Minnesota Intelligent Rural Communities Program – Demonstration Communities final report

Robert Bell
Intelligent Community Forum

A report commissioned by the Blandin Foundation to support the work of the Minnesota Intelligent Rural Communities Coalition and Funded by the American Recovery and Reinvestment Act

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The Author

Robert Bell, co-founder of the Intelligent Community Forum, developed the MIRC Indicators, conducted the analysis of the data provided by the Blandin Foundation team, and wrote this report. Contact him at: rbell@intelligentcommunity.org or +1 646-291-6166 x101.

Executive Summary

The Intelligent Community Forum served as one of more than 20 partners in the Minnesota Intelligent Rural Communities (MIRC) project of the Blandin Foundation. For the project, ICF worked with the Foundation to adapt its Intelligent Community Indicators in order to measure the readiness and the progress of 11 Demonstration Communities (DCs) in rural Minnesota.

The MIRC project was a $4.8 million grant, provided by the US Broadband Technology Opportunities Program and administered by the Blandin Foundation, aiming to drive broadband adoption and use in greater Minnesota using the Intelligent Community economic development framework. The project sought to create technologically and economically vital rural communities able to compete and thrive in a global economy driven by information and communications technology. The Demonstration Communities selected to receive the grants were a cross-section of cities, towns, counties and multi-county regions, with a total population of 250,000 people and population density ranging from 1,700 to 4 people per square mile.

Intelligent Communities are those which have – whether through crisis or foresight – come to understand the enormous challenges of the Broadband Economy, in which information and communications technology (ICT) is transforming every aspect of the way we live, learn, create profits and participate in society. Based on this understanding, Intelligent Communities take conscious steps to create an economy capable of prospering in the 21st Century. They are not necessarily big cities or famous technology hubs. They are located in developing nations as well as industrialized ones, rural areas and suburbs as well as cities, the hinterland as well as the coast.

The MIRC Indicators were customized by ICF from its international Intelligent Community Indicators to provide meaningful evaluation of the readiness of the Demonstration Communities to use broadband and information technology for economic and social development. The resulting Intelligent Rural Community Indicators measure broadband penetration and costs, educational performance and attainment, digital inclusion efforts, innovation by business and government, and the communities' skills at marketing themselves to the world and advocating for change within the community.

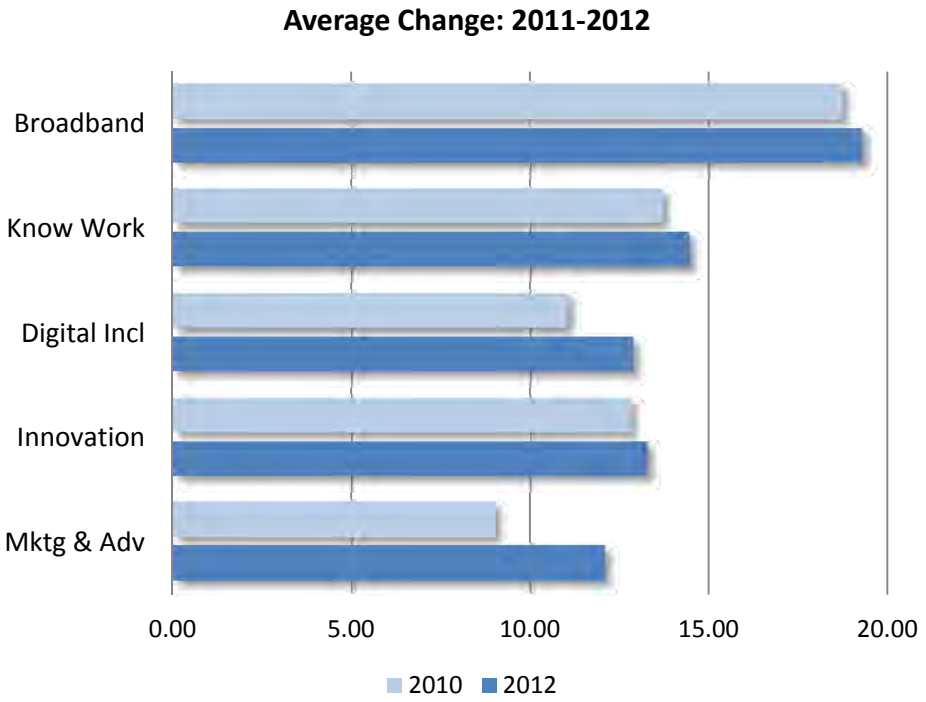
This report is based on detailed analysis of data provided by the Demonstration Communities as well as community stories assembled by the Blandin Foundation team.

The Demonstration Communities: Then and Now

The Blandin Foundation invited 11 Demonstration Communities across rural Minnesota to propose development projects within the framework of the Intelligent Rural Community Indicators. Blandin staff and consultants worked with each of the communities to help them understand the framework and devise projects with the highest potential to promote positive change. The Foundation then provided funding for approved projects.

The first report, issued in February 2011, was based on data gathered in the second half of 2010. It scored the communities on a 100-point scale, with 20 points allocated to each of five Indicators. This report updates the metrics based on data gathered in the first and second quarters of 2012. Over the

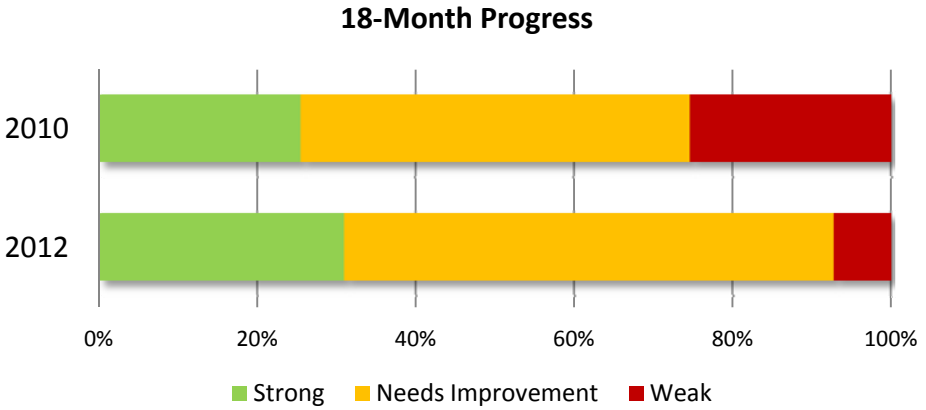
18-month period, the Demonstration Communities posted a 9.4% average improvement in their scores, ranging from a high of 16% to a low of 4% positive change.



