkland County)
- Pilot Project on Remote Monitoring of Equipment (MD of Peace)
- Digital meetings (Smoky Lake)
- e-council, twitter, extensive map (Mountain View County)
- Participation in the Finishing the Dream Project (Mountain View County)

Future expansion of municipal broadband usage faces many challenges including lack of leadership, lack of technical expertise, outdated technology, equipment and lack of finance. Demographic characteristics and rural attitudes towards the usage of broadband also pose challenge for the rural municipalities.

Incentives can significantly influence the evolution of e-government toward actions that empower residents and businesses to learn to use the evolving technology platform. The Municipalities' action will ensure that their citizens are willing and able to use the technology. However, the need for increased funding, updated equipment, training, awareness and new technologies are important issues to be addressed.

1. INTRODUCTION

Broadband technology is a key to enhancing the competitiveness of an economy and sustaining economic growth. In the realm of government, broadband applications are promising to enhance the delivery of public services to citizens. Broadband is widely applied not only to enhance productivity and efficiency but also to develop innovative business models and strategies in every sector.

Governments all over the world are using Information and Communication Technology (ICT) applications to increase efficiency, accountability, enhance transparency, increase revenue collection and facilitate public sector reforms. Broadband provides access to online information and services that are essential for governments, businesses, and the public to operate effectively in the information age. Broadband usage can help governments reinvent themselves, operate more efficiently, faster and produce new outcomes for their citizens through e-government.

Governments are also using broadband to improve their service capabilities and transform their relations with citizens and businesses. Such an implementation is called e-government. It is well recognized that e-government has the potential to provide services more efficiently and effectively, by improving access to public services, improving interactions with business, and empowering citizens to access information and to participate in public issues.

There are many broadband-enabled e-government projects being implemented around the world. Like other countries, Canada is carrying out e-government activities. Of the many initiatives, 'Government On-Line' is the Government of Canada's plan to deliver programs, services and information over the internet to improve service delivery to Canadians. There has been tremendous growth in access to broadband in Canada as Canadians are among the most connected in the world[1].

In the last few years, the Government of Alberta has made great efforts to harness the implementation and the use of information technologies. The 'Alberta SuperNet' is an example of a project that enables government, educators and health care workers to share and deliver information and services province-wide, faster than ever before. The Alberta SuperNet's broadwidth is used to provide many e-services and e- government. One example of a broadband application that has benefited communities is a project by Alberta Justice that allows for videoconferencing between a remand centre in Edmonton and various court houses around the province, reducing the need to transport people accused of crimes to and from court[2].

1 Gary Grant, IDeA Local e-government now: a worldwide view 2002.
2 Alberta SuperNet, 2006.

Rural municipalities in Alberta are also using broadband technology to improve internal municipal affairs and to provide services to communities. The municipal websites / portals have become an important source of information for citizens and authorities, within the scope that denominates e- government.

However, there is a lack of data and information on the degree of broadband utilization, best practices and successful initiatives undertaken by the rural municipalities, and on the impacts of broadband in shaping opportunities for social and economic development in rural municipalities. Therefore, there is a need to collect this information and to better understand the broader implications of broadband access in rural municipalities.

2. OBJECTIVES OF THE STUDY

The use of broadband by rural municipalities in Alberta has progressed significantly in the last few years. While changes are evident, successful application of broadband varies from municipality to municipality; some are significantly ahead of others in the application of this technology. However, an overall picture of broadband utilization is not clear. Therefore this research was undertaken to gain insight on broadband utilization, its applications and best practices in rural municipalities.

The overall objective of this research is to develop strategies that will lead to the deployment and promotion of effective e-government among rural municipalities, enhance broadband usage in social and economic development in rural municipalities and train and encourage ICT usage among rural communities.

3. LITERATURE REVIEW

3.1. What is E-Government?

Although e-government initiatives are recent, they have become the topic of a rapidly developing field of empirical study. Some research has already been carried out into the evaluation of e-governments at local, regional and central levels.

There are various definitions of e-government and each emphasizes the importance of interaction between citizens and government in different ways. The European Commission defines e-government as the "use of information and communication technologies by public administration associated with organizational changes and new skills in order to improve public services and democratic processes as well as to reinforce public policies"[3].

Kaylor states that " E government…is taken to be the ability for anyone visiting the (government) website to communicate and/or interact with the (government) via-internet in any way more sophisticated than a simply email letter to the generic…email address provided at the site". It can be defined as "the use of internet ICT by a public organization to support or redefine the existing and/or future relations with 'stakeholders' in the internal and external environment in order to create value"[4].

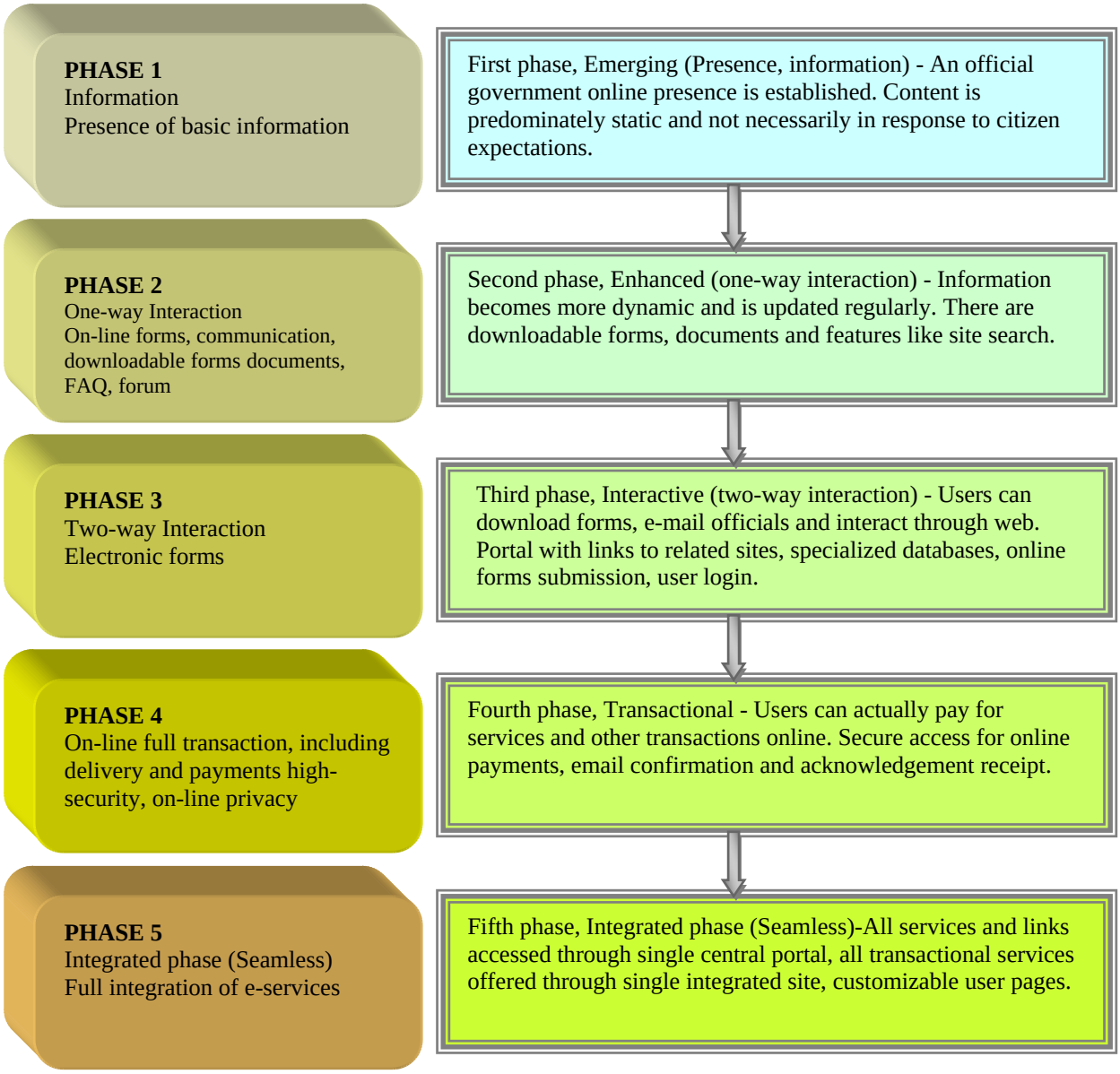
In this context, e-government is unambiguously a process involving transformational change at the organizational level: "e-government is more than technology, more than the internet, more than service delivery; it is about putting citizens and customers at the heart of everything we do and building service access, delivery and democratic accountability around them."[5]

3.2. Phases of e-government

E-government creation is not a process that can be achieved within one simple step or phase. By its nature the process has evolutional properties and is conducted in a couple of steps or phases. Asia Oceania E-Business Marketplace Alliance (AOEMA) compared three models of the phases in e-government development (the World Bank, United Nations and the Gartner Group[6]). The AOEMA model is presented in Figure 1.

