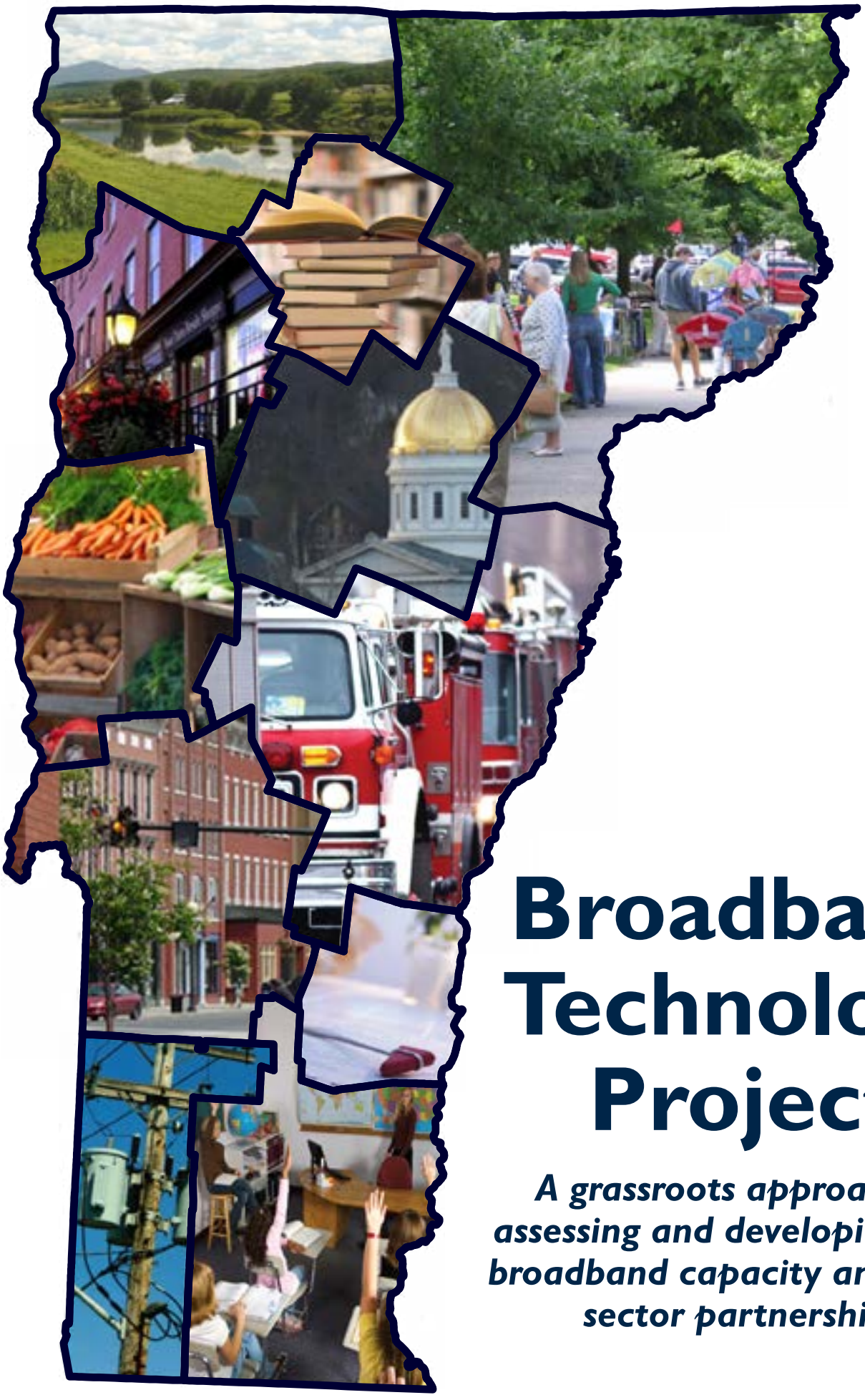

Broadband Technology Project

A grassroots approach to assessing and developing local broadband capacity and cross-sector partnerships

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An electronic version of this report (PDF) is located online at http://www.vapda.org/BroadbandPlan2012.pdf.

Broadband Technology Project

A grassroots approach to assessing and developing local broadband capacity and cross-sector partnerships

Introduction

Across Vermont, broadband availability, adoption and related information technology use varies widely. Yet it is clear that adoption and use of broadband technologies are crucial to the success of our state and its communities. The Vermont Telecommunications Plan will be successful if the state's residents, governments, businesses, organizations and institutions aggressively pursue and utilize broadband infrastructure, both existing and soon-to-be deployed, and utilize the best available (fixed and mobile) broadband technology. The Broadband Technology Project addresses the fifth goal of the Vermont 2010 Telecommunication Plan: Ubiquitous adoption and use of broadband at home and work.

Vermont's Regional Planning Commissions (RPCs) developed a network of contacts in communities and local sectors to assess where promising opportunities are available to further develop broadband technology adoption and use. These Regional Technology Planning Teams used the Vermont Telecommunications Plan and other ongoing state-level efforts combined with local and regional knowledge to develop strategies and actions for integrated use of broadband technology. The Broadband Technology project also led to the creation of new cross sector partnerships, the identification of broadband technology gaps, and the creation of regional and statewide strategies and actions.

Goals and Priorities

RPCs and Regional Technology Teams developed goals and strategies for regions and economic sectors as part of this project. Through that process several overall goals were found to be held in common:

- Broadband will be available and affordable to all Vermonters.
- Technology will be used to provide transparency, increase efficiency and allow greater access to local government.
- More Vermonters will be able to telework/telecommute while maintaining strong connections to colleagues, clients and the public.
- Fluency in and literacy about broadband, the internet and the accompanying technological devices will increase.
- Broadband will increase economic opportunity and support economic diversity.

ECONOMIC SECTORS

- Agriculture
- Arts/Creative Economy
- Business
- Diverse Communities
- Education
- Energy/Utilities
- Healthcare
- Human Services
- Libraries
- Manufacturing
- Media
- Municipal Government/ Emergency Services
- Non-Profit/Services
- Public Housing
- Public Safety
- Seniors/Youth
- Technolgy
- Tourism
- Transportation

Project Report

This project report outlines the priorities identified by the Regional Planning Commissions and the Regional Technology Planning Teams to increase the use of broadband technology across all economic sectors.