Community Progress

The 2010 analysis of the 11 DCs showed a wide range of strengths and weaknesses, and this report provides both an overview of the communities as a whole and individual analysis of each one. To improve understanding of the analysis, we have grouped the scores into three categories: "strong" meaning a score of 15 or higher out of 20 for each Indicator, "needs improvement" for a score of 10-14, and "weak" for a score of 9 or less.

The 2010 report covered five Indicators each for 11 communities, for a total of 55 metrics. Of these, 28% fell into the "weak" range, 47% in the "needs improvement" range, and 25% in the "strong" range. By 2012, the percentage of MIRC scores in the "weak" range fell from 28% to 7%. There was a corresponding increase in the "needs improvement" range from 47% to 62%, while the "strong" range grew from 25% to 31%.



The Demonstration Communities, in short, made substantial progress, and this report explores how each did so within its unique geographic and demographic situation. A review of the data from 2010 and 2012, as well as verbal feedback from the Demonstration Communities at a workshop during the 2011 Blandin Broadband Conference, indicate that:

- The Intelligent Rural Community Indicators measure what they were intended to measure and are well-calibrated to reveal meaningful differences in readiness and performance.
- The Indicators provided a means for communities to focus their efforts on goals achievable in the short term that would have a meaningful impact on their competitiveness and digital readiness.
- The Indicators were effective in tracking the progress from 2010 to 2012.

Intelligent Communities: Partners in Progress

Intelligent Communities are those which have – whether through crisis or foresight – come to understand the enormous challenges of the Broadband Economy, in which information and communications technology (ICT) is transforming every aspect of the way we live, learn, create profits and participate in society. Based on this understanding, Intelligent Communities take conscious steps to create an economy capable of prospering in the 21st Century. They are not necessarily big cities or famous technology hubs. They are located in developing nations as well as industrialized ones, rural areas and suburbs as well as cities, the hinterland as well as the coast.

The good news is that, while the Broadband Economy presents an epic challenge to communities, it also hands them a powerful new competitive tool. Beginning in the 1990s, carriers deployed the local networks that most of us think of as "broadband" – DSL, cable, satellite and wireless – within neighborhoods, towns and cities. At the same time, the costs of computer software and hardware plummeted in obedience to Gordon Moore's famous law that the capacity of microchips doubles every 18 months. This created a virtual cycle in which information and communications technology (ICT) – a tool we use to do everything better, faster and cheaper – itself became immensely better, faster and cheaper. Through local broadband, individuals, small businesses, institutions and local governments have gained access to worldwide information resources and a broad range of tools to connect both globally and locally.

Global Reach, Local Gain

Today, information and communications technology offers every community the opportunity to move from the periphery to the center in economic terms. It creates new kinds of companies like Apple and Google, even whole new industries. It enables small companies to be global exporters – including the export of skills and knowledge which were never before transportable across time zones or national borders.

It can ensure that schools in remote regions and inner cities have access to the latest information tools and reference sources. It can link rural healthcare providers to leading medical centers and local law enforcement to national information grids. Individuals and businesses can go global in search of low-cost, quality vendors, and Web-based tools can increase community involvement.

By boosting the economic and social well-being of communities, broadband can reduce the incentives for their young people to move away in search of opportunity and a better quality of life. Paradoxically, it can play a key role in giving communities a sustainable future in our ever-more-connected world.

Adapting to the Challenge

But broadband alone, technology alone, are not enough to create a prosperous and inclusive economy, which is the foundation for everything else that makes a community healthy and vital. Not in an environment in which ICT has put your community into direct competition with every similar community

on earth, as well as opening up new opportunities for trade and collaboration. Intelligent Communities work long and hard to adapt to the challenges of the Broadband Economy. Some are recovering from economic crisis and have more plans and hopes than tangible results to show. Others are well on the way toward ambitious goals and have a record of achievement to display. Some far-sighted communities never let crisis overtake them in the first place, but made the right choices and investments in time to benefit from the emergence of the Broadband Economy.

The Challenge of Partnership

Intelligent Communities use information and communications technology (**broadband**) to create a virtuous cycle of economic and social progress.

They strive to create a **knowledge-based workforc**e with the skills needed to compete in the Broadband Economy by using ICT to add value to everything they do.

Knowledge workers in the public and private sectors are the drivers of **innovation**, which is the primary means by which living standards will rise in the 21st Century.

To keep a successful knowledge-based, innovative economy from further polarizing the community, Intelligent Communities invest in **digital inclusion** to connect the poor, poorly educated, elderly and disabled to digital opportunity.

And they **advocate** aggressively for positive change among their citizens and employers, because without public support, there can be no real progress – as well as **marketing** their new-and-improved economic prospects to the outside world.

This virtuous cycle is available to communities of every size, in every place on earth. But it is difficult to achieve. It requires partnership to make progress. It takes intense collaboration at the local level among government, business and institutions to develop a shared vision of change, build support throughout the community, and implement a long-term strategy to achieve it. This model of collaboration has become known as the Triple Helix: a kind of super-DNA that powers the evolution of the 21st Century community.

While promoting change, partners in progress must also respect and understand the community's legacy – the historical, social and cultural features that make it a special place to live and work. Success in our new century does not mean throwing out the things that gave birth to the community and sustained it for decades or centuries. It means using the tools of today to give those intangible assets new value in a global economy.

In an editorial published the day after Barack Obama won a second term as president, *New York Times* columnist Thomas Friedman summed up both the challenge and the opportunity facing every community on earth:

My prediction is that the biggest domestic issue in the next four years will be how we respond to changes in technology, globalization and markets that have, in a very short space of time, made the decent-wage, middle-skilled job — the backbone of the middle class — increasingly obsolete. The only decent-wage jobs will be high-skilled ones.

The answer to that challenge will require a new level of political imagination — a combination of educational reforms and unprecedented collaboration between business, schools, universities and government to change how workers are trained and empowered to keep learning.

"Hope and Change: Part Two," *The New York Times*, November 7, 2012

Metrics for the MIRC Project

The Intelligent Community Forum served as one of more than 20 partners in the Minnesota Intelligent Rural Communities (MIRC) project of the Blandin Foundation. For the project, ICF worked with the Foundation to adapt its Intelligent Community Indicators in order to measure the readiness and the progress of 11 Demonstration Communities (DCs) in rural Minnesota.