3 The European Commission (2003), The Role of e-government for Europe's Future, COM (2003) 567.
4 Bekkers 2003.
5 Department of Transport, Local Government and the Regions 2002.
6 AOEMA (Asia Oceania E-Business Marketplace Alliance), http://www.aoema.org/E-Government/Stages-Phases_of_egovernment.

Figure 1: Phases of e-government



3.3. Application and Benefits of e-government

According to the European Commission, the delivery of improved public services and support for active democratic engagement can be enhanced through e-government: the use in public administration of ICT, such as the internet, together with relevant associated organizational change and skills development[7].

7 European Commission (2003), The Role of e-government for Europe's Future, COM (2003) 567.

The interaction between citizens or businesses with government, which traditionally occurred at a service desk, has been supplanted by e-government through 'the use of ICT to improve the efficiency, effectiveness, transparency and accountability of government' (World Bank). E-government can provide convenient access to information about public services via the internet and facilitate public transaction services, encouraging citizens to participate in the decision-making process and become a medium for democracy (NAO, 2002). In Reffat's (2003) opinion, e-government initiatives are complex but primarily for the intention of applying new and emerging technologies to support a transformation of government institutions.

The adoption of ICT in the public sector was believed to facilitate the desire for change and bring tremendous benefits: the delivery of better and integrated public services, bridging the digital divide, achieving lifelong learning, rebuilding government-customer relationship, promoting economic development and creating a more participative government (Reynolds and Regio, 2001). The reasons for countries' promotion of e-government in an OECD report (2003) included: helping improve efficiency in the public sector, enhancing service quality, supporting more effective outcomes, promoting economic policy objectives and developing trust relationships. Another application for e-government is improving government processes (e-administration), connecting citizens (e-services), and building external interactions (e-society) (Heeks, 2001).

E-government is not simply an introduction to web-based technologies but a complex social system which covers key social issues. It provides opportunities for the government to reconsider how to deliver better public services and in what way to tailor it to users' needs. Furthermore, it is argued that a successful e-government should be an aggregation of successful e-services, e-management, e-democracy and e-commerce (Sakowicz, 2003), which requires a fundamental change in the manner that government works and how people view the way government serves them.

Broadband as a tool of e-government assists citizens to be more informed, improves access to information and allows individuals to publish alternative viewpoints. Schuler (2000) stated that internet technologies provide tools for strong democracy, such as email, forums and online access to documents. Lack of participation has often been blamed on the 'digital gap': Individuals are excluded from participation because they cannot afford access to the necessary technologies or do not have the training or background to feel comfortable using them (Haase and Pratschke 2003; Lenhart et al. 2003; McCaffrey 2003).

3.4. E-government at the Municipal Level

An e-municipality covers a number of mechanisms which convert the paper procedures of a traditional municipal office into electronic processes, with the goal to create a paperless office and to increase productivity and performance of municipalities. Its objective is to improve transparency and accountability leading to better e-government within municipalities[8]. In short e-municipality development is an opportunity to regulate public administration processes, to visualize and simplify them and to realize them online.

3.5. Municipal E-Government Services Model

The Municipal E- Government Services Model formulated by Esteves (2005) includes e-services such as applications (document downloads), council/municipal newsletters, browser/search engines, web maps, street maps, public transportation, email, telephone listings, mobile services, online transactions, follow up services (monitoring), digital certificate, citizen folders and online services. Five phases identified under this Model are:

- ***Presence*** – in this phase, e-services publish information to the citizens. This means that there is online information and it may include basic search tools and documents downloading.

- ***Municipal Information*** – this phase provides information on various services. This information sometimes demands advanced technological tools such as GIS (Geographic Information Systems) or the opportunity of fast search.

- ***Interaction*** – this phase considers communication and interaction between the citizens/residents and the council members/staff.

- ***Transaction*** – this phase includes a set of services that allow a bidirectional electronic interaction between citizens and the council. These services include authentication, application processing and so on.

- ***E-democracy*** – includes citizen participation such as online forums, blogs, chats, online communities and online surveys on municipal topics.

Interactions with the government can either be one-way, from government to citizen/business, or two-way, which allows citizen/business to communicate to government.

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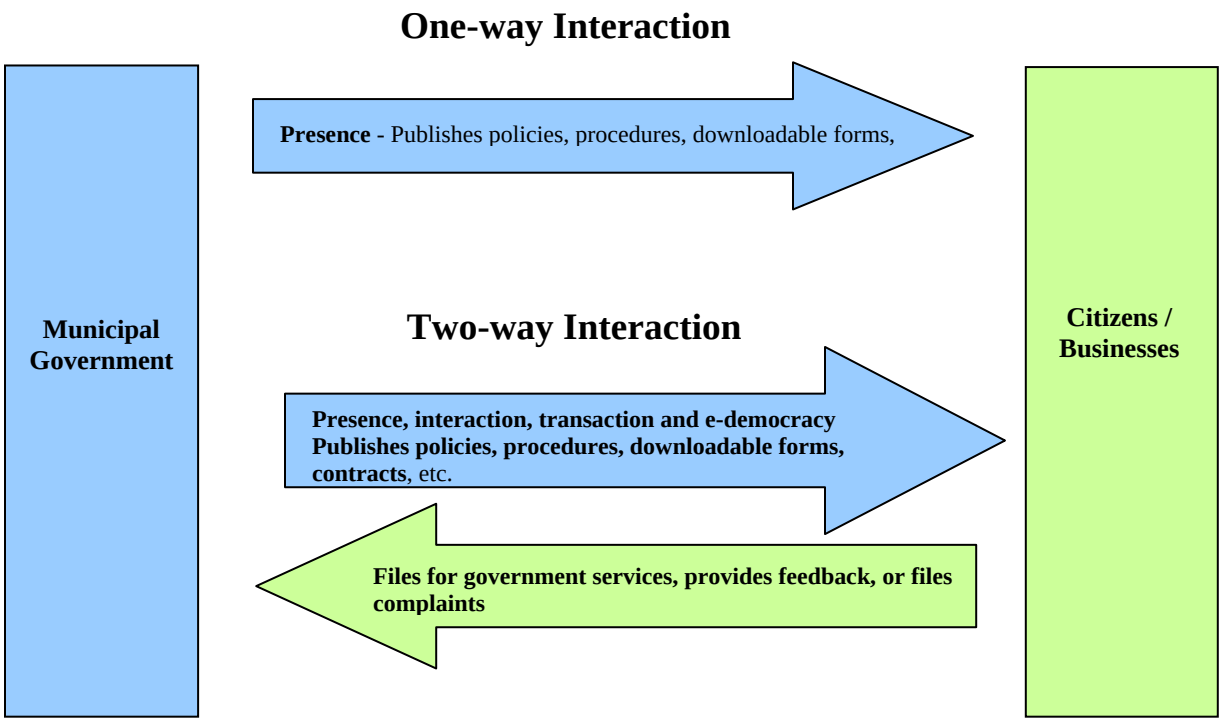
8 L.L.Lee, M.Neff, M., How Information Technologies Can Help build and sustain an organization's CoP: Spanning the Socio-technical Divide? in Knowledge networks, Innovation Through Communities of Practice, (P.Hildreth, Ch. Kimble, Eds.) Idea Group Publishing, Hershey, 2004, pp. 165-183.

Figure 2: The Municipal E- Government Services Model formulated by Esteves (2005)



4. THE SCOPE OF RESEARCH PROJECT

The scope of this research project is to investigate and analyze the experiences and best practices of selected rural municipalities in Alberta with respect to broadband usage and e-government implementation. Five rural municipalities (the Municipal District of Peace No 135, Smoky Lake County, the County of Thorhild, Mountain View County and Parkland County) were selected in order to represent a range of economic bases and geographical locations in the Province.

This research project specifically, focused on the following four main issues related to broadband usage:

- ⇨ Municipal website, its design, content, quality, on-line information, applications and e-government services available.
- ⇨ Broadband applications including videoconferencing, remote monitoring, Supervisory Control and Data Acquisition (SCADA).
- ⇨ Broadband impacts on municipal government service delivery.
- ⇨ Best practices or successful initiatives of municipalities regarding broadband.

5. RESEARCH METHODOLOGY

This project used a case study approach to collect information. The case study process is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident[9].

5.1. Methodology Rationale

Qualitative methodologies are a standard and accepted way of conducting research into practical issues. They are used to complement quantitative findings, give an insight into processes and procedures and provide information on people's behaviors, perspectives and values. Qualitative research (case study method) is an appropriate approach for this project, because of its exploratory, fluid and flexible, data-driven, and context-sensitive characteristics[10].

9 (Yin 2003).
10 (Mason 2002).