The report is divided into several sections. The first section details the specific statewide goals, strategies and actions that will be consistently implemented by

all RPCs. The next section provides a Regional Profile for each RPC service area including a demographic profile, a review of available technology, high priority strategies and recommended actions. The final section is a detailed analysis for each region of technology use in all economic sectors.

Acknowledgements

The Vermont Center for Geographic Information www.vgci.org and Vermont Telecommunications Authority www.telecomvt.org are key partners on a statewide level. Within each region, participants included representatives from various interests including: Utilities/Energy, Business (Agriculture, Technology, Arts/Creative Economy, Retail/Restaurant/Tourism, Professional Services, Manufacturing), Libraries/Education (College, K-12, Adult), Health Care (Hospitals, Clinics), Emergency Services/Town Government, Youth/Senior Centers, Non-Profit/Service.

This project also relied upon information from www.Broadbandvt.org and the Vermont Telecommunications Plan and broadband technology development efforts in e-Vermont Communities (www.e4vt.org).

Regional Planning Commission Statewide Priorities

Each of the 11 Regional Planning Commissions (RPCs) established regional technology and innovation teams with representation from a variety of sectors including business, education, libraries, government, media, health care and human services. Input from these teams shaped the goals, strategies and actions found in the region-wide commonalities and sector analysis sections of this plan. While there was some variability in priorities reflective of unique local and regional conditions, there was significant consistency in goals and strategies across the RPCs. The five themes that were present in each region: were the availability and affordability of broadband, the role of broadband in local government, telecommuting, digital literacy, and economic impact of broadband. The RPCs recommend the following *RPC Statewide Priorities* be pursued in order help achieve these five goals.

The RPCs recognize the critical role of broadband to the economic, civic and cultural lives of Vermonters. The RPCs are committed to supporting broadband adoption as much as feasible and will continue to work with partners to identify our role in furthering statewide strategies. To that end, each RPC has agreed to implement several tasks, listed as *RPC Actions*, as part of their regular planning program. If additional resources are found, all RPCs or a subset of the RPCs will pursue the *Future RPC Actions* or other tasks developed in cooperation with our statewide partners.

Goal: Broadband will be available and affordable to all Vermonters.

RPC Statewide Priorities:

- Promote higher broadband speeds for village centers, downtowns and growth centers.
- Encourage providers to establish or expand programs that offer lower-priced internet to households that qualify for the free and reduced lunch program.
- Encourage providers to establish affordable internet pricing structures for the elderly and low income residents without school-age children.

RPC Actions:

- Integrate broadband infrastructure and broadband adoption needs, priorities and strategies into local and regional plans.

Future RPC Actions (as resources allow):

- Work with school districts to develop a brochure about lower-priced internet programs to be included with the free and reduced lunch program applications and promotional materials.

Goal: Technology will be used to provide transparency, increase efficiency and allow greater access to local government.

RPC Statewide Priorities:

- Investigate allowing municipal website development to be an eligible task for Municipal Planning Grants (MPGs).
- Establish separate state grant for town website development and/or technical assistance.

RPC Actions:

- Complete a scan of all municipal websites and give feedback on municipal websites. Encourage ADA compliance and other best practices from the Snelling Center's toolkit, "e-Government Help Center for Vermont Towns."
- All RPC websites will be reviewed for ADA compliance and updated/revamped as necessary.

Future RPC Actions (as resources allow):

- At least one staff member from each RPC will receive training on best-practices for municipal/public websites.

Goal: More Vermonters will be able to telework/telecommute while maintaining strong connections to colleagues, clients and the public.

RPC Statewide Priorities:

- Encourage the state to develop policies to allow more state workers to telecommute.
- Promote and support the establishment of telecommuting centers in rural areas.

RPC Actions:

- Each RPC will work with their respective boards to develop a telecommuting policy that is appropriate for their region.
- Purchase software to increase video conference capacity and encourage more online collaboration amongst the RPCs.

Goal: Increase fluency in and literacy about broadband, the internet and the accompanying technological devices.

RPC Statewide Priorities:

- Support efforts of community libraries and educational institutions to promote technological literacy.
- Direct additional funding to community libraries to support technology upgrades, training and staff time.
- Revise online state government benefits applications for continuity and ease of use. Expand training and support to local libraries on assisting the public with these forms.
- Coordinate efforts to promote availability of broadband and promote understanding of the potential financial and economic benefits of broadband technology.

RPC Actions:

- Participate in conference sessions focused on municipal use of technology through the Vermont Education and Training Collaborative. (The Collaborative is a collection of agencies and organizations that provide technical assistance and education to local land use officials in Vermont and includes the RPCs, Vermont League of Cities and Towns, the Department of Economic, Housing & Community Development and other partners).

Future RPC Actions (as resources allow):

- Partner with RDCs and other regional organizations to provide one or more targeted trainings annually.
- Work to strengthen partnerships between RPCs and local libraries and promote the libraries' role as a key resource for closing the digital divide.

Goal: Broadband will increase economic opportunity and support economic diversity.

RPC Statewide Priorities:

- Target higher broadband speeds for village centers, downtowns and growth centers to encourage redevelopment.
- Promote the use of broadband as a way to connect Vermont farmers with more consumers either through on-line farmers markets or expanded advertising.

RPC Actions:

- Identify specific technology infrastructure needs—such as telecommuting hubs and Wi-Fi hot spots—in local and regional plans to support economic development strategies.

Future RPC Actions (as resources allow):

- Complete scan of available local and regional mobile aps.
- Develop mobile applications and mobile device friendly websites as an alternative or add-on to traditional print publications such as trail maps and guidebooks.