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The MIRC Indicators were customized by ICF from its international Intelligent Community Indicators to provide meaningful evaluation of the readiness of the Demonstration Communities to use broadband and information technology for economic and social development. The resulting **Intelligent Rural Community Indicator**s measure:

- Broadband penetration and costs
- Educational performance and attainment
- Digital inclusion efforts
- Innovation by business and government
- The communities' skills at advocating for change within their borders and marketing themselves to the world

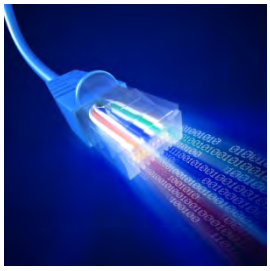
ICF's original Indicators provide a global standard encompassing some of the largest cities on earth as well as small communities, and some of the world's most advanced technology regions as well as rural economies. In order to create MIRC Indicators that would provide meaningful insight into exclusively rural communities in the United States, ICF changed its metrics across the full range of the Indicators, and recalibrated them to the scale of resources available in the rural economy.

We also modified some of the things we measured. The purpose of the international ICF Indicators is to compare the development of communities in a particular year. The purpose of the MIRC Indicators is less to measure current performance or condition than to judge *readiness*. The MIRC project aims to prepare communities to take economic and social advantage of broadband. A perfect set of MIRC Indicators would measure how prepared each community is to achieve economic and social progress using broadband and information technology. At the end of the MIRC project, a repeat analysis should indicate how much progress each community has actually made.

Inside the Indicators

The MIRC analysis used a 100-point scale and assigned 20 possible points to each of the five MIRC Indicators.

Broadband. Broadband is the new essential utility, as vital to economic growth as clean water and good roads. Intelligent Communities express a clear vision of their broadband future and craft policies to encourage deployment and adoption. We measured broadband based on:

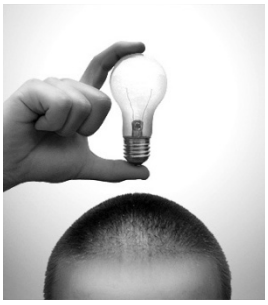


- Availability, that is, the percentage of homes, schools and government facilities "passed" by broadband
- Penetration, the percentage of homes, schools and government offices with broadband subscriptions
- The number of different broadband providers competing with each other in the local market, which is a rough indicator of how competitive the market is

Knowledge Workforce. A knowledge workforce is a labor force that creates economic value through the acquisition, processing and use of information. Intelligent Communities exhibit the determination and demonstrated ability to develop a workforce qualified to perform knowledge work from the factory floor to the research lab and from the construction site to the call center or Web design studio. Here, the metrics were based on:

- The highest educational attainment of residents (high school, community college, undergraduate, graduate)
- The computer-to-student ratio in public elementary and high schools, and the availability of in-house teacher technology training
- Degrees or certificates issued per capita by community colleges, undergraduate or graduate schools, either local or within commuting distance ("degree" is used to indicate graduation from any post-secondary school)

Innovation. For business, broadband has become to innovation what fertilizer is to crops. Intelligent Communities work to build the local innovation capacity of existing companies and the creation of new companies, because these produce all of the job growth in modern economies, and invest in e-government programs that reduce their costs while delivering services on the anywhere-anytime basis that digitally savvy citizens expect. Innovation in the public and private sectors was measured by:



- New business starts per capita per year
- Availability of start-up capital from private or public sources
- The percentage of businesses in the community that are in the top 20 industrial growth sectors, as measured by employment
- The average number of employees per business (fast growth businesses tend to be smaller)
- The average age of businesses (which tend to grow fastest in their early years)
- Whether the local government and school system have Web sites and their ability to support interactive transactions, a proxy for public-sector innovation

Digital Inclusion. As broadband deploys widely through a community, there is serious risk that it will worsen the exclusion of people who already play a peripheral role in the economy and society, whether due to poverty, lack of skills, prejudice or geography. Intelligent Communities promote digital inclusion by creating policies and funding programs that provide "have-nots" with access to digital technology and broadband, by providing skills training and by promoting a compelling vision of the benefits that the broadband economy. This Indicator measured the barriers that exclude people from the broadband economy and the programs put in place to overcome them. The metric was based on:

- Percentage of households with access to the Internet at any speed
- Average price of broadband, measured per megabit per month
- Number of locations with free public access to broadband-connected computers
- Existence of training and other programs to increase digital inclusion of the elderly, low-income and low-literacy population

Marketing & Advocacy. Like businesses facing greater global competition, communities must work harder than ever to understand their own advantages and create a vision of their place in the global market. They must also communicate to the world how they are maintaining or improving their position as wonderful places to live, work and build a growth business. Effective advocacy creates a new vision of the community from within, while good marketing shares this story with the world. Advocacy (internal community visioning and communications) and marketing (external communications) were evaluated by:

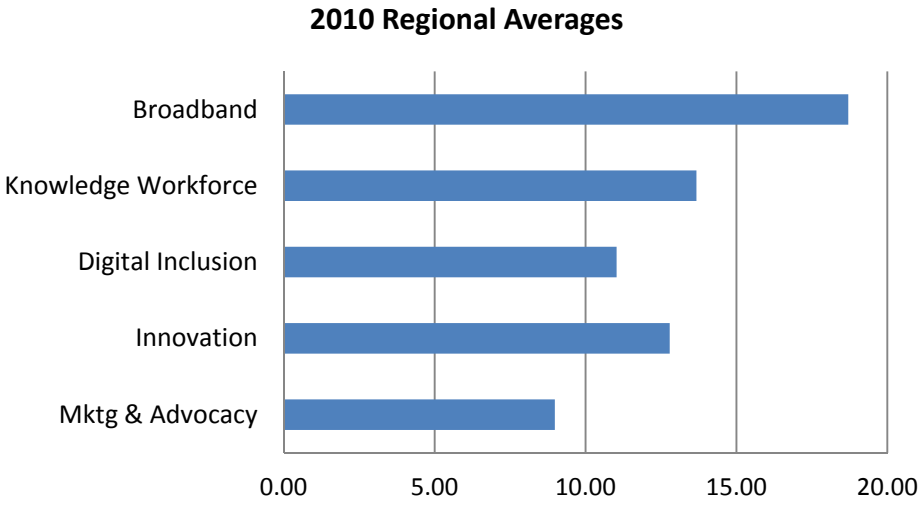
- The overall quality of online economic development marketing material
- Use of Intelligent Community messages in online marketing
- Existence of a group and programs dedicated to creating an Intelligent Community
- Existence of a documented strategy for economic and social development using information and communications technology

The Community in Words. No statistical measurement is an accurate reflection of reality – especially where human lives, culture, beliefs and individual initiative play so important a role as they do in community life. So it is also important to understand what the Intelligent Rural Community Indicators did *not* measure. They did not track or evaluate specific projects undertaken by the Demonstration Communities, from building broadband networks to advocacy programs that build enthusiasm for positive change. These may deliver large returns on their investment of money, time and ingenuity, but those returns are not captured by the initial or final "snapshots" of the Indicators. To convey arc of change for each community, we include a narrative that summarizes their major accomplishments over the 18 months of the project.