5.2. Data collection

i) Archival and Documentary Research

Before the fieldwork, data regarding locations, demographics and maps of the selected municipalities was collected from different sources including websites and relevant articles.

ii) Primary data collection (Interviews/Field visits)

A participative, qualitative approach, using semi-structured interviews was used for the field work. Key contacts for each case were interviewed, face to face. Interviews followed an interview guide (Appendix A-Case Study Interview Protocol) and focused specifically on broadband use, impacts and changes due to broadband use, best practices and future plans. The interviews were carried out by using a set of open-ended questions and the discussions were recorded as a series of field notes and subsequently transcribed into more detailed accounts. When completed the case studies were sent to the participants for their review and validation. Interviews were conducted with municipal government representatives. The list of the persons interviewed is attached as Appendix B.

In addition, the report provides detailed profiles of the five municipalities that were selected for this research project.

5.3. The Case Study Municipalities

The five rural municipalities selected for this study are shown in Figure-3 were strategically selected to represent a range of social, economic, and geographical features. The statistical comparison of municipalities regarding their demographics and economic base is shown in Table-1.

5.3.1. Demographics and economic base

Parkland was the largest county with a total population of 26,679, followed by the Mountain View with 12,570 inhabitants. There was only a slight difference in the age parameters of the rural municipalities. The youth population (less than 20 years old) ranged from 24.3% to 28.9%. The County of Thorhild had the highest number of seniors (6.7%) and Parkland County the lowest (2.6%).

Average annual family income in the County of Thorhild ($53,737) and Smoky Lake County ($45,021) was lower than other counties, particularly, Parkland County at $71,079. The unemployment rate in 2006 was almost 8% in Smoky Lake, 4% in Parkland County and only 1% in the MD of Peace (Table 1).

The amount of Metropolitan Influence (as measured by their MIZ)[11] varied from strong in Parkland County to moderate in the County of Thorhild and Mountain View County to weak in Smoky Lake County and the MD of Peace.

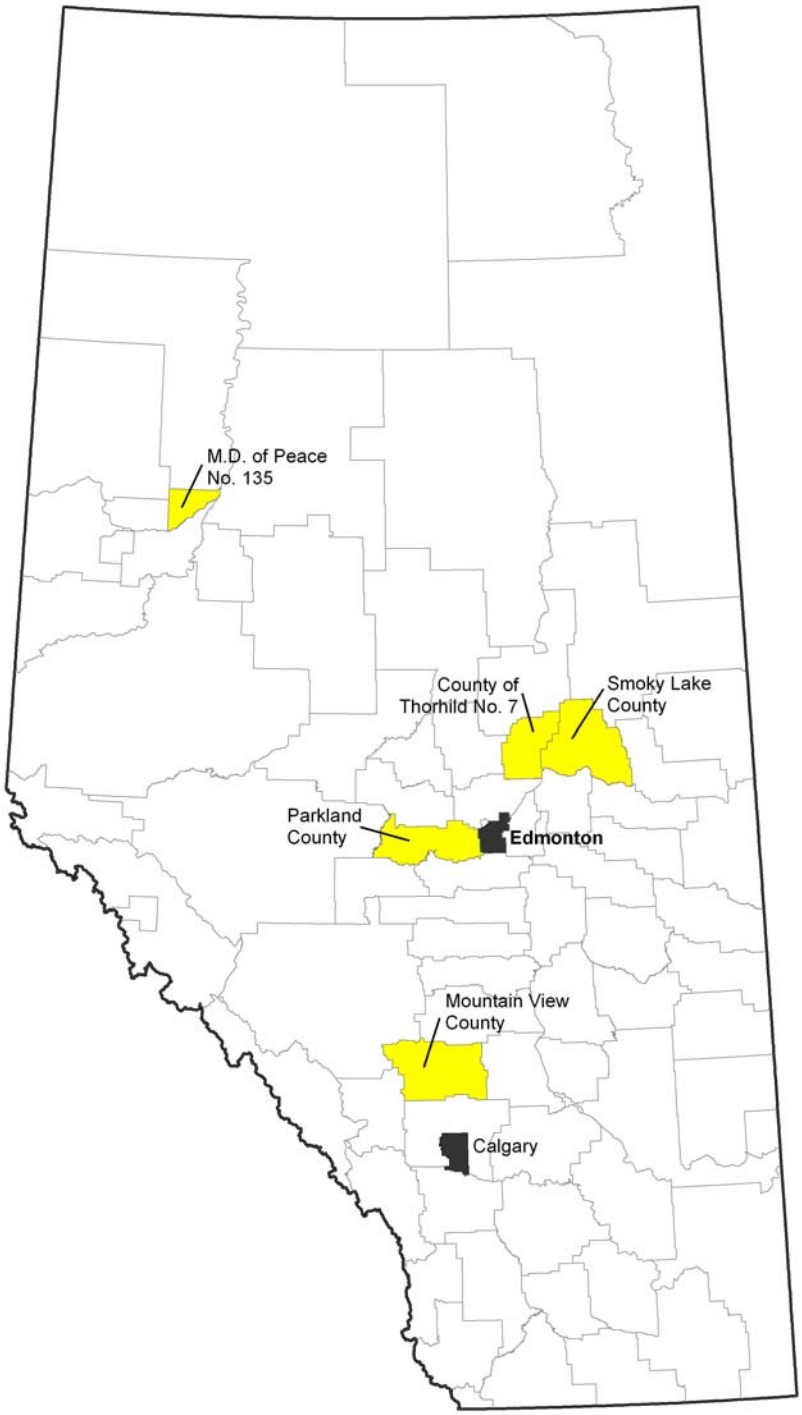
The agriculture sector is the main economic base of all counties except Parkland County, where oil and natural gas is the dominant economic sector.

Table 1 – Statistical Comparison of selected Municipalities

Census Statistics[12]	MD of Peace	Smoky Lake County	County of Thorhild	Mountain View County	Parkland County
Metropolitan Influence Zone	Weak	Weak	Moderate	Moderate	Strong
Population	1,487	2,716	3,542	12,570	29,679
Less than 20 years old	28.7%	27.6%	24.3%	26.7%	28.9%
20-39 years old	18.1%	18.6%	16.9%	19.8%	20.7%
40-59 years old	34.1%	30.4%	35.7%	35%	35.9%
60-74 years old	13.3%	17.7%	16.4%	13.7%	11.8%
75+ years old	5.8%	5.7%	6.7%	4.7%	2.6%
Average Family Income[13]	$66,951	$ 45,021	$53,737	$64,080	$ 71,078
Unemployment Rate	1.0%	8 %	3.0%	3.0 %	4.0%
Economic Base	Agriculture,	Agriculture, Natural Gas	Agriculture	Agriculture, Oil & Natural Gas	Industrial (Oil & Natural Gas), agriculture

11 Rural and Small Town areas are disaggregated into four Metropolitan Influenced Zone (MIZ) based on the size of commuting flows of the workforce to any Census Metropolitan Areas (CMA) or Census Agglomerations (CA). The strong MIZ category comprises areas with a commuting flow of 30% or more. The moderate MIZ category comprises areas with a commuting flow between 5% and less than 30%. The weak MIZ category comprises areas with a commuting flow of more than 0% and less than 5% (Rural and Small Town Canada Analysis Bulletin, Vol. 7, No.5, Statistics Canada).
11 Community Information Database, Statistics Canada, Census of Population, 2006 (population by age 2006 and employment rate 2006).
13 *www.albertafirst.com* (population 2008, average family income 2001).

Figure 3 – Map of the Case Study Municipalities



Source: Alberta Agriculture and Rural Development

5.4. Study Parameters

The vital parameters selected for this study include:

5.4.1. Municipal Website

A municipal web-site is a mechanism to inform the citizens about municipality, local services, development issues, events and provide direct communication between the municipality and its citizens.

Examples and stages of Municipal/Government Websites are given in Table 2.

Table 2: Delivery of Services: Stages and examples of Municipal/Government Websites for e-government

Stages of e- government Development	Service Delivery Modes	Examples of services
Basic information available online	-Information access and delivery	-Simple website for information dissemination, providing contact information of Municipal/ government officials.
One-way communication	-Communication with officials -Document access and download. -Online mapping -Applications -Multimedia-streaming and playback - Interactive discussions	-Secure web environment -Allow access to government documents -Downloadable forms -Multimedia presentations
Two –way communication	- Online databases - Online forms - E-Commerce applications	-A self-service on line request and financial transaction -E-commerce transactions such as the purchase and renewal of permits/licenses, and the purchase of government data or documents
Transactional	- Integrated government services - E-Permitting/Wireless applications	-Secure web environment -Smart permitting involving online request submissions, GIS, document management, 3D modeling of proposed projects, wireless applications

Source: Alexei Palace and G. David Garson, 2003, *Digital Government: Principles and Best Practices* (Hershey, PA: IGI Global).

5.4.2. Broadband Usage

Broadband helps municipalities to provide basic services and management through remote monitoring. Broadband connections allow the municipality to react much faster and provide access to information and resources faster. Broadband connections also allow Voice over Internet Protocols (VoIP), emails with large attachments, video streaming, GIS data access and can facilitate coordination of emergency evacuation programs among agencies. In addition, broadband can be used for videoconferencing, to arrange meetings, train staff and connect municipalities to each other. Remote surveillance and Supervisory Control and Data Acquisition (SCADA) are some other applications of broadband.