Central Vermont Regional Planning Commission

Regional Profile

Demographic Profile

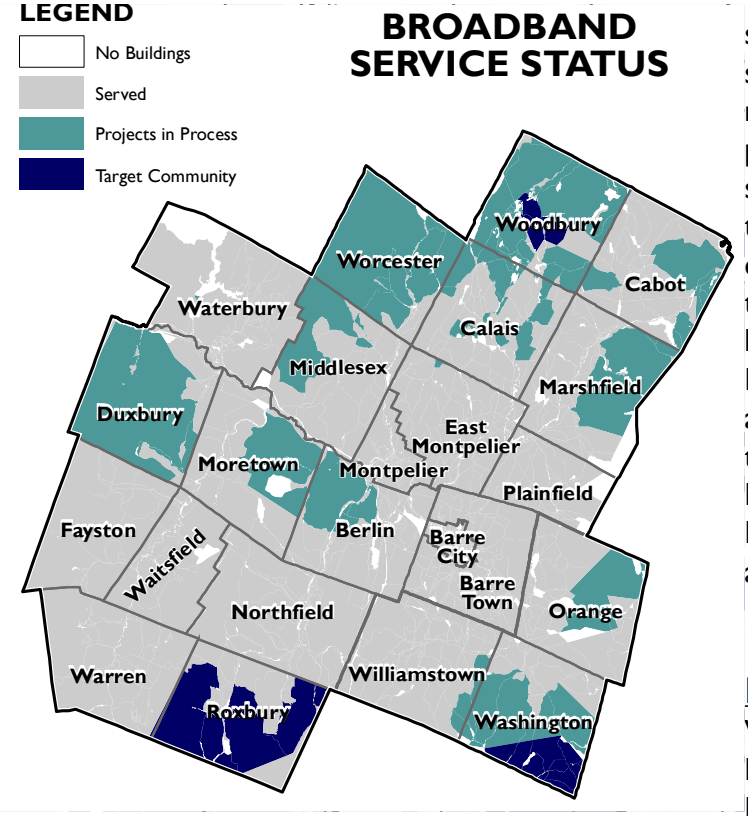
The Central Vermont Region is comprised of the 20 towns of Washington County in addition to three municipalities in adjacent Orange County: Orange, Washington, and Williamstown. The 2010 population of Central Vermont was 65,034 – approximately 10 percent of the entire population of Vermont. The largest population concentration in the Region can be in Barre City, with 9,052 residents, followed by Barre Town, with 7,924 residents. The Region is rural in nature with approximately eighty percent of inhabitants living outside of the urban core areas of Montpelier and Barre City.

Beyond the urban core areas, the Region is characterized by smaller towns and villages, reflecting the historic settlement patterns whereby population concentrated in compact hamlets, villages, and cities, often found along the fertile river valleys, while the surrounding rural areas supplied the raw materials for manufacturing. Over the past few decades, such settlement patterns have shifted due to changes in transportation, lifestyle preferences, and the growth of resort areas and second homes. As a result, many of Central Vermont's rural municipalities have doubled their populations while the larger cities have witnessed negative growth.

According to the Census Bureau, the Central Vermont region mirrors state demographics to an extent. The median age is 43.2 years with the largest population group ranging from 50 to 59 years. (compared to 41.5 for the state of Vermont). The median household income is $54,227; roughly ten percent of the population lives below the federal poverty line; and the current unemployment rate is five percent . In 2009, a majority 63 percent of the population reported working in the service providing industries which would address transportation, distribution, and sales of food products. Other major employers throughout the Region include healthcare, education, manufacturing, and the public sectors. The average worker earned $3,348/mo in 2009. The major employment centers included Montpelier, Barre City and Waterbury.

Current Service

Although the majority of the Central Vermont Region is served by Broadband in some capacity, primarily through cable and DSL (digital subscriber line via a telephone provider), the maps of cable, DSL, and fixed wireless



service (WISP) provided online by BroadbandVT show Roxbury, Washington, and Woodbury as the most underserved towns in our region. With large portions of the towns without access to Broadband service or with access at less than 25% of residences, these areas should be targeted for increased connectivity and access. Other communities reported to lack Broadband access, but that are anticipated to have increased Broadband access by 2013 include: Duxbury, Moretown, Berlin, Worcester, Woodbury, and Marshfield. Current service providers throughout the Region include: FairPoint, AT&T, Verizon Wireless, Hughes Network Systems, LLC, Cloud Alliance, Kingdom Connection, Windblue Communications, and Starband.

E-Vermont Communities

Within the Central Vermont Region, the towns of Middlesex, Moretown, and Calais participated in the E-Vermont Community broadband initiative. Middlesex underwent the planning stage of the process in 2010, Moretown and Calais underwent the planning stage of the process in 2011. More information about these community initiatives can be found in the *Summary of Statewide Initiative* section of this document or at http://e4vt.org/programs/e-vermont/communities.

Region-Wide Commonalities

Description of Region's Process

The process to develop the Central Vermont Regional Technology Plan's goals and strategies involved: numerous meetings with our technology team; a survey that was distributed to the Region via the CVRPC town officials email list, the CVRPC blog and webpage, and to eight towns via Front Porch Forum; and one-on-one interviews with representatives from each of the identified ten sectors.

The initial step of the process was to develop a regional technology team. Members on the team varied from experts in their field to the everyday computer user interested in developing their broadband expertise and knowledge. During the initial technology team meetings, we identified common goals, barriers, and strategies regarding widespread adoption of broadband technologies.

To gather additional data and fill in data gaps, we developed a survey that was distributed via several online outlets. The survey identified: how people use broadband technology at work and in their day to day activities; in which sector they used broadband technologies; and whether or not having broadband was essential to them accomplishing their activities. The survey results were analyzed based on sector and provided valuable information that helped us identify common and sector goals, strategies, and projects. From the surveys we were also able to develop an email list of regional citizens who were interested in participating in regional broadband forums, as well as provide input on the draft plan.

The final step of gathering input for the plan was one-on-one interviews with regional experts in each sector. We developed a standard set of questions for the interviews for consistency of responses. The questions were similar to those of the survey, but the one-on-one interview allowed for greater depth and detail of responses.

In all three survey methods we observed similar responses leading to overall regional trends. The result of this process is a comprehensive technology plan that identifies future goals, policies and projects that will enable generations young and old to better adopt broadband technologies at work, school and in their daily activities.