The Demonstration Communities: Then and Now

The chart below shows the average scores of the combined Demonstration Communities (DCs) based on data gathered in the second half of 2010 and reported in February 2011.

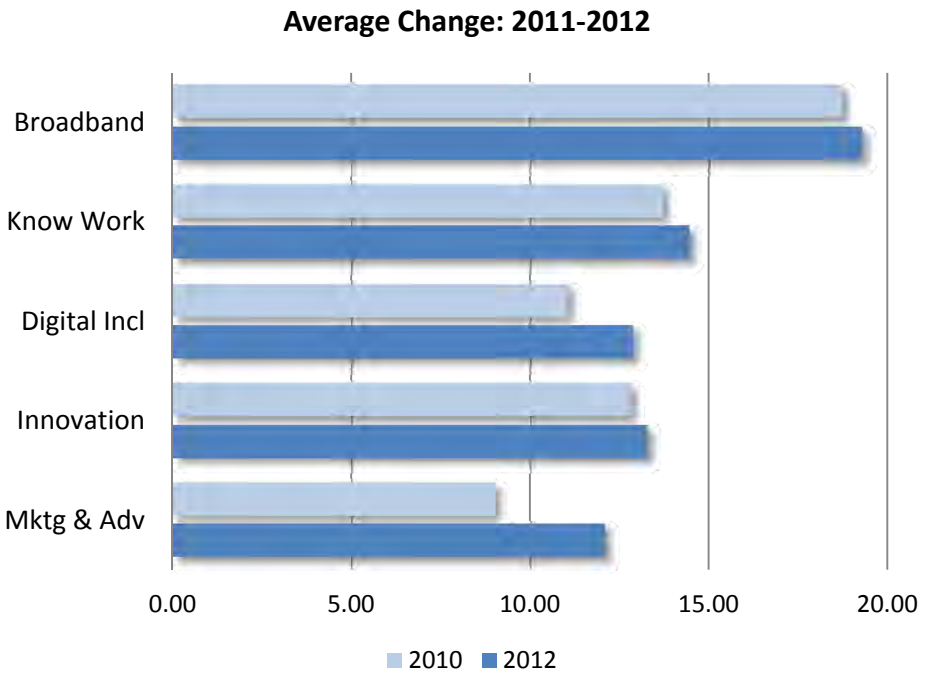
The 2010 averages show a region which was generally well-served by broadband, though with significant gaps and variations in pricing. Educational achievement, as measured by undergraduate degrees, was below the US average but the percentage of residents who graduated from community college far exceeded the average for the nation. There was substantial room for improvement in digital inclusion and innovation, and the marketing & advocacy score was the weakest of the five.



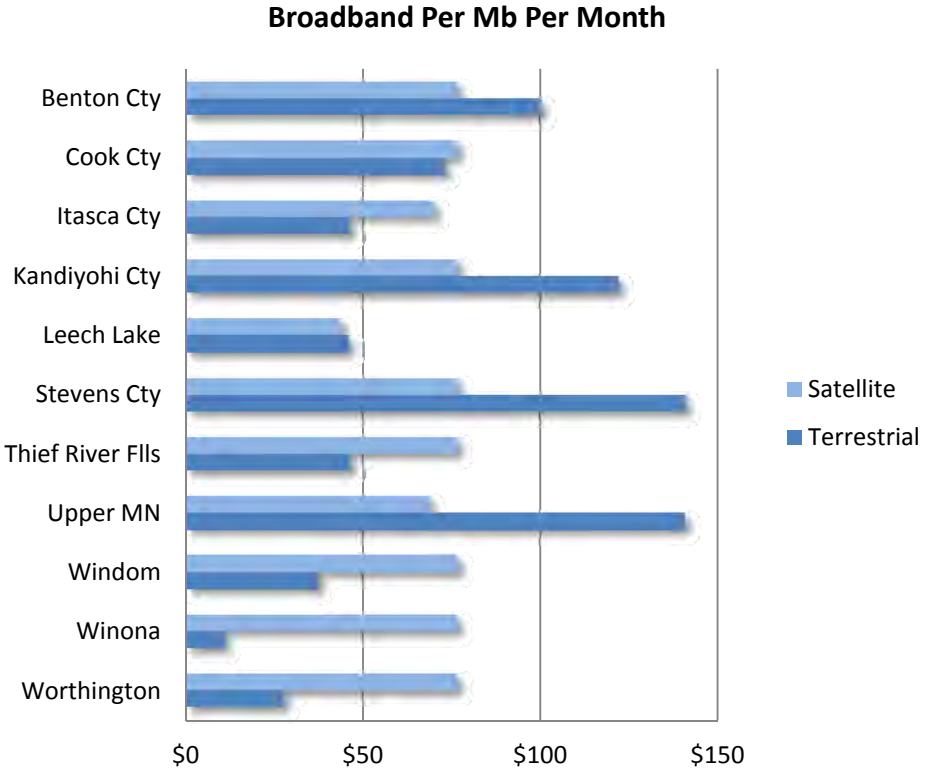
Over the 18 months between the measurement periods, the Demonstration Communities posted a 9.4% average improvement in their scores, from a high of 16% to a low of 4%, as shown below. The areas of improvement, in order from greatest to least, were as follows:

Marketing & Advocacy. In 2010, this was the area of greatest weakness, where the communities had not yet embraced the messages and meaning of the Intelligent Community movement. It is also a metric offering the opportunity for the greatest improvement in the shortest time and at the least expense. The Demonstration Communities were quick to seize on this advantage, and improved their average score by 26%.