A GPS vehicle locator can be used to identify which remote units are closest and most easily dispatched to trouble calls. GIS and GPS navigation systems can then remotely controlled show street maps, provide real time driving directions, and satellite images. Wireless networks can then provide building floor plans, mug shots, records of hazardous materials or disabled persons, and other information, as well as allow remote data capture and reporting to keep units in the field and avoid return trips to the central office.

Municipal web sites are managed through a content management tool. This tool makes it easier to make changes on agency web pages. This, in turn, reduces the time and energy required to keep agency web pages up-to-date.

5.4.3. Broadband Impacts

Evaluating and measuring broadband impact is very challenging. However, broadband impact can be assessed in three different contexts: economic, social and political. In the economic context broadband impact is measured in terms of efficiency, productivity and economic growth. In the social context, broadband applications lead to a better quality of life by providing better healthcare, expanded education opportunities and increased responsiveness by governments to the citizen needs.

In the political context, broadband has an impact on e-democracy and promotes democratic forum in the cyberspace[14] . Potential community benefits also include telemedicine, e-learning, e-government, e-business, telecommuting, and media and entertainment. The impact of broadband can also be associated with other factors, including IT, organizational and cultural change, etc[15.] In their study, Crandall and Jackson concluded that the adoption of broadband will have a significant impact on the economy, even though many of the impacts cannot be readily foreseen[16].

In simple words, access to broadband and its use can improve the efficiency and effectiveness of municipal services. Whether as a means for economic growth, driving home ownership, or

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14 Broadband and e-Government Diffusion, Enrico Ferro and Daniele De Leonardis, Instituto Superiore Mario; and Lucy Dadayan, University at Albany, SUNY.

15 Brynjolfsson, E., Hitt, L.M., and yang, S."Intangible assets: Computers and Organizational Capital,' in: *Brookings Papers on Economics Activity, 2002, pp. 137-199.*

16 Crandall, R.W., and Jackson, C.L, " The $500 Billion Opportunity: The Potential Economic Benefit of Widespread Diffusion of Broadband Internet Access," Criterion Economics, L.L.C., pp. 1-72.

helping businesses, consumers, schools and hospitals, broadband can benefit the entire community. Municipal offices can deliver services to residents more efficiently and conveniently through broadband. Having a single point of contact allows various departments to offer services such as licensing, issuing of permits and online bill payment in a way that saves both ratepayers and staff time and money. Online transactions are faster than face-to-face transactions. Paper processing is automated, reducing time and the risk of clerical errors. In addition municipalities can increase tourism through their web sites.

Broadband communications help municipalities provide, safeguard and maintain the public facilities, equipments and entities, such as streets, sidewalks, street lights, parks, storm drains, schools, hospitals, police & fire stations, water treatment plants, electric power systems, public transportation, etc. Broadband applications can improve the protection and safety of citizens with necessary police, fire, animal control, and utility services.

5.4.4. Best Practices

5.4.4.1. What are best practices?

Best practices refer to a technique, method, process, activity or anything else that is more effective than any other technique, method or process. Best practices can also be defined as the most efficient and effective way of achieving a task based on procedures that have been tried and tested by a large number of people. Best practices help to communicate how a problem has been solved or how a target has been achieved from one person to another.

5.4.4.2. Motivation for best practices

Best practices are innovative and offer new and creative solutions to common problems. Best practices are the best way to learn from other experiences and to reduce costs and time for implementing good work. One best practice acts as a model for generating ideas and the motivation for replication in another region. Best practices result in sustainable effects and outline the process of developing and following a standard way of doing things that multiple organizations can use for management, policy and especially software systems.

5.4.4.3. An example of Best Practice – Intelligent/Smart Communities

Intelligent Communities are those which have whether through crisis or foresight come to understand the enormous challenges of the broadband economy, and have taken conscious steps to create an economy capable of prospering in it[17]. They are not necessarily big cities or famous technology hubs. They may be located in developing nations as well as urban and rural areas.

17 http://www.intelligentcommunity.org/index.

Intelligent communities have the following three success factors that distinguish them from other communities:

(i) Collaboration

The development of an Intelligent Community typically requires intense collaboration among government, businesses, universities and institutions. Few organizations have enough resources, political capital or public backing to drive a community-wide transformation on their own. But coordination can make it possible. It demands vision, flexibility and a high degree of trust among the partners. Effective collaboration is typically the result of the working environment created by effective leaders.

(ii) Leadership

No Intelligent Community can succeed without strong leadership. Effective leaders identify challenges, set priorities, communicate a compelling vision and foster a sense of urgency in achieving it. They establish a collaborative environment that encourages risk-taking and creates win-win relationships with partners in government, businesses and institutions.

(iii) Sustainability

When Intelligent Communities invest in broadband, workforce development, digital inclusion, innovation, marketing and advocacy, they work to create programs that sustain themselves through local service revenue, growth of the tax base, and the attraction of long-term investment. They also plan their growth in order to maintain quality of life while creating jobs and spurring business growth. Furthermore, they use technology to reduce dependence on physical infrastructure, allowing more citizens to share the same community resources.

6. RESULTS AND DISCUSSION

Case Studies

Five rural municipalities were selected for this study. Each has undertaken initiatives to improve their services through broadband. Each municipality's story is unique; each municipality uses the broadband technology that best meets their needs. In order to examine the degree of e-government service delivery among selected municipalities, a five-stage framework was applied:

- ***Stage 1*** – Information - necessary to start the procedure to obtain this public service is available on-line;

- ***Stage 2*** - One-way Interaction- The publicly accessible website offers the possibility to obtain in a non-electronic way (by downloading forms) the paper form to start the procedure to obtain this service. An electronic form to order a non-electronic form is also considered as stage 2;

- ***Stage 3*** - Two-way Interaction- the municipal website offers the possibility of an electronic intake with an official electronic form to start the procedure to obtain this service. This implies that there must be a form of authentication of the person (physical or juridical) requesting the services in order to reach stage 3; and

- ***Stage 4*** - Full electronic case handling- the publicly accessible website offers the possibility to completely treat the public service via the website, including decision and delivery. No other formal procedure is necessary for the applicant via "paperwork".

- ***Stage 5-*** Integrated phase (Seamless)-All services and links accessed through single central portal, all transactional services offered through single integrated site, customizable user pages.

Following are the success stories that could be shared with other municipalities and used as a source of information and knowledge.

Municipal District of Peace No.135

6.1. Municipal District Background

6.1.1 Geography and Demographics

The Municipal District (MD) of Peace No.135 is a rural municipality located along the north bank of Peace River, northeast of Grande Prairie and approximately 500 km northwest of Edmonton. The MD is home to 1,487 people and has a landmass of 926.1 km².

The MD's economy is largely based on agriculture including grain, mixed, game and cattle farming. Beekeeping is also important in the area. The largest employment sector is farming.[18] About 87% of farm operators are 35 years and older and 70% are males.[19]

Being a remote and rural community, the residents have no school in the MD. However, the neighboring Village of Berwyn and the towns of Grimshaw and Peace River have public and Catholic schools. Post-secondary and upgrading programs are available in the towns of Peace River and Fairview. Almost 22% of residents have high school certificates or equivalent, 12% have a university degree or diploma while around 13% have a trade certificate/diploma[20].

The MD has a variety of recreational facilities including camping, fishing, wildlife viewing, historical attractions, museums and scenic landscapes[21].

18 www.cid-bdc.ca.
19 www.albertafirst.com.
20 www.albertafirst.com (2006).
21 www.mdpeace.com.

6.1.2. Broadband in MD of Peace No.135

The MD has adopted broadband to provide a range of services, programs and initiatives to meet the needs of its residents. The MD is using broadband to inform residents about its services and to communicate with them.

i) Municipal website (www.mdpeace.com)

The MD used a community consultation process to improve the design of its website. The home page provides information on, and access to a range of services including, MD background, administration, newsletters, local events and attractions. It also includes information on the local Agricultural Service Board, landfill site, development and planning, community wells, public works and community services. Useful links to other regional government websites are also provided. Information is also available on municipal development plans and municipal services including rental equipment information and rates, the agricultural fieldman and snowplow agreements.

Residents can download forms for fire and development permits. However, the users cannot complete and submit these forms on line. Residents can subscribe to newsletters and obtain other information, such as upcoming events. Users can also perform key word searches for issue-specific information on the home page (or search for staff such as the agriculture field man).

The website was designed by MD staff and it is updated and maintained by the MD. The MD has one full time professional who updates and maintains the web site on a monthly basis. The website provides residents with round the clock (24/7) access to issue specific information.

The MD recognizes that not all residents and businesses have ready access to broadband. This limits the degree to which e-government processes and applications can be used to serve all residents, and requires that the MD maintain its traditional news media channels for announcements and information.

ii) Broadband Applications

The MD initiated a pilot project to remotely control and track their road work and snow removal equipment in June 2009.