Shared High Priority Goals

1. Ubiquitous adoption - A broadband adoption rate of 100%. Broadband technologies have the capacity to enhance our everyday experiences and serve as valuable tools in every sector. Everyone should be able to use broadband to suit their needs in personal and professional settings.
2. Increase web presence of entities within all sectors – Every business, municipality, school, library, and service will have a web page. As Central Vermonters shift from looking up services in a phone book to using internet based search engines, it will be important for businesses/organizations to have a functioning webpage that provides rich information. Such websites will increase the ease of searches and provide a competitive advantage over those entities without web pages.
3. Ensure that all residents have basic computer and broadband literacy skills – The digital divide was a concern among all sectors. To ensure that no Central Vermonter is left behind in the digital age, we encourage all sectors to develop digital literacy outreach programs that provide training in basic computer skills and broadband technologies.
4. Increase connectivity for those unable to reach anchor institutions or fixed point broadband centers – The advantage of broadband technologies is its mobility. Wifi, cellular communications, WISPs, etc allow Central Vermonters in rural locations to utilize broadband technologies without being in a fixed location. In the future, greater cellular coverage along with portable computer labs and mobile devices (cell phones, tablets etc.), will allow those previously unable to access broadband technologies to do so.

High Priority Strategies/Actions

1. Purchase of portable lab supplies – This action supports the goal of increasing access to rural and/or immobile Central Vermonters. Lab supplies could be purchased by anchor institutions and loaned out to various community entities to provide workshops and trainings.
   - Possible partners: Kellogg Hubbard Library, Central Vermont Medical Center, Washington County Supervisory Unions, Green Mountain United Way, Central Vermont Chambers of Commerce
2. Develop peer to peer mentoring programs in all sectors – This action aims to utilize the skills of those already established within a sector and train their counterparts. Peer to peer mentoring may be more effective in that trusted relationships are already established or when provided through formal or anchor institutions such as local schools and libraries.
   - Possible partners: Vermont College of Fine Arts, Norwich University, UVM extension, Community College of Vermont, Central Vermont Adult Basic Education, Central Vermont Food Systems Council, Central Vermont High Schools, Central Vermont Chambers of Commerce, Central Vermont Council on Aging, Center for Independent Living, Green Mountain United Way, Boys and Girls Club, Central Vermont Meals on Wheels, Central Vermont Adult Basic Education, Central Vermont Veteran Services
3. Ensure human services facilities have access points for patrons and patients – As more services change from paper to digital forms, it will be essential that human service facilities have computer work stations with aides in order assist patrons and patients with the transition.

- Possible Partners: Central Vermont food shelves, Vermont Food Bank, Central Vermont Medical Center, Washington County Mental Health, Central Vermont Adult Basic Education, Central Vermont Senior Centers, Central Vermont Houses of Worship, Washington County Youth Service Bureau

4. Develop educational and training materials specifically for the technologically adverse – This action will help to lessen the digital divide. Materials could be placed in anchor institutions in order to promote greater distribution.
   - Possible partners: Central Vermont Senior Centers, Central Vermont Council on Aging, Center for Independent Living, Central Vermont Medical Center, Central Vermont Adult Basic Education, Central Vermont Chambers of Commerce, Central Vermont Food Shelves, Central Vermont Libraries, Community College of Vermont, Central Vermont Housing Authorities
5. Provide social media training – Social media provides the opportunities to engage a variety of audiences in all sectors due to their ease of use and low cost for service providers. Greater understanding of social media tools can enhance user experiences and allow for greater engagement.
   - Possible partners: Central Vermont Chambers of Commerce, Central Vermont Economic Development Corporation, Central Vermont Community Action Council, Central Vermont Senior Centers, Washington County Youth Service Bureau,, Central Vermont Libraries
6. Regional tele-centers – Two tele-centers set up in the region would house equipment such as high power computers, printers, projectors, conference call phones etc. and office space to rent. These centers would allow small businesses and visitors access to high speed broadband technologies without the significant start up costs and capital. The centers could be staffed to provide additional technical assistance and training.
   - Possible partners: Central Vermont Chambers of Commerce, Central Vermont Economic Development Corporation, Central Vermont Community Action Council, Center for Independent Living, Central Vermont Adult Basic Education
7. Encourage Municipalities to include broadband goals and strategies within local plans as tools to enhance economic development, education and overall resiliency.
   - Possible Partners – VLCT, Central Vermont Planning Commissions, Central Vermont Select Boards, Central Vermont Supervisory Unions, Central Vermont Economic Development Corporation, Agency of Commerce and Community Development, VAPDA

Central Vermont Regional Planning Commission

Sector Analysis: Agriculture

SECTOR QUICK FACTS
• Use of broadband technology varies from farmer to farmer. • Numerous opportunities to increase and incorporate broadband use for advertising and selling of products.

Current Conditions

Central Vermont has an active agricultural community that is devoted to producing local, fresh food, while also engaging and teaching citizens and potential new farmers about farming, and the food system within Central Vermont.

The broadband adoption rate of farmers within Central Vermont varies from person to person. While some farmers market their products on online farmers markets, many farmers still use traditional methods of communication to sell their products.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Tech gurus emerging within the sector. 2. Numerous stakeholder organizations established at local, regional and state levels.	1. Time to learn the technology. 2. Fear of technology. 3. Web presence of farmers.
EXTERNAL	
Opportunities	**Challenges**
1. Peer to peer mentoring. 2. Connecting with other supply chains, vendors, distributors, markets. 3. Ability to compare local prices. 4. Engaging all stakeholders in meaningful adoption conversations.	1. Using mobile sale applications that use credit cards - % of sale fee. 2. Price comparisons – what is your bottom line?

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase broadband adoption rates of Central Vermont farmers.	Encourage technology training during slow seasons.	Develop peer to peer (farmer to farmer) mentoring program. Research and secure funding to purchase portable computer lab supplies to bring training to farmers.

Increase web presence of farmers.	Support use of online farmers markets, CSAs and social media Support engagement with local and regional stakeholders.	Develop centralized regional/state website with online farmers markets and CSAs. Contract local organization or provide internships to local students to develop website templates for farmers.

IN THEIR OWN WORDS

Farmers are busy people, so it would be wonderful if the technology and training could come to us during the winter or slower time of year.

Sector Analysis: Business

Current Conditions

Businesses in Central VT see the benefit to e-commerce and developing a strong internet presence for their products and services. The problem is that not all of the target consumers are able to take full advantage of the product and services being offered because of older computer equipment and slow connection speeds.