Digital Inclusion. In 2010, the Communities scored well on basic Internet access and at an average level for public access and programs. The high cost of broadband in many parts of the area, however, presented a challenge to inclusion. The average cost per megabit per month across the Communities was $72, compared with $11 in its most densely populated municipalities. Higher prices for broadband are typically driven by low population density, which raises costs, and limited real competition, which reduces incentives for lower prices. No change in basic broadband pricing was measured in 2012, but the Communities expanded their public access locations and programs for the digitally excluded population. This raised their average score by 14%.



Broadband. Over the 18 months under comparison, all of the DCs grew their rate of broadband adoption at an average rate of 12%, compared with a rural Minnesota statewide average of 10.3% for the same period. In both 2010 and 2012, all of the DCs scored well in broadband compared with national rates of adoption in comparable rural areas. Average penetration in the DCs in 2012 was 67.1%, however, which was still 5% below the rural statewide average of 70.6%.



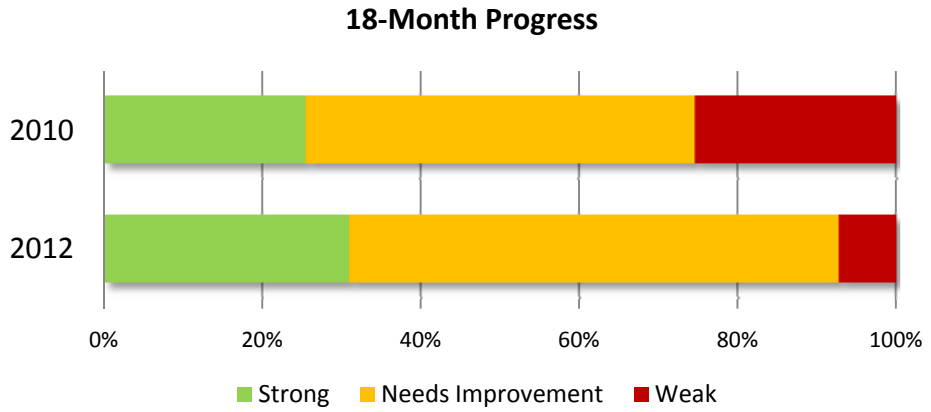
Knowledge Workforce. In 2010, the percentage of residents with undergraduate or graduate degrees in the DCs was low compared with national averages but the percentage with community college degrees significantly outpaced the rest of the US population. This may reflect the relative scarcity of undergraduate and graduate campuses, as well as the traditional employment demand of employers for skills useful in resource extraction and manufacturing in the region in past decades. Public schools in the DCs, however, were well equipped with information technology. The average student-to-PC ratio in 2012 was 2.81 to 1, compared with 3 to 1 in 2010 and to the 2006 US average of 3.8 to 1. More than 90% of schools provided in-house training for their teaching staffs. From 2010 to 2012, the average score of the DCs improved by 5%, which is meaningful given the long and major effort required to change the educational outcomes of a community.

Innovation. In 2010, the rate of new business starts in the DCs was low compared to both US averages and a reasonable estimate of rural averages. As a result, the average age of businesses in the area was nearly 14 years, whereas businesses do most of their job creation in the first five years of life. Start-up capital was available only in the form of public-sector grants and loans, for the most part, though many of the DCs did not appear to be aware of the availability of such programs. Changing any of these dynamics is a long and difficult process, and the DCs on average showed small progress over the 2 years measured, producing only a 4% average improvement.

Overview of Community Performance

The 2010 analysis of the 11 DCs showed a wide range of strengths and weaknesses. To improve understanding of the analysis, we have grouped the scores into three categories: "strong" meaning a score of 15 or higher out of 20 for each Indicator, "needs improvement" for a score of 10-14, and "weak" for a score of 9 or less.

The 2010 report covered five Indicators each for 11 communities, for a total of 55 metrics. Of these, 28% fell into the "weak" range, 47% in the "needs improvement" range, and 25% in the "strong" range.



In 2012, the percentage of MIRC Indicators in the "weak" range fell from 28% to 7%. There was a corresponding increase in the "needs improvement" range, from 47% to 62% in 2012, while the "strong" range grew from 25% to 31% in 2012.

The chart on the next page shows the percentage improvement attained by each of the DCs from 2010 to 2012. The six communities that achieved the greatest improvement in their scores came from the middle to lower end of the 2010 rankings.

Conclusions

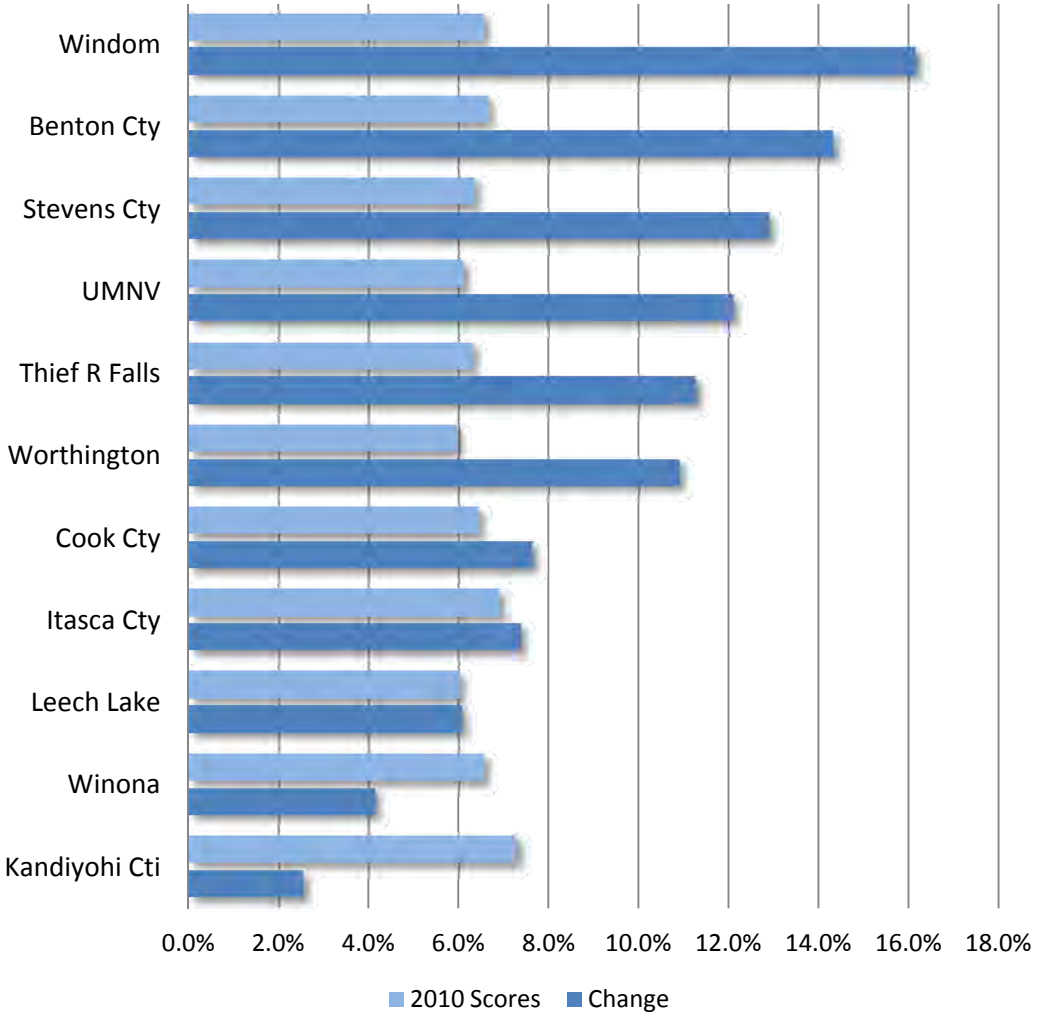
A review of the data from 2010 and 2012, as well as verbal feedback from the Demonstration Communities at a workshop during the 2011 Blandin Broadband Conference, lead to several conclusions:

■ The Intelligent Rural Community Indicators measure what they were intended to measure and are well-calibrated to reveal meaningful differences in readiness and performance. During the 2011 workshop, community leaders confirmed that the scoring was an accurate reflection of where they believed their communities to be on the development curve.

■ The Indicators provided a means for communities to focus their efforts on goals achievable in the short term that would have a meaningful impact on their competitiveness and digital readiness. Responding to the 2010 scoring, most communities made measurable progress in areas that were susceptible to quick results. At the 2011 workshop, community leaders confirmed that low-scoring Indicators represented areas where they needed to focus their energies, and expressed appreciation for ICF's recommendations on the best ways to make measurable progress.

■ The Indicators were effective in tracking the progress from 2010 to 2012. Communities tended to achieve the greatest progress in areas where they were weakest in 2010. Lower-performing communities tended to achieve greater gains from 2010 to 2012 compared with communities whose 2010 scoring was high, and who had subsequently less room for improvement.

Improvement Over 2011



A note on the chart: the light blue bar reflects the relative scores of the communities in 2010 across all MIRC Indicators, without reference to the bottom axis, while the dark blue bar shows the actual percentage improvement across all Indicators.

Community Rankings and Analysis 2012

The following pages provide the story of the MIRC projects in each Demonstration Community and a summary of the metric analysis of change from the 2010 to the 2012 evaluations. The communities are listed in order of the improvement they achieved in their scores over the 18 months, beginning with the community showing the greatest improvement.

Windom

Windom in Words

When Windom grad Mari Harries moved back to her home town, she was looking for a great place to raise her young child. Her fond memories, and a desire for a safe and friendly place to live, brought her home. However, Mari also wanted the same for other young families, and strove to create a community that welcomes back its own. That meant creating a sense of connectedness, and awareness of things to do. Using Windom's municipal fiber-to-the-premises network, Mari created a blog, "Finding Windom", to share upcoming events, opportunities for involvement, and her reflections on the good life in Windom.

In 2006, Windom leaders took control of their high-speed Internet future by creating their own municipal fiber network. In 2010, with their participation in Blandin Foundation's Minnesota Intelligent Rural Communities (MIRC) program, they helped city residents, businesses, and organizations better utilize the Internet. The steering committee created a new community portal, FindingWindom.com, helped businesses create a stronger online presence and aided the city in creating a new transactional Web site. The result was a 30% increased in Marketing & Advocacy ratings over two years, according the Intelligent Community Forum's (ICF) benchmarking tool.

Through MIRC, substantial investments were made in video-conferencing equipment, computers, and training opportunities at Windom's Business Arts & Recreation Center and the Windom Education and Collaborative Center. This created money-saving teleconferencing opportunities for businesses and public institutions, and provided public access to higher education classes never before offered in Windom. These efforts helped Windom make the largest improvement (over 16 percent,) and score the highest among the 11 MIRC demonstration communities in 2012. Residential broadband subscriptions also increased from 63 to 70 percent.

In addition to the above, Windom implemented the following projects:

- Laptops and wireless cards installed in all 14 emergency vehicles in Windom and Cottonwood County.
- iPads purchased and utilized in Windom High School to create innovative and interactive learning, especially in the sciences.
- Windom Schools received wireless routers for increased student and public Internet access.

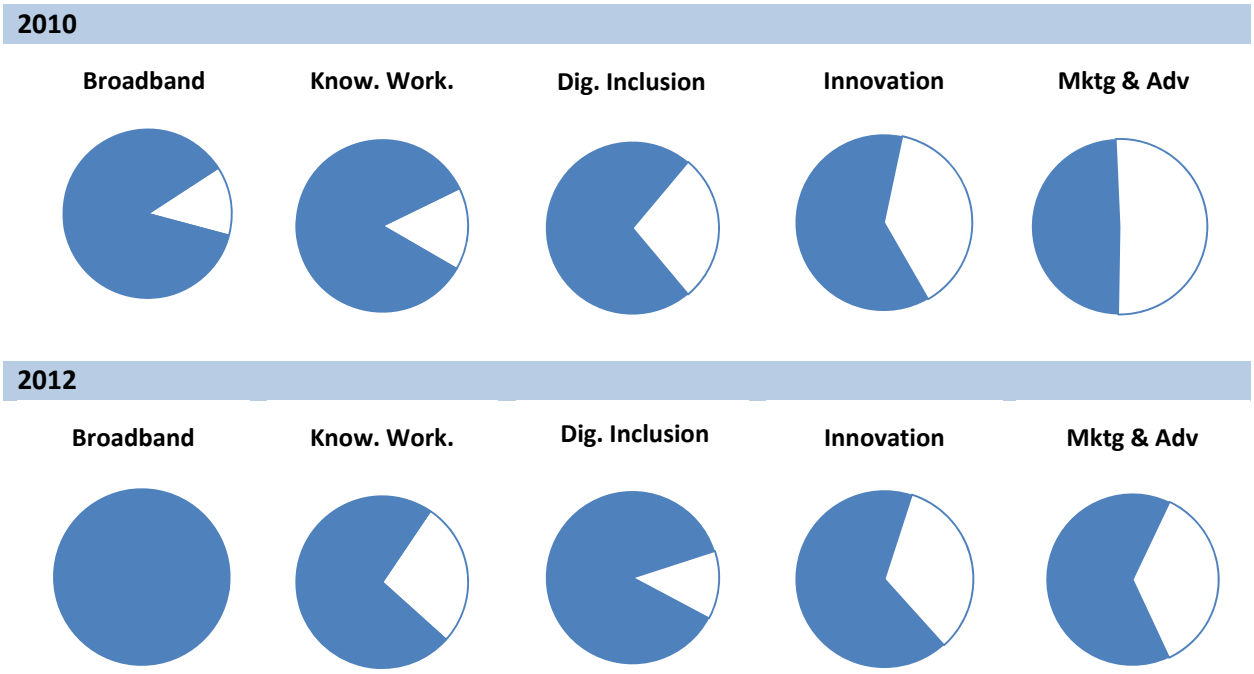
- iPads for Windom Area Hospital, allowing patients and their families to look up medical information, update Caring Bridge sites, or contact family members and stay current.