The website allows residents to access emergency and disaster services information, and the latest notification of MD events and announcements. Broadband is also used to stream videos, document downloads and email large file attachments by staff and residents.

iii) Broadband Impacts

Broadband has provided MD residents with improved service through 24 hour access to information and downloadable forms. MD residents, staff and businesses have better access to a wide range of services, meeting records, event calendars and other documents.

Broadband has enabled better communication among staff, residents, businesses, and visitors. Broadband access has also enabled the users to make more informed decisions and allowed the MD to respond more quickly to disaster management issues.

iv) Best Practices

The best practices adopted by the Municipal District of Peace No.135 include:

- ⇨ Website development.
- ⇨ Downloadable application forms.
- ⇨ Remote monitoring of equipment (snowplowing pilot project).

v) Future plans regarding Broadband

- ⇨ Increased remote monitoring of equipment (snowplowing).
- ⇨ Training of elected officials and staff in broadband usage and application.

vi) Challenges regarding Broadband

As not all rural residents have access to broadband; information dissemination will remain a challenge for the Municipal District. Broadband expansion will require financial resources and expertise.

Smoky Lake County No.13

6.2. County Background

6.2.1. Geography and Demographics

Smoky Lake County No. 13 is a rural Municipality situated approximately 100 km northeast of the Edmonton. The municipality is home to 2,716 people and has an area of 2835.26 km².

The County's economy is largely based on agriculture and forestry which employs almost 31% of workforce of the area. Business and community services account for almost 26% of the labor force while 10% of residents are engaged in construction work[22].

County residents have access to schools (K-12) within the County and post secondary opportunities within a two hours drive to Edmonton. Almost 33% of the population has a trade certificate/diploma while around 11% and 4% have school certificates and university degree respectively[23].

The County has a variety of recreational facilities including curling rinks, ice arenas, dance halls, gymnasiums, ball diamonds, campgrounds, kid's playgrounds and senior citizens drop-

22 www.albertafirst.com.
23 Ibid.

in centres. Community organizations, sports clubs and service groups are also active throughout the County.

6.2.2. Broadband in Smoky Lake County

The County had adopted broadband to provide a range of services, programs and initiatives to meet the needs of residents. The County has a website to inform residents about services and to improve communicate with them.

i) Municipal website (www.smokylakecounty.ab.ca)

The County has designed its website to provide information to county residents. The website provides information on, and access to a range of services including, county information, council proceedings, bylaws and policies and county maps. The website also includes information on economic development initiatives, industry links, the agricultural service board, taxation assessment, public works, and Family and Community Services. Useful links to other regional and provincial government websites are also provided.

The website also contains information on job opportunities and community event calendars. County residents can download forms such as a residential development permits and applications. However, these forms cannot be completed and submitted online.

The homepage provides residents a Frequently Asked Questions (FAQs) option, where they can get information on current/latest issues. Users can also search for issue-specific information from the home page.

The commercially designed website is updated and maintained by county staff. The County has one part time IT professional who updates and maintains the web site. The website provides residents with around the clock (24/7) access to issue specific information and forms.

The County is working to replace paper documents with digital media for meetings and agendas. The county also provides laptops and broadband access to council members.

The County recognizes that not all of its residents have ready access to broadband; this limits the degree to which e-government processes and applications can be used to serve all residents. This requires that the County maintain its traditional news media channels for county announcements and information.

ii) Broadband Applications

The County conducts remote monitoring of its water system in coordination with EPCOR and Alberta Environment. The County is using GIS for equipment tracking and snow clearing operations.

Other applications of broadband which are used by staff and residents of the county include video streaming, downloading documents and county maps and emailing large files, etc. In addition, the County has infrastructure and equipments for videoconferencing but it is not yet functional.

iii) Broadband Impacts

Broadband improves access to services, to connect the county residents and allows county officials to provide them better customer service. Connected residents have 24/7 access to information, downloadable forms and other developments taking place in the county.

A wide range of municipal maps, meeting records, events list, and documents are now available on-line. Broadband provides elected officials with another channel to address county issues and serve the community better.

iv) Best Practices

Best practices adopted by Smoky Lake County include:

- ⇨ Website development.
- ⇨ Downloadable application forms.
- ⇨ Digital meetings/agenda
- ⇨ Extensive map collection available on-line

v) Future plans regarding Broadband

The County would like to expand of broadband service to underserved and non served areas and is planning for two full time positions for IT professionals / GIS technician within the next two years.

vi) Challenges regarding Broadband

As not all rural residents have access to broadband, necessary information dissemination will remain a challenge for the county. In the expansion of broadband, the County faces financial and expertise problems.

COUNTY OF THORHILD NO. 7

6.3. County Background

6.3.1. Geography and Demographics

The County of Thorhild is a rural municipality situated approximately 90 km northeast of Edmonton. The County is home to 3,542 people[24] and has a landmass of 1997.85 km^2. The County's economy is largely based on agriculture which employs almost 39% of the areas workforce. Business and community services account for almost 21% of the labor force[25].

County residents have access to schools (K-12) in Aspen View Regional Division #19. Approximately, 27% of residents have trade certificate/diploma; approximately 11% have high school certificates and 5% have obtained a university degree[26]. The county has a variety of recreational facilities including a ski hill, two ice arenas, camping facilities, lakes, historical attractions and museums.

24 www.municipalaffairs.gov.ab.ca/cfml/MunicipalProfiles.
25 www.albertafirst.com.
26 Ibid.

6.3.2. Broadband in Thorhild County

The County is using broadband for information dissemination and to provide contact information for county staff and elected officials.

i) Municipal website (www.thorhildcounty.com)

The County has developed a website to provide information about the county and its services. The homepage provides information about council, community services, county departments, community communicator (newsletter), county links, job openings, etc. The homepage also provides information on several departments including assessment and taxation, agricultural services, council proceedings, area structure plans, municipal development plans, budget and financial statements.

Users can download and print council meeting agendas and minutes, newsletters, residential permit checklists, fee schedules, a building permit brochure, on-site sewage maintenance tips and carbon monoxide safety tips, among others.

The home page also gives residents a FAQs option, where they can obtain information on current/latest issues. Forms such as the development and location permit, the mobile home and garage permit, the gas and electrical permit, the plumbing and private sewage permit are downloadable. However they can not be completed and submitted on line.

The website was professionally designed and its format and content has been updated three or four times since it was first introduced. The latest website is being updated and maintained by county staff twice a month.

The County recognizes that not all residents have access or will use broadband. The population of the County is declining and the average age of residents is increasing as young people leave for careers elsewhere in larger urban centres. An aging population tends to favor more traditional methods of disseminating information such as newspapers and newsletters. Therefore, the County relies heavily on its traditional news media channels for county announcements and information.

ii) Broadband Applications

The County is working to set up SCADA for a remote monitoring and control system including equipment tracking, snow clearing, etc. However broadband provides applications such as video streaming, document downloads, emails with large attachments to staff and residents of the county. Videoconferencing is also among one of the future initiatives of the county.

iii) Broadband Impacts

Broadband provides better services to county residents. The County office is always connected to staff and they can respond to needs as they arise. Broadband also allows county officials to provide better customer service and 24/7 access to information, maps and forms.

A wide range of municipal documents, newsletters, meeting agendas and records and event calendars are available online for staff, residents and businesses. Most elected officials have laptops and access to broadband. Therefore, they can download council documents, meeting agendas and other information related to the county at their residences reducing the need to spend time and money traveling.

iv) Best Practices

The best practices from County of Thorhild are as follows:

- ⇨ Comprehensive website developed.
- ⇨ Downloadable application forms.

v) Future plans regarding Broadband

- ⇨ Videoconference infrastructure
- ⇨ Setting up SCADA

vi) Challenges regarding Broadband

As not all rural residents have access to broadband and not all will chose to use it the dissemination of information will remain a challenge for the County. This is further complicated by a declining population and an increasing number of seniors.

MOUNTAIN VIEW COUNTY

6.4. County Background

6.4.1. Geography and Demographics

Mountain View County is located in south central Alberta, situated off the Highway #2 corridor between Calgary and Red Deer. Its rural population is 12,570, not including the towns of Olds, Carstairs, Didsbury, Sundre and the village of Cremona.[27] The County covers 3,804.43 km² giving it population density of 3.3 persons km².

The County has an abundance of natural resources, which support a number of oil and gas, forestry and manufacturing activities. However, agriculture is the major economic activity in the area and the main employer. Agriculture and related activities account for more than 30 per cent of total employment in the area. About 29% of the workforce is employed in the business and community services sector. The retail and wholesale sector employs 10.27% of the workforce, with construction and manufacturing accounting for 8.18% and 7% respectively[28].