SECTOR QUICK FACTS

- Strong marketing presence to consumers.
- Limited ability to provide all services to clients because of slow internet connections.
- Need to educate consumers on the use of digital tools.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Ability to e-commerce. 2. Strong marketing presence to consumers. 3. Sharing of content. 4. Research and business development. 5. Communicating with colleges, partners, and clients. 6. Ability to telecommute from home or away.	1. Slow connection speeds limit ability to conduct work. 2. High cost for DSL connection. 3. Limited ability to provide all services to clients because of slow connections.
EXTERNAL	
Opportunities	**Challenges**
1. Increased productivity. 2. More services provided to more clients. 3. More effective and efficient communication across a variety of sectors and channels. 4. Connect to work and home from anywhere while on the go. 5. Ability to share larger files without long waits for upload or download. 6. Improved marketing, merchandising, education, and business.	1. Broadband connection speeds slow down when demand is high. 2. Connecting with underserved areas with products and services. 3. Educate consumers on the use of digital tools. 4. Use of digital forms and applications with clients and partners. 5. Clients and consumers are held back because of old computer equipment and slow connections. 6. Ensure privacy and secure personal information.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Market more products and services online.	Increases business presence on the web and expand opportunities to contact consumers.	Develop material for business expansion through online marketing abilities. Partner with existing web based organizations like Front Porch Forum to promote products and services.
Attract more business and business professionals to Central VT.	Partner with Central VT business organizations and leaders to identify the needed infrastructure to attract more business.	Encourage Central VT businesses and communities to invest in the needed infrastructure to attract more business to Central VT.

Increase the use of digital forms, applications, and services.	Survey consumers and businesses to determine barriers to using digital forms, applications, and services.	Developed marketing material addressing barriers, and distribute to target markets and consumers.

IN THEIR OWN WORDS

Broadband makes me more productive. Without it I couldn't work.

Sector Analysis: Education

Current Conditions

Education adopted broadband early and has made it available to faculty and students at school and in the classrooms. Many classrooms still lack the ability to utilize technology to the fullest. The Vermont Department of Education is dedicated to improving the use of technology by teachers and students at school and at home.

SECTOR QUICK FACTS

- Prevent non-computer literate students from falling behind.
- Wide spread access to online books, resources, and teaching curriculum.
- Poor technology and slow connection speeds both at school and home.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Access to online education materials and courses. 2. Access to online books, resources, and teaching curriculum. 3. Allows for better communication with students and parents on class curriculum. 4. Collaboration among faculty and staff. 5. Schools have access to high quality internet.	1. Not every student has access to internet at home. 2. Poor technology and slow connection speeds. 3. Lack of training on technology in the class room for faculty and students. 4. Working with faculty and students that aren't digital natives.
EXTERNAL	
Opportunities	**Challenges**
1. Improve efficiency and communication among teachers, parents, students, and college personnel. 2. Ability to access materials from home and telecommute. 3. Better access to material and class room curriculum. 4. Improve the sharing of resources.	1. Provide for the safety of students while online. 2. Prevent non-computer literate students from falling behind. 3. Provide support for educators to incorporate more technology in the class room.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase the use of technology in the class room like computers, projectors and SMART boards.	Encourage teachers to use technology in their curriculum.	Secure funding to purchase technology for the class room.
Increase the access for faculty, students, and parents to curriculum and other resources.	Encourage parent engagement with the curriculum.	Develop web sites to share content and provide out reach.
Improve the safety of students while online.	Promote good searching and browsing habits.	Provide education to students and parents on appropriate web safety and habits.

Increase technological use opportunities for children outside of school.	Encourage local schools to identify students that do not have access to computers at home.	Develop and promote extended learning in conjunction with school curriculum and Internet based learning.

IN THEIR OWN WORDS

You're living in the Dark Ages if you don't have Internet access.

Sector Analysis: Energy/Utilities

Current Conditions

Vermont's energy demands continue to grow, particularly when considering such factors as average annual vehicle miles traveled, inefficiencies in the heating and cooling of buildings, average housing stock age and conditions, and an overall lack of education and promotion regarding the effects of energy consumption during non-peak hours. Utility companies throughout the region are partnering to invest in smart grid technologies; programs such as Efficiency Vermont are helping to connect homeowners to financial incentives and provide the necessary education to improve home efficiency; many employers are offering telecommuting and teleconferencing options; and programs such as GoVermont are connecting commuters to viable alternatives to the single-occupancy vehicle. Overall, as broadband availability improves throughout the region, the potential for energy efficiency will increase throughout various sectors.

SECTOR QUICK FACTS

- Vermont serves as a national model for energy efficiency programs.
- Utility companies throughout the state are moving beyond service lines and organizational boundaries- determining effective strategies to decrease peak usage.
- Telecommuting and teleconferencing are becoming more common throughout the workforce.
- Public transportation providers are investing in technologies that will improve transparency and increase ridership.
- Cost, training, and topographical limitations are the largest limiting factors.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Utility company collaboration and promotion of smart meter technologies. 2. Behavioral pilot projects being conducted to determine the most effective way to promote energy efficiency through smart grid technology. 3. Smart grid technologies provide economic and financial data to support efficient energy use. 4. Go Vermont empowers commuters with information to support alternatives to the single occupancy vehicle. 5. GMTA provides affordable public transit opportunities throughout much of the region. 6. 6 Smart grid technology increases electric reliability and efficiency of utility companies.	1. Lack of collaboration amongst various energy sectors to ensure uniformly executed holistic approach to energy efficiencies. 2. Public transit lacks uniform wireless capabilities on all buses. 3. Lack of education regarding peak use. 4. Successfully affecting behavioral change to decrease energy consumption.