County residents have access to schools within the county and post-secondary opportunities in neighboring urban municipalities. Almost 15% of residents have completed high school, 10% have a university degree and 36% have a trade certificate/diploma. The County also has

27 www.albertafirst.ca.
28 Ibid.

access to a variety of recreational facilities (within the county and for its neighboring communities) such as curling rinks, indoor arenas, golf courses, tennis courts, playgrounds, baseball diamonds and hiking/walking trails. The County has also many private and publicly-run campgrounds. The County is responsible for timely information and dependable services to meet the needs of residents. There are many methods of delivering services and information to communities including newsletters, local newspapers, radio, and other media. These sources may vary from location to location. Recently broadband technology has provided another way to communicate, provide information and deliver services.

6.4.2. Broadband in Mountain View County

The County is using broadband to meet two main objectives:

- ⇨ Inform residents about the latest county information and services available.
- ⇨ Improve existing services (by improving access, reducing the delivery time and raising the quality of services).

More recently, two new initiatives have been introduced that incorporate broadband use to increase access to digital technologies:

- ⇨ e-council
- ⇨ Twitter.

The e-council initiative has replaced paper documents with digital documents and provided laptops to council members containing an electronic reference library of municipal documents which is updated on a regular basis. The Council also has electronic access to meeting agendas and air photos of the county. On the other hand**,** the County uses twitters to provide interactive forums and live information updates.

i) Municipal website (www.mountainviewcounty.com)

The County has developed a comprehensive website to provide information to county residents, businesses, community organizations and others. The website contains links to e-government services and on-line information such as property assessment data, council committees and proceedings, electoral boundaries, agricultural services, area structure plans, municipal development plans, budgets and financial statements. There are also links to the County newsroom, maps and event calendars.

Available e-government services include downloadable application forms for development, gas, electrical, plumbing, and private sewage permits. While these forms must be completed off-line and submitted using traditional means of fax, mail, or presented in-person, their on-line availability is a positive step in developing an e-government service process.

The County website is notable by the depth of its information and the up-to-date nature of its content. The website has been developed in light of the needs and requirements of the local community. Consequently, it features local and distinctive elements such as links to road conditions and twitter news. While the website was commercially designed, the County

Communication Officer is responsible for maintaining and updating the website and twitter postings on a regular basis.

Website visits are tracked by the County to monitor its use. The most common site visits (web-traffic) are to documents on planning and development, policies, bylaws and downloadable forms.

The County has adopted the use of email and more recently, twitter, to encourage rapid two-way e-interaction between county residents/ businesses and municipal government. Twitter is a device-independent messaging service that sends and receives short text-based messages limited to 140 characters in length. It is used in the County for interactive forums and live information updates. It can also be used during regular or special council meetings to update Twitter users on meeting topics. Twitter can also be used to update road and bridge closure information or issue operational services bulletins. County residents can also access emergency and disaster services information, county events or public service announcements through twitter alerts.

The County recognizes that not all residents and businesses have ready access to broadband; this imposes a practical restriction on the degree to which e-government service, processes and applications may be implemented, and requires that the county maintain its traditional information and service channels. Despite this, the county plans to continue to add more interactive applications to its website in the future.

ii) Broadband Applications

Broadband allows remote monitoring and control system including equipment tracking of machinery involved in road work or snow clearing, worker safety monitoring and real-time facility management. Disaster management planning includes the use of broadband to monitor, connect, and manage emergency response. Broadband enables applications such as live communications and video teleconferencing to be streamed to county meetings and operations centres.

The County website can allow residents to access emergency and disaster services information, and obtain the latest notification of county events or public service announcements through alerts and breaking news. It also provides links to interesting and helpful information about events and topics of interest within the County.

Videoconferencing is also among one of the most useful applications of broadband in the area. Videoconferencing allows staff and elected officials to obtain valuable information through meeting with others while saving the time and travel costs.

The County is also working on a Control and Monitoring System (CAMS). The CAMS is a fleet monitoring system that allows the organization to track the location, speed and mode of operation of the equipment. This is particularly useful in monitoring maintenance hours on identified lengths of road, and for advising the public of the status of the response to snowfalls and blizzards.

iii) Broadband Impacts

Broadband is absolutely essential for Mountain View County to provide services and meet public expectations. Broadband provides better and more efficient services to county residents. There is increased efficiency in county operations and management and key improvements in the decision making process, as well as improvements in record management. Broadband also enables the County to more quickly respond to disasters and undertake disaster management.

Always-on broadband allows county office staff to remain connected through e-mails and twitters and to allow county officials to provide better customer service. Through the County website, residents and businesses can access information on services and events 24/7.

A wide range of municipal maps, meeting records, event calendars, document accessibility and communications for staff, residents, businesses, and visitors are available on-line. The use of computer tablets among staff and elected officials enables them to access this information 24/7. Elected officials have access to broadband at their residences to download council documents, maps, meeting agendas and municipal e-libraries.

Part of the overall e-government strategy includes seeking ways to reduce paper use and speed information access. As part of this, municipal councilors and senior management have computer tablets that facilitate information retrieval and sharing; the council chamber table has individual docking stations to allow councilors to connect their individual computer tablets while in session. While not in session, the County councilors can still access meeting notes, maps, agendas, and other useful information from home, as can municipal workers. This is particularly valuable to those who live and farm in the county, and provides some flexibility for seasonal reasons.

iv) Mountain View County's projects regarding broadband

All the communities in Mountain View County are participating in the "Finishing the Dream" project. The "Finishing the Dream" project will establish "service hubs" in 12 communities in south central Alberta (where people can access broadband technology, learning applications and support). The Community Engagement Sites will provide not only on-site access to services, technologies and support but will also act as the catalyst for community members – young and old – to learn about the opportunities broadband access can provide, get used to the technology, and begin to develop a "culture of use" in communities throughout the region.

The Olds Extended Community Engagement Site will connect the network of Community Engagement Sites to the Bell e-Learning Centre – a Community Learning Campus facility located at Olds College, and a program delivery hub. This combination creates the Olds Extended Community Engagement Site serving the Town of Olds, and as the 13th Community Engagement Site being the most comprehensive facility in the system. This proposal includes project planning, network design, and the business and financial modeling

for future initiatives including a project to take fiber optic cables to the premises of homes and businesses in Olds.

v) Best Practices

Best practices from Mountain View County are as follows:

- ⇨ Comprehensive website development
- ⇨ On-line application forms for permits, project funding, etc.
- ⇨ e-council
- ⇨ Twitter
- ⇨ Extensive map collection available on-line.
- ⇨ Participation in the "Finishing the Dream" project.

vi) Future broadband plans

- ⇨ In development – direct access to the Alberta SuperNet.
- ⇨ A high-speed videoconference suite in the county office and extension of Community Engagement Sites to the Midway Community and Reed Ranch School on the east side of the county.
- ⇨ City view planning and development software application.

vii) Challenges regarding Broadband

As not all rural residents have access to broadband; this poses obstacles to disseminate necessary information and e-services. As an alternative to fixed wireless, DSL, and other broadband services, county residents are adopting cellular-based broadband service such as High-Speed Packet Access (HSPA) as it becomes available. This has been to the detriment of existing wireless service providers within the county, potentially reducing the options for service to its residents.

viii) Lessons learned

"Broadband service within rural areas lacks the economic drivers of the population dense parts of Canada. While both local and national providers have attempted to support broadband service to rural areas, the economics of the service have left large pockets of land with only dial-up services or expensive satellite access. Strong communication policies by senior governments supporting access to broadband services for all rural residents and businesses are essential to the future rural economy and quality of life".

Doug Plamping, the Chief Administrator Officer
Mountain View County

PARKLAND COUNTY

6.5. County Background

6.5.1. Geography and Demographics

Parkland County is a rural municipality located west of Edmonton with an area of approximately 2438 square kilometers and a population of 29,679. Its population density of 12.17 per square kilometer makes it one of the more densely populated rural municipalities in Alberta[29].

The County's economic base is prominently industrial related to major power generation, coal mining projects and oil and gas projects. The agricultural industry is also an essential part of the local economy. Agriculture production includes cereal grains and oilseeds, along with specialized vegetable and nurseries. In addition, the County's scenic rolling hills, lakes and varied terrain have attracted numerous investments in golf courses, resorts and other tourism-related facilities.

The Business and Community Services sector account for more than 33% of total employment, followed by 15% in the retail and wholesale sector. However, the agriculture and transportation and utilities sectors provide about 8% and 11% of employment in the area respectively.

29 www.albertafirst.com.

County residents have access to ten schools including elementary, junior and senior high schools, with post-secondary opportunities in neighboring municipalities and the City of Edmonton. Almost 37% of residents have a trade certificate/diploma while 14% have completed high school. In addition, 10% have a university degree.

The County offers a range of municipal services and a vibrant mix of agricultural, residential, industrial and recreational opportunities.

6.5.2. Broadband in Parkland County

The County has made great efforts to implement broadband applications to take advantage of broadband technology, based partly on the recommendations of its Parkland Rural Broadband Study completed in 2008.[30]

The County is pursuing its vision and mission of providing high quality, sustainable services to its residents and businesses by implementing a range of e-government services, programs and initiatives. As an example, the County is using broadband to inform residents about municipal services, as well as providing updates on county events and related information. Through its Intelligent Community Initiative, the county is improving existing service delivery by improving access, reducing delivery times and raising service quality.

The County has recently introduced two new broadband initiatives: *Enforcement Services Online Incident Reporting* and *BizPaL*.

- Online Incident Reporting provides residents with a way to report incidents in various categories ranging from nuisance complaints to traffic safety.

- BizPaL is a one-stop online service for businesses and entrepreneurs to obtain business permits and licenses, forms, and information from all three levels of government. BizPaL is an Industry Canada initiative in partnership with cooperating governments. There are currently 46 Alberta municipalities participating in the BizPaL initiative.[31]

Residents can also access a range of other services and information on the County's website, as well as provide feedback on the quality of services available.

i) Municipal website (www.parklandcounty.com)

The County has developed a comprehensive website which is more interactive than just informative. The website contains an enormous amount of material designed to inform and interact with residents of the County. It provides information to county residents, businesses, and community organizations

30 Parkland Rural Broadband Study September 2008.
31 Industry Canada website: http://www.bizpal.ca/index_e.shtml accessed November 9, 2009.

The home page provides information on location, history, mission and vision of the County, as well as county maps and reports. Apart from general information, the website enables residents to access a range of services including, business, permits, licenses, forms, tax information, council proceedings, recreation, culture and tourism and on line services. The business section provides detailed information on business, directories, courses, economic development strategy, industrial and business area and purchasing services. The recreation and tourism section further highlights recreational amenities and their location, transportation, and tourism information. Users can also search for issue-specific information by typing key words into a search engine on the home page.

The home page also provides links to the parkland communicator, current projects and initiatives, community events, events calendar, council meetings, community hall listings, public notices and public meetings information pages. It also provides links to regional and provincial initiatives. In addition, the County offers secure public access to tax, utility and property information. The residents can register their accounts online to access their tax and utility accounts. They can download application forms such as development permits, business license application, dog license, electrical, gas and fire permits, plumbing and private sewage permits, tax assessment data, and related information.

Most importantly, online services are available at the click of button for residents and businesses such as overweight and over-dimensional permits, fire permits, Tridem Axle Certificate (TAC) permits, purchase services, search the public tax roll, BizPaL and enforcement services. Residents and businesses can download and submit completed forms on line. As an incentive to use the online permit process, the County provides incentives such as no-charge online fire permit applications.

One of the hallmarks of the website is the density of information and its user-friendly nature. Its major feature is the way that it has adapted to the needs and requirements of the local community. The site reflects the nature of the area through distinctive elements such as a link to communicator and current projects and initiatives of the County as well regional and provincial initiatives.

The County employs three Information Technology (IT) professionals who are actively encouraged to network with other municipal IT colleagues; attend conferences and specific training courses to learn of new or advanced hardware and software for technology use. Parkland County also monitors its online presence with analytical tools to track website traffic, number of visits, visitors and monitor use. The website provides residents with around the clock (24/7) access to issue specific information. The site is updated on weekly basis.

The website is a remarkable step for the County and has become an important source of information and a crucial element for better provision of services to its residents.

ii) Broadband Applications

The County uses various broadband applications to provide remote monitoring and control systems for equipment tracking, weed spraying or snow clearing operations, etc. these applications can also enhance safety for peace officers, animal control officers or for municipal employees working alone.

The County can quickly respond to disaster management and can react much faster and at a quicker pace. Broadband also provides applications such as video streaming, document downloads, emails with large attachments, county mapping at 1:1000 scale, etc to staff and residents of the county.

Videoconferencing is also among one of the most useful applications of broadband in the area. Videoconferencing allows staff and elected officials to obtain valuable information while saving time and travel costs.

The website can allow residents to access emergency and disaster services information, and obtain the latest notification of county events or public service announcements through alerts and breaking news. It also provides links to interesting and helpful information about events and topics of interest within the County.

Parkland County Council and staff can connect to their internal network through a secure Citrix portal to access email, data, applications, and county policies and procedures, and the County anticipates posting county council meeting agendas in the first quarter of 2010. However, Council members may need training to access these public services or the secure Citrix portal.

iii) Broadband Impacts

Broadband is absolutely essential for Parkland County to provide services and meet public expectations. Broadband helps county officials in simplifying processes and services for residents. For instance, broadband allows county staff to efficiently research issues, processes and bylaws of other governments and interest groups, and connect county staff with the staff of other counties. It also provides a mechanism for exchanging information and ideas with the public, and gauges public sentiment relating to decision-making and policy formation processes (e- democracy).

Parkland County is experiencing the benefits of broadband. Broadband provides better and more efficient services to county residents. There is increased efficiency in county operations and management, and key improvements in the decision making process. The County is now able to respond quickly to emergencies and manage disaster.

The County office is always connected so staff can get e-mails instantly and can response to everyone’s needs. Broadband also allows county officials to provide better customer service and county residents to access information on services and events 24/7.

A wide range of municipal maps, meeting records, event calendaring, document accessibility and communications for staff, residents, businesses, and visitors are available on-line. Elected officials have access to broadband at their residences to download council documents, maps, meeting agendas, and municipal e-libraries.

iv) Best Practices

The best practices by Parkland County include:

- ⇨ Comprehensive website
- ⇨ On-line services including permit application forms
- ⇨ BizPaL
- ⇨ Enforcement Services Online Incident Reporting
- ⇨ Extensive map collection available on-line
- ⇨ Intelligent Community Project

The Parkland County is implementing recommendations from a Rural Broadband study to enable the County to become an "Intelligent Community" and encourage a culture of use among county residents, businesses, and municipal government[32]. The initiative has three key priorities:

- Extend reasonably-priced broadband to 90% or more of the County residents.
- Create partnerships with Internet Service Providers (ISPs) to provide service where there is limited or no service in the County
- Map County broadband access and service levels and anticipated needs to prioritize areas for broadband infrastructure development.

These initiatives will enable the County to move forward on developing its Intelligent Community concept, as such it plans to become a community that will "… use broadband infrastructure for several key economic, educational and social development initiatives, including: innovation, digital inclusion, knowledge workforce and marketing programs."

v) Future plans regarding Broadband

Parkland County has taken a very innovative approach to providing broadband access to its constituents.

The "Intelligent Community" initiative is a high priority to Parkland County. This initiative represents a paradigm shift for the County that encompasses: broadband, a knowledge workforce, innovation, digital inclusion and marketing. This initiative will also help county businesses and resident's access broadband in all areas of the County now and into the future, and enable economic and social development in the County. The initiative is anticipated to increase and sustain business and social opportunities for the County, its residents and businesses.

32 Parkland Rural Broadband Study September 2008.

In addition to building e-government capacity, providing online payment systems and information resources such as BizPaL, the County's future priorities are to expand the use of broadband to support an internal unified communications strategy, and to develop and launch the knowledge workforce program as an e-learning project.

vi) Lessons learned

The lessons learned according to Al McCully, the General Manager Community Services of Parkland County are as:

- Undertake an analysis before expending capital dollars, and continue to analyze cost and revenues throughout the process.
- Broadband is dynamic and the rural communications environment is constantly evolving.
- Focus on sustainability of the system, as municipalities do with other types of infrastructure.
- View broadband as the "enabler" to allow rural municipalities, residents and businesses to utilize information technology to build and sustain their communities and economies.

7. KEY FINDINGS

7.1. Broadband and e-government

The rural municipalities in this study are currently at different stages of broadband development and e-government. Nevertheless, the situation is improving gradually and rural municipalities are cognizant of the importance of broadband and e-government. Each rural municipality has different objectives, issues, applications and challenges. A summary of broadband use by rural municipalities is attached as Appendix C.

7.1.1. Website contents

All rural municipalities have web presence and include a substantial amount of basic information about the municipality, its council and the services provided. Also, municipal websites vary considerably in terms of their technological design as well as their contents. All five rural municipalities provide information to their residents in a user-friendly manner. The contents on the rural municipal websites are very diverse, in accordance with their activities including: basic information (address, telephone number, e-mail address, and office hours), services (places, people, history, culture, events, etc.), information and services about economy, education, health, entertainment, other activities in the rural municipality and links to other websites.

Parkland and Mountain View clearly have more developed websites. They have a modern design with the application of different portal technologies. All rural municipalities published news and notices related to the work of the county administration on their websites.

7.1.2. e-services

The study found that all websites included features that assisted residents to seek information about municipal services available electronically, enabling a user to seek information or service without having to wait until the municipal office opened.

All municipal websites allow the downloading of forms (pdf files). Most of the forms require manual completion, printing and sending by post later. Services that enable online form filling including authentication and a digital signature option attain the third developmental stage of e-government. Parkland County has achieved the third level of e-government- full electronic case handling (i.e. completion of forms, authentication, digital signature, decision, delivery and payment, if necessary). An incentive program providing a discount for payments to encourage residents to use the site is also a feature of Parkland County's approach.

e-services allow information to be available 24/7/365, simply moving a service from offline to online even at the *publish* stage and making it available on the Internet is a significant service improvement for many users. All county websites are updated monthly and some on a bi-monthly basis. Links to other government services is another important feature which was present on almost all websites.