EXTERNAL	
Opportunities	**Challenges**
1. Development and adoption of technological advancements to provide real time location information for transit riders. 2. Development of affordable home energy efficiency alternatives.	1. Increase technological literacy amongst users. 2. Lack of homeowner capital needed to invest in energy efficient home improvements. 3. Maintain the state's scenic beauty while providing equitable and affordable broadband service. 4. Long term concerns of sourcing electricity as energy demand will exceed supply. 5. Some technological advancements that would support increased public transit ridership are cost prohibitive. 6. Overall infrastructure challenge-topographical, bandwidth limitation, etc.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Reduce transportation energy consumption and carbon emissions.	Encourage the development of telecommunication polices and web-conferencing.	Research and promote available resources and educational opportunities supporting telecommuting and web-conferencing.
Increase visibility of smart meter technology.	Assist in promotion and outreach with local utilities regarding the use of smart grid technologies in the home.	Co-host informational session open to the public focusing on smart meter technologies.
Increase visibility of transportation alternatives to the single occupancy vehicle.	Increase Way to Go Week participation in the Central Vermont Region.	CVRPC continued participation in Way to Go Week. Assist with marketing and outreach to increase Way to Go Week participants.

IN THEIR OWN WORDS
Smart Grid technology is not a magic bullet-we need to look more holistically at our energy consumption and take advantage of programs like Efficiency Vermont and really provide incentives for homeowners to increase their structural efficiency.

Sector Analysis: Healthcare

Current Conditions

Central Vermont has a variety of types and sizes of health care facilities. The largest in the Region is Central Vermont Medical Center. CVMC has partnered with several smaller facilities to provide IT and billing support to allow doctors to focus on providing quality health care.

SECTOR QUICK FACTS

- CVMC and Fletcher Allen both utilize electronic medical records (EMR).
- Smaller non CVMC/FA affiliated facilities are undergoing the switch to EMR to improve patient services and experiences.

As of October 2011, CVMC has merged with University of Vermont's Fletcher Allen to combine services. The merger will allow both hospitals to better share patient records and increase efficacy of service.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Many smaller clinics are linked to larger anchor hospitals to provide IT support. 2. Multiple applications in use already – teleconferencing, transcription services, prescriptions, billing, research.	1. Cost and training needed to switch over to EMR for smaller clinics and private practices. 2. Use of standard paging technologies due to better service coverage.
EXTERNAL	
Opportunities	**Challenges**
1. Connect additional smaller clinics to anchor hospitals for greater IT support. 2. Interactive records for patients. 3. Telemedicine, especially with rural patients. 4. Patient self-diagnosis.	1. Concerns over security of data and patient confidentiality. 2. More formal protocols/insurance billing for time spent using "telemedicine." 3. Common platform for EMR. 4. Patient self-diagnosis.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase the use of telemedicine among all sizes of providers.	Encourage providers to use telemedicine to save patient/doctor time and resources.	Provide additional training and purchase hardware for practices lacking in telemedicine capacity. Develop website identifying possible telemedicine partners, institutions and resources.
Increase use of EMR among rural clinics and private practices not connected to anchor hospitals.	Provide additional assistance to rural clinics and private practices.	Identify costs and gaps providers need to either use their own EMR system or connect to anchor hospital (CVMC/FA).

Increase patient use of EMR patient portals.	Encourage patients to be active participants in health regimes and prescribed care.	Develop patient materials that outline how to log into patient portals available on EMR platforms. Providers can "prescribe" health regimes that can be researched online. Patients can record progress on EMR.

IN THEIR OWN WORDS

Using a larger hospital's IT network and EMR platform has allowed me to spend more time with and provide better care to my patients. It's great not to have to worry about upgrading networks or changing EMR platforms.

Sector Analysis: Human Services

Current Conditions

As service capacity improves and technology advances at a cumulative pace, the community's most vulnerable populations are often left behind, further widening the gap that characterizes the Digital Divide. Broadband technology has the potential to increase quality of life through communication, entertainment, and service opportunities, but as such technologies become the norm, there is the potential for a significant portion of the region to be at a disadvantage. Currently, community based facilities such as schools, libraries, and senior centers provide affordable access to such services, but a lack of population-specific educational opportunities means that those that are most in need may not take advantage of such services. Overall, there is a need for programs and funding to target such vulnerable populations.

SECTOR QUICK FACTS

- Communication technologies improve senior independence and decrease isolation.
- Broadband availability can increase service providers efficiency through digital records and cross referencing with other medical records.
- Community-based organizational service and hardware access already available in many area.
- Lack of population specific adult educational opportunities.
- Cost, population appropriate hardware and software, training, and availability are the largest limiting factors.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Isolation reduction and improved socialization opportunities for vulnerable populations through the use of communication technologies. 2. Public schools providing education and resources for youth. 3. Increasing vulnerable population access to goods and services. 4. Human service organizations able to virtually contact and monitor clients and patients.	1. "Digital Divide" –lack of accessibility, affordability, and education regarding use of available technologies. 2. Educational opportunities that will accommodate a variety of learning styles. 3. Safe usage education for technologically adverse and vulnerable populations-particularly seniors and children.
EXTERNAL	
Opportunities	**Challenges**
1. Hardware and software providers are designing systems for those that have impairments or lack technical experience. 2. Community-based resources (i.e. libraries, community centers, senior centers, schools) providing hardware and service access. 3. Population-specific organizational resources (i.e. AARP, continuing education courses) partnering with service providers (Verizon, AT&T, etc.) to provide hands-on training opportunities.	1. Lack of population appropriate financial and technical support. 2. Lack of ability-appropriate available technologies. 3. Development and availability of affordable user-friendly hardware and software. 4. Safety concerns-Exposing vulnerable populations. 5. Increasing adoption rates among stakeholders who maybe inexperienced with technology or technology adverse.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase technological access for vulnerable populations.	Encourage service-based organizations to partner with local service providers and community facilities equipped with the appropriate technology.	Identify funding sources for augmentative devices. Identify sources of low-cost hardware and software via gifts, donations, etc. Identify service providers that offer discounted rates for qualified users. Promote community facilities that already provide such opportunities such as local libraries.
Increase vulnerable population use of broadband technologies.	Increase technological educational opportunities through the development of population specific curriculum and programs.	Create and promote a working database of regional education opportunities to be updated annually. Identify customized hardware and software for ease of use by seniors and demonstrate usage. Develop population specific trainings such as traditional continuing education classes, peer to peer mentoring, in-home trainings, etc.
Increase broadband technology use for technology adverse seniors.	Promote the role broadband technologies play in supporting continued independent living.	Develop educational and training materials specifically for the technologically adverse.
Increase service/care provider technological use.	Support the use of technology by service care providers.	Develop staff and client trainings focused on available resources (i.e. electronic records access).
Encourage the development of paperless services.	Promote population appropriate educational materials to facilitate transition to paperless services.	Provide additional training and equitable access opportunities for recipients of services transitioning to a paperless format.

IN THEIR OWN WORDS

I think that broadband internet will become an essential medium for the increasing number of computer-savvy but homebound seniors of the future-not just as a way of finding and staying in touch with service providers…but for staying connected with family and friends through social media sites.

The interactive utility of broadband internet will become far more useful than any medium currently used now for senior outreach. I think that social networking and continuing education sites will be two strong areas of use that will increase the demand for broadband among seniors.

Sector Analysis: Libraries

Current Conditions

There are 15 public libraries within the Central Vermont Region and numerous additional college and K-12 libraries. Libraries serve as valuable anchor institutions within the Region and provide additional services such as public internet access, community gathering places and educational trainings/opportunities.

SECTOR QUICK FACTS

- Internet connectivity speed and type depending on location.
- Staff enthusiastic about learning and sharing new technologies.
- Fiber access expected in late 2012 for largest libraries in Region.

Libraries within the Region are striving to acquire additional bandwidth to increase membership and provide additional online services such as webinars, online classes and enhance regional and local online catalog capabilities.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Staff have solid technical capacity and enthusiasm to learn. 2. Adequate public computer access and free wi-fi in most locations. 3. Access to Vermont Universal Classes with membership.	1. In need of full time IT staff. 2. Limited library budget for additional equipment unless provided grant funds/private donations. 3. Limited presence and use of library websites and social media for outreach/engagement.
EXTERNAL	
Opportunities	**Challenges**
1. Engaging additional library stakeholders – board members, colleges, public schools, local governments, eVT, State Department of Libraries to provide additional resources/trainings/marketing/funding. 2. Scale of Vermont libraries to try pilot projects.	1. State funding to libraries is limited and dependent on donations/memberships. 2. Small scale of Vermont institutions.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase use of website and social media engagement by staff, members and stakeholders.	Enhance navigation, appearance and breadth of library websites and media content.	Redesign of library websites, launch facebook and twitter media campaigns by the time fiber reaches the institutions.
Increase training/educational opportunities for members and staff.	Promote trainings available for all new technologies used within the libraries.	Collaborate with region colleges to develop student internship/volunteering programs to teach trainings. Advertise Vermont's Universal Classes. Hire fulltime IT staff person.

Increase connectivity for members who are unable to reach a library.	Improve physical presence within members' community.	Purchase portable computer lab supplies for exhibits outside of the library.
Increase library operating budget for broadband related activities.	Research additional traditional and nontraditional sources of funding.	Work with State Dept of Libraries to help find additional sources of grant funding and increase State appropriation for libraries.
Increase use of e-materials (books, podcasts, videos) among members.	Support e-materials as suitable alternatives to standard paper materials.	Create separate branch of library for e-materials to avoid restriction issues. Advertise e-material options via social media and webpage. Have e-readers available for loan. Provide training opportunities for use of e-materials.

IN THEIR OWN WORDS

We didn't realize how much use our e-collection experienced until the service was down. We heard patrons in outlying member towns tracked down additional collections at 3 other area libraries so they could continue using electronic books. Clearly, our e-collection is a valuable resource to those who live farther away from the library.

Sector Analysis: Media

Current Conditions

As a sector, the media are technology advanced and are early adopters of the use of broadband. They have embraced the sharing, collaborating, and making content available over the internet. The challenge, however, is making the content available to more people and sectors that lack technology and bandwidth at home.

SECTOR QUICK FACTS
• Media uses large amounts of bandwidth to view and post content.
• Rich environment for sharing of media.
• Provides a richer media experience for all.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Communicate with partners and colleagues out of state. 2. Ability to share large files. 3. Stream media live or after editing. 4. Better collaboration on projects. 5. Rich environment for sharing of media.	1. Limited ability to send large data to all clients because of limited bandwidth. 2. Use of antique equipment. 3. Upload speeds. 4. Media is a huge bandwidth hog.
EXTERNAL	
Opportunities	**Challenges**
1. Enhanced communication with high definition video conferencing. 2. Engage with more colleagues and other professionals. 3. Being able to work off-site from more locations. 4. Provide for more live media feeds. 5. Save on costs.	1. Getting more people access to online content. 2. Provide a richer media experience for all. 3. Closing the digital divide regarding technology and access to it. 4. Access to DSL to view media content. 5. High cost of high bandwidth internet.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase access to online media content.	Promote the use of online media content.	Create local and regional websites to host local and regional media content.
Increase the adoption of streaming video and media content.	Encourage municipalities to stream meetings live.	Develop education and training material on how to create online content.
Improve download and upload speed to help share content.	Encourage the adoption of broadband in Central VT.	Expand broadband to underserved areas of Central VT.
Highlight the benefits of the use and sharing of digital content.	Encourage the use of digital content at home and work.	Develop media for education and promotion of digital content.

Sector Analysis: Municipal Government/Emergency Services

Current Conditions

SECTOR QUICK FACTS

- Lack of uniform resources throughout the region.
- Mixed technical ability among staff, commissioners, and stakeholders.
- Minimal use of social media.
- Increasing availability of real time emergency planning tools and information sources.
- Topography is a limiting factor throughout the region for widespread use.
- Cost, training, and availability are the largest limiting factors.