7.1.3. e-decision making and e-democracy

This part of the website provides information to the residents on broader issues about operations of the rural municipality. Information on governance issues such as strategic planning, and reporting of council meetings, keeps the community informed about municipal operations. The websites also allow the residents to ask questions and contribute their comments, remarks, initiatives, proposals and opinions through e-mail, forums, and online opinion polls.

7.1.4. e-council

Mountain View County e-council has allowed the County to replace paper documents with digital documents. The councilors are equipped with laptops, have access to agendas and can communicate with county residents and with each other through the internet. This enables them to address municipal issues more efficiently and quickly. The Councilors in the other rural municipalities also have laptops and access to broadband. Smoky Lake County is working on digital meetings.

7.1.5. Best Broadband Practices

All the counties have made an attempt to adopt some good and novel broadband practices to make their systems more efficient and effective. All counties have comprehensive websites that provide services to residents, and are updated on a regular basis. Some of the leading practices adopted by rural municipalities are listed below:

- Intelligent Community Project (Parkland County)
- Partnership with internet service providers (Parkland County)
- Map county broadband access and service levels (Parkland County)
- Pilot Project on Remote Monitoring of Equipment (MD of Peace)
- Digital meetings (Smoky Lake)
- e-Council, twitter, extensive map (Mountain View County)
- Participation in the Finishing the Dream Project (Mountain View County)

7.1.6. Broadband related future plans and challenges

Cognizant of the importance of broadband, all rural municipalities have some plans to introduce newer technology, enhance broadband access and improve the quality of services. However, their endeavors are challenged by a series of problems including lack of leadership, lack of technical expertise, outdated equipment, lack of finance, lack of training and the need for newer technologies such as wireless access and connectivity in rural areas. Other issues include low population density and their consequent lack of human and financial resources.

Broadband use varied considerably among all the municipalities. For example, being adjacent to an urban area and having a larger population size appears to influence the quality of broadband technology and services provided.

In addition, demographic characteristics and rural attitudes towards usage of broadband also pose challenges for rural municipalities. These include the reluctance and capacity to use broadband by a higher percentage of the elderly and the less educated population.

The study concludes that incentives can significantly influence the evolution of e-government toward actions that empower residents and businesses to learn to use the evolving technology platform. Municipalities may take steps to ensure that their citizens are willing and able to use the technology. Over time attitudes will likely become more positive, but the need for increased funding, updated equipment, training, awareness, and new technologies will remain important issues to be addressed.

APPENDIX

APPENDIX A: Case Study Interview Protocol (CSIP)

External clients: website applications and services

1. How would you describe your municipal website?
    a. What is its intended purpose and target audience?
    b. How was it designed, maintained and updated?
    c. Could you give examples of on-line information, applications or e-government services available on the website? Which are more commonly used?
2. Web traffic
    a. Are web visits tracked? How is website activity recorded or tracked?
    b. What are typical access times, peak usage and duration?

Internal applications and clients: municipal government and administrative applications

1. Background on broadband service to municipal government
    a. Download speeds
    b. Availability and access within municipal government administration and facilities
    c. Mobile applications
2. Broadband applications:
    a. Does the municipality have video-conference facilities? If so, are they available to community members, organizations, or others to use?
    b. Remote monitoring and control systems are becoming more common among "wired" among broadband-connected communities. For example, does the Municipality use broadband for Supervisory Control and Data Acquisition (SCADA) or remote monitoring and control systems for municipal infrastructure?
    c. Remote equipment tracking and maintenance?
    d. Voice over Internet Protocol (VoIP) applications?
    e. Teleconference applications/ net meeting applications?
3. Capacity building and staff training
    a. Does your municipality employ full or part-time internal information technology and e-service development and delivery staff?
    b. What sorts of training/ development programs are in place to help staff learn to use new or advanced hardware and software?
    c. What broadband applications are used by elected officials? How are they trained to use e-services?

Broadband impacts (direct or indirect)

1. What impacts (direct or indirect) has broadband made in your office? For example, what differences have broadband applications made in municipal decision-making or policy formulation processes?
2. What key improvements has the municipality made as a result of municipal government broadband use? For example:
    c. Records Management?
    d. Municipal service delivery and cost effectiveness?
    e. Municipal operations and maintenance programs?
    f. Other areas?
3. Best Practices
    a. Would you like to share "lessons learned" or some successful initiatives and best practices with other municipalities?
    b. What are the municipality's priorities / future plans relating to e-government and broadband? Would you like to share these?

Thank you for sharing your information, observations and ideas with us!

APPENDIX B: The List of the persons interviewed

1. Lyle Mcken (Municipal District of Peace No.135)
2. Twila Bauman (Smoky Lake County)
3. Dan Small (County of Thorhlid)
4. Doug Plamping (Mountain view County)
5. Al McCully (Parkland County)

APPENDIX C

SUMMARY OF BROADBAND USE BY SELECTED MUNICIPAL GOVERNMENTS

Municipality	Population	Municipal Website	Broadband Impacts (economic, Social, political)	Best Practices	Future Plans	Challenges
Municipal District of Peace No.135	1,465	- Website includes information on municipality background, its administration, planning & development, Agricultural Service Board, landfill site, community wells, public works, local events and community services. - Downloadable forms/applications.	- Increased efficiency in municipal operations and management. - Improved customer services - Enhanced community participation through creating awareness.	- Website development - Provision of online application /forms - Pilot project on remote monitoring of equipments	- Expansion of Pilot project for remote monitoring of equipments (snowplowing plan) - Training of elected officials and staff on broadband usage and applications.	Broadband expansion will require additional financial resources and expertise.
Smoky Lake County	2,716	- Website has information on county, county services, business and community event calendars. - Downloadable forms/applications.	- Efficient county operations and management. - Improved community participation through creating awareness among residents about the county activities, services, business opportunities.	- Website development. - Provision of online application /forms. - Digital meetings/agenda. - Extensive map collection available on-line	- grant application for broadband for underserved, unserved areas. - In planning – two full time positions for IT professionals / GIS technician within next two years.	Provision of broadband access to all residents will remain challenges of the county.

County of Thorhild	3,542	- Website provides information on county departments, community communicator, county links, etc. - Downloadable forms and permits.	- Improved and efficient customer service. - Elected officials have access to broadband enabling them to make informed decisions (e-democracy).	- Website development. - Provision of online application /forms.	- Videoconference infrastructure. - Setting up Supervisory Control and Data Acquisition (SCADA).	- Provision of broadband access to all residents, declining population and elderly residents will remain challenges of the county.
Mountain View County	12,570	- Website provides information on e-government services, municipal development plans and financial status, business opportunities, social services, community event calendars and news. - Downloadable forms/applications. - Broadband applications include e-council and twitter.	- Increased efficiency in county operations and management. - Improved customer services. - Improved decision making process and improved record management. - Enhanced efficiency of elected officials enabling them to take informed decisions (e-democracy). - E-business.	- Comprehensive Website development. - On-line application forms / permits. - E-council. - Use of Twitter to encourage rapid two-way e-interaction between county residents/ businesses and municipal government. - Extensive map collection available on-line. - Participation in the "Finishing the Dream" project.	- Direct access to Alberta Super Net. - A high-speed videoconference suite - City view planning and development software application	As not all rural residents have access to broadband; this poses obstacles to ubiquitous information dissemination and e-services. County residents are adopting cellular-based broadband service such as High-Speed Packet Access (HSPA), as an alternative to fixed wireless, DSL, and other broadband services. This has been to the detriment of existing wireless service providers within the County, potentially reducing the options for service to its residents.

Parkland County	29,679	- Broadband aimed to provide high quality and sustainable services to citizens and businesses. New services include: ▫ Enforcement Services ▫ Online Incident and BizPaL. - A comprehensive and more interactive website. Information on county background, reports, online services. - Online services for residents and businesses such as overweight and over-dimensional permits, fire permits, Tridem Axle Certificate (TAC) permits, purchase services, search the public tax roll.	- Helps county officials in simplifying processes and services for residents. - Provides a mechanism for exchanging information and ideas with the public. - Gauges public sentiment relating to decision-making and policy formation processes (e-democracy). - Enhanced efficiency of elected officials enabling them to take informed decisions. - E-democracy, good governance and informed decisions.	- Comprehensive Website development - Provision of online application /forms - Implementing an "Intelligent Community" project that has three key priorities: ▫ Extend reasonably priced broadband to at least 90% of the County residents. ▫ Create partnerships with Internet Service Providers. ▫ Map County broadband access and service levels and anticipated needs to prioritize areas for broadband infrastructure development.	- Implement "Intelligent Community" project - Expansion the use of broadband to support an internal unified communications strategy, and to develop and launch the knowledge workforce program as an e-learning project.	Undertake an analysis before expending capital dollars, and continue to analyze cost and revenues throughout the process.