Many towns and villages within the CVRPC region currently have town maintained websites which are utilized for the posting of meeting agendas, minutes, and a calendar of events. Additionally, some towns engage social media outlets such as Twitter, Facebook, and more commonly, Front Porch Forum to enhance or serve in place of a website. The recent disaster of Irene has given municipalities the opportunity to reflect on the efficiency and effectiveness of emergency services. As real-time information sharing becomes a reality across various public safety sectors, first responders will have the opportunity to provide more efficient and effective service. Overall, while some towns are able to use and maintain communication through available technologies, the region lacks the uniform service and resource capabilities to consistently create and manage such technologies as well as take advantage of more interactive technologies that would increase transparency and efficiency.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL

Strengths	Weaknesses
1. Capability to maintain town websites, Facebook pages, and postings on Front Porch Forum as a resource for current events, meeting announcements, agendas, and minutes, etc.	1. Uniform training needs, particularly for smaller towns and villages that lack designated IT support staff.
2. Improved job and communication efficiency.	2. Established services not changing to reflect interactive technological advancements.
3. Current abilities and comfort with common technological applications.	3. Not utilizing online handling of routine requests.
4. Use of both public and private online forums for the exchange of ideas.	4. Lack of uniform availability and implementation of real-time emergency planning tools and information sources across municipalities.
5. Conversion of paper files and data to electronic files.	5. Lack of uniform access to various forms of communication technologies for first responders.
6. Ability to access Emergency Operation Plans and coordinate disaster responses remotely.	6. Lack of collaboration and coordinate amongst smaller municipalities to leverage available resources and effectively reach a broader audience.
7. Use of various forms of media during an emergency (i.e. radio, local television, social media, etc.).	7. Limited staff capacity and budget constraints-particularly amongst smaller municipalities.
8. Increase efficiency and transparency of organization.	8. Potential duplication of services.

EXTERNAL	
Opportunities	**Challenges**
1. Increased opportunity for public participation through various mediums. 2. Partner with local media to host interactive public meetings, feature plans, documents, etc. 3. Coordinate evacuation and care plans for vulnerable population during an emergency. 4. Use of social media outlets to increase communication before, during, and after emergencies.	1. Lack of community-based educational opportunities keeping pace with technological innovation to facilitate public use of government services. 2. Increasing adoption rates among stakeholders who maybe inexperienced with technology or technology adverse. 3. Financial infeasibility of more advanced services (greater bandwidth and faster speed access). 4. Lack of universal implementation of digital services amongst all branches of government. 5. Lack of uniform service throughout the region. 6. Topographical limitations.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Increase citizen participation and engagement in government through the innovative use of technology.	Promote broadband usage as an effective sharing tool for government uses.	Research/fund communication tools and leverage social media tools to better engage with audience.
Increase visibility of CVRPC as a resource center.	Promote CVRPC's technical assets through the use of traditional and social media outlets.	Host informational session open to the public focusing on regional technological resources.
Increase use of CVRPC website by both staff and stakeholders.	Prioritize functionality and usability of website.	Rebuild website by mid-March.
Increase technological skills among staff and stakeholders.	Promote educational opportunities for staff, stakeholders, and citizens.	Offer three (3) in-house workshops/"lunch and learns" so that staff effectively use the technology we employ.
Increase organizational efficiency and productivity.	Promote the transition of traditional paper based services to online services.	Research currently available online government services within the region. Educate town staff regarding enhanced website use and potential resource collaboration opportunities. Promote online training tools for basic government services through outreach coordination and educational workshops.
Increasing telecommuting opportunities for staff.	Develop and adopt telecommuting policy.	Increase VPN connection to all staff, hook up server for remote access capabilities.
Increase the use of a variety of communication mediums during emergencies.	Promote the use of social media as a medium of communication between towns and citizens.	Develop educational materials for town staff regarding the role of social media in the event of an emergency.

Ensure effective emergency procedures and policies address all populations.	Promote the development of uniform communication services during an emergency event. Support the development of communication and emergency plans that track special populations.	Research current municipal emergency service plans throughout the region. Educate municipal emergency management staff regarding potential opportunities to more effectively target vulnerable populations.

IN THEIR OWN WORDS

Information can be more current and accurate because it can be updated by staff remotely, which is important when there is a crisis or emergency.

Although Broadband is mostly available throughout the region, there are still pockets where the only option is dial-up. Slow downloads and dropped signals cause many hardships and hinders economic growth.

Sector Analysis: Nonprofit/Services

Current Conditions

Email, websites, and Facebook pages are the most common methods of communication for the non-profit and service sector. Technical support can be less of an issue than in other sectors due to the small size of many of these organizations which generally does not require an in house server or network. The availability of broadband has contributed to non-profit efficiency in communication-enabling organizations to share large documents, telecommute, and reach out to a global audience.

SECTOR QUICK FACTS

- Some technological advances are cost-prohibitive for non-profits.
- Strong use of websites and social media such as Facebook and blogs to communicate with the public.
- Advanced technology adoption and use by staff.
- Staff and client base can be broadened beyond the local level.

Strengths/Weaknesses/Opportunities/Challenges

INTERNAL	
Strengths	**Weaknesses**
1. Enhanced communication with clients (i.e. sharing of files, training via video conferencing) and overall efficiency. 2. Broaden client and staff base. 3. Strong adoption of social media. 4. Reduce overhead cost through the use of social media outlets (Front Porch Forum, Facebook, and email).	1. Limited resources to increase broadband utilization within organizations. 2. Need for increased social media contacts. 3. Limited staff capacity and limited budget.
EXTERNAL	
Opportunities	**Challenges**
1. Partner with e-commerce businesses to develop online donation and membership capabilities. 2. Increase participation and engagement with stakeholders. 3. Collaboration and connection with similar organizations throughout the world.	1. Aging population may lack connection opportunities 2. Financial infeasibility of more advanced services (greater bandwidth and faster speed access). 3. Need for an affordable rate structure. 4. Internet speeds decrease at high volume times. 5. Lack of uniform connection throughout the region.

Goals/Strategies/Actions

GOALS	STRATEGIES	ACTIONS
Promote the use of broadband-based advanced software technologies to increase donation and fundraising opportunities.	Research available online donation, membership, and fundraising capabilities.	Develop educational training materials for web-based applications which support online donations, memberships, and fundraising.
Increase communication and resource sharing among non-profits.	Support interactive resource sharing and communication among nonprofits.	Develop a database or list serve to serve as a communication tool among nonprofits throughout the state.

Increase the visibility of nonprofits throughout the region and state.	Support online marketing efforts through websites, Facebook, and other social media.	Host website development and web-based marketing educational; work sessions.

IN THEIR OWN WORDS

I have a small home-based business that is currently 100% internet based. Without the internet, it wouldn't exist. I'm also on the board of directors of a national non-profit, but we individuals are all over the country. We use the internet for all our communication and for meetings. In addition, as a homeschooling family, we rely on the internet for many learning aids.