Windom in Numbers

With a population of 4,500, Windom is the smallest and least-densely populated municipality among the DCs. This makes its improvement all the more impressive: Windom logged the greatest improvement (16.2%) on the Intelligent Rural Community Indicators between 2010 and 2012.

Broadband. Thanks to the major effort to develop a fiber network, Windom's Broadband score rose from an already impressive 19.11 in 2010 to a top score of 20.00 in 2012, based on an increase in residential broadband penetration from 63% to 70%.

Knowledge Workforce. Windom improved its computer-to-student ratio from 1/3 in 2010 to 1/2.2 in 2010. That represents a significant investment that will pay educational dividends in coming years. This did not, by itself, change the community's scoring in the analysis.



Digital Inclusion. Windom ranked above average in this metric in 2010 based on broadband priced in the middle range of the DC average and reasonable levels of basic Internet access. In 2012, its score improved 21% through a further increase in the number of public-access locations with computer and connectivity reported by the community.

Innovation. Windom made a smaller amount of progress – an 8% improvement – in this metric from 2010 to 2012, based on reporting in 2012 that its government Web site had transaction capability. Changing other negative factors cited in 20120 – a low level of business starts and no risk-funded companies – requires substantial effort and time to accomplish, and it is no surprise that the 18-month period saw no change in either.

Marketing & Advocacy. Windom improved its score in this metric by 41% from 2010 to 2012. In 2010, Windom was rated as 10% above the average of the DCs based on having a task force in place and strong economic development marketing but a lack of a documented strategy for Intelligent Community development. By 2012, Windom succeeded in putting into place its strategy and notched up achievements against specific goals, which boosted its score significantly.

Conclusions & Recommendations

From the Minnesota Intelligent Rural Community Indicators, Windom gained a clear understanding of how to target the "low-hanging fruit" that could affect the community positively with limited investment in limited time. It focused on improving access for offline citizens, adding interactive capabilities to its Web site, and putting a documented plan into place with measurable goals and an agenda for action. The only additional step the community should take is to review its Web and other marketing content and find opportunities to include specific Intelligent Community messages concerning broadband, knowledge work, innovation and digital inclusion.

But it was not all about harvesting the easy gains. The fiber-to-the-premises project was a bold undertaking for a place with fewer than 5,000 residents. Deploying the network, delivering an affordable service and driving adoption are significant achievements of which Windom's residents should be very proud.

The challenges of the future, however, will be greater. We recommend that Windom turn its attention to the more substantial issue of creating a business ecosystem that supports the relocation and start-up of innovative businesses, starting with the assets it has already put in place. An important component will be meaningful and productive relationships with the nearest post-secondary educational institutions. From instructors to students, these are repositories of talent. The extent to which Windom can help match that talent to economic opportunity, and to foster more opportunity, will determine its future success. The city should also foster business partnerships and create community programs that help match grants, subsidies and angel investment to young companies.

Benton County in Words

During a MIRC site visit to Benton County, Blandin Foundation representatives visited the home of 92-year- old Ginny. They heard about the impact a touch-screen computer was having on her ability to stay in her home with a better quality of life, connecting her to healthcare providers and her family. During the conversation, the computer beeped. Ginny got up, ambled to the computer, answered a video call from Hawaii – and was delighted to see her new great granddaughter, who had just been born. Thanks to Internet access, the world just got smaller and better for Ginny.

Community leaders in Benton County have a long history of working to improve Internet access as part of their economic development initiatives. Starting in 2004 and continuing through 2010 with Benton County's participation in the MIRC program, they have helped create significant change in the ability of all of county residents to access and use the Internet. The Benton County Connected steering committee has successfully used the MIRC process to increase their ratings in Digital Inclusion by 50% in two years, according the Intelligent Community Forum's (ICF) benchmarking tool.

By adding new computers in libraries, schools, senior housing, and at Independent Lifestyles in Sauk Rapids, as well as adding 13 new Wi-Fi access points in a wide variety of businesses and community sites, the county has boosted the number of Benton County residents who can now get on the Internet. These efforts helped Benton County make the second-largest improvement among the Demonstration Communities, with an overall increase in ICF scoring of almost 15%.

In addition to the above, Benton County implemented the following projects:

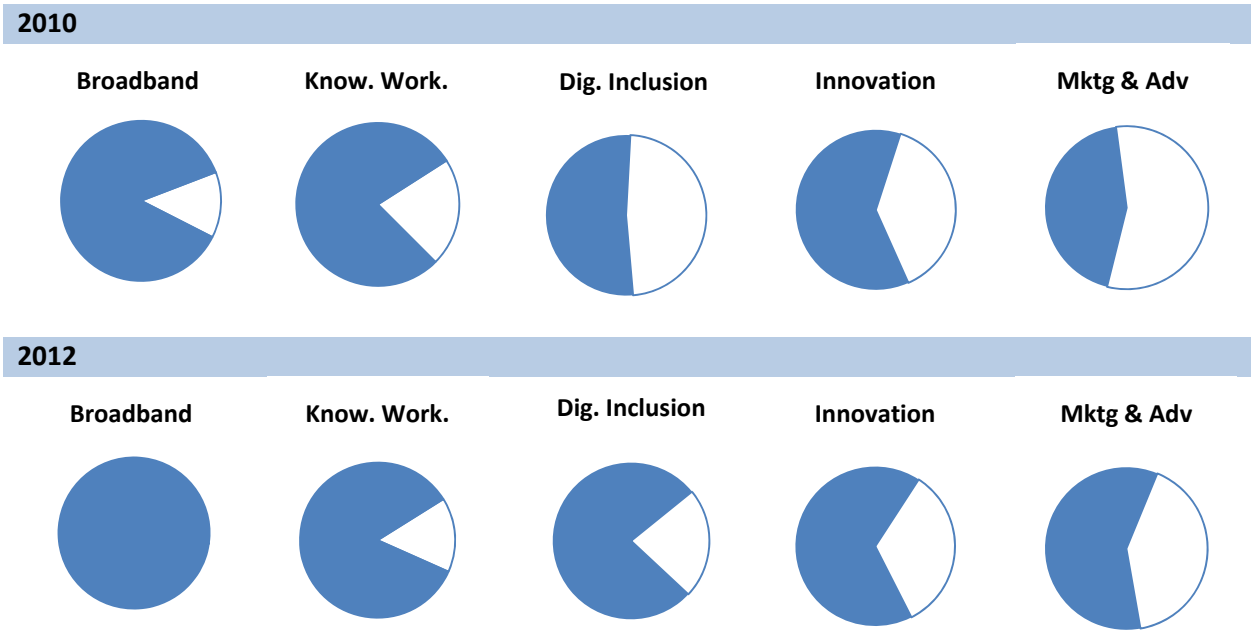
- Creation of the WhatsUpInFoley.com community Web site.
- Questia, the world's largest online library, was made available to Sauk Rapids and Foley students and staff.
- Foley Schools received wireless routers for increased student and public Internet access.
- Foley and Sauk Rapids Computer Labs made available more hours for students, business, and community members.
- Foley High School's Future Farmers of America created a Web site to link to the County Ag community and initiated a new water-testing service for county residents with wells.
- Computers and software were made available to elderly to help them connect to healthcare providers and family, allowing them to stay in their own homes for a longer period of time.
- Almost 70 county businesses received free assistance in claiming their Google Place sites, allowing more local and pass-through customers to find them on the Internet or with mobile devices. Local public assets are also being mapped.

- Three Lunch 'n Learn Chamber of Commerce sessions and numerous community educational workshops were held around the county to educate over 100 businesses about the importance of getting online or doing more online to improve their profitability.
- Distribution of over 30 free computers to low-income county residents.

Benton County in Numbers

With nearly 29,000 people, Benton County has the highest population density of the counties in the DC group. It posted a better than 14% improvement in its total score from 2010, when it was the third-ranked community in the group, to 2012, when it ranked second.

Broadband. Like Windom, Benton County achieved gains in broadband adoption that boosted its score from a strong 19.11 in 2010 to the top score of 20.00 in 2012. Residential penetration was nearly 75%, far above US averages, and 14% higher than the 2010 penetration rate of 66%.



Knowledge Workforce. In 2010, Benton County was a strong performer in this category, with the second-highest score among the DCs, based largely on local access to higher education from community/technical schools and four-year institutions. By 2012, the county also increased its penetration of information technology in schools. The computer-to-student ratio improved from 1-to-5 in 2010 to slightly better than 1-to-3 in 2012, which boosted the county's Knowledge Workforce score by a solid 8%, while giving schools a better chance to effectively integrate ICT into education.

Digital Inclusion. The county made its biggest gains in outreach to the digitally excluded. While other indicators did not change, the number of public-access ICT locations reported in 2012 significantly

outpaced the 2010 number and gave the county a serious opportunity to deliver access and training to citizens. The Digital Inclusion score improved 48% over 2010 as a result.

Innovation. Benton County's innovation score improved 8% based on a 2012 review of the local government's Web site, which provided transaction capabilities that were not in evidence in 2010. These offer citizens better, more efficient service than traditional procedures that require a visit to the county office. The more challenging indicators – new business starts per capita, average business size and age, and the availability of risk funding – did not change.

Marketing & Advocacy. Like Windom, Benton County achieved a greater than 30% improvement in this scoring from 2010 to 2012. The improvement was built on creation of a task force to focus on Intelligent Community development, the development of a strategy and documenting of that strategy in actionable form.

Conclusions & Recommendations

Through its participation in the MIRC program, Benton County targeted the Indicators in which it could make the greatest difference with the project funding available, and made a significant impact through nine individual projects. Each step in development, if sustained over time, contributes to further progress as citizens become comfortable with information and communications technology and incorporate it into their lives and work. Most importantly, it developed a plan that can be reviewed and revised in future years to raise the bar still higher.

Benton County's data indicated that it has both community/technical schools and undergraduate schools within reach of many citizens. These are precious assets with the potential to support higher quality primary and secondary education, technology training for local business, and start-ups of Benton County companies that will remain in the county and begin a virtuous cycle of economic growth. Of all the Intelligent Community opportunities available to the county, this is the most promising. Taking advantage of it requires county and municipal government leaders to begin working with educational leaders and prominent businesses to discuss goals, define opportunities and obstacles, and search for near-term gains that can launch a long-term collaboration effort. It also requires a conscious effort to match companies in need of funding with grants, subsidies and angel investment.

Stevens County in Words

Last year, when students at Hancock School tried to get online, there was a need to make sure no other classes were on the Internet; there was not enough bandwidth for multiple classes to get online at the same time. With funding from the Stevens County Economic Improvement Commission (SCEIC), using a grant from the Blandin Foundation's MIRC program, Hancock School was able to increase its bandwidth tenfold, with the ongoing costs paid by federal E-Rate funds. Using MIRC program dollars, Chokio-Alberta Schools and Morris Area Schools were able to improve their Internet access by increasing the number of wireless routers throughout their buildings.

In 2010 SCEIC formed a MIRC Steering Committee to help Stevens County residents, businesses, and organizations better utilize high-speed Internet and to promote the community. Improving educational opportunities was a key focus for the MIRC Steering Committee, helping to ensure their current and future workforce was getting opportunities for improving skills similar to those of more urban communities.

Steven's County made a significant 13 percent gain in its overall ICF ratings, the third largest of the eleven MIRC communities. By increasing the number of computers at public libraries and educational facilities, and by placing computers and wireless routers at public schools and other sites throughout the county, Stevens County successfully used the MIRC process to increase its ratings in Digital Inclusion by over 30 percent, and the student-to-computer ratio by 40 percent, in two years. Improvements were made in all five categories, according to ICF's benchmarks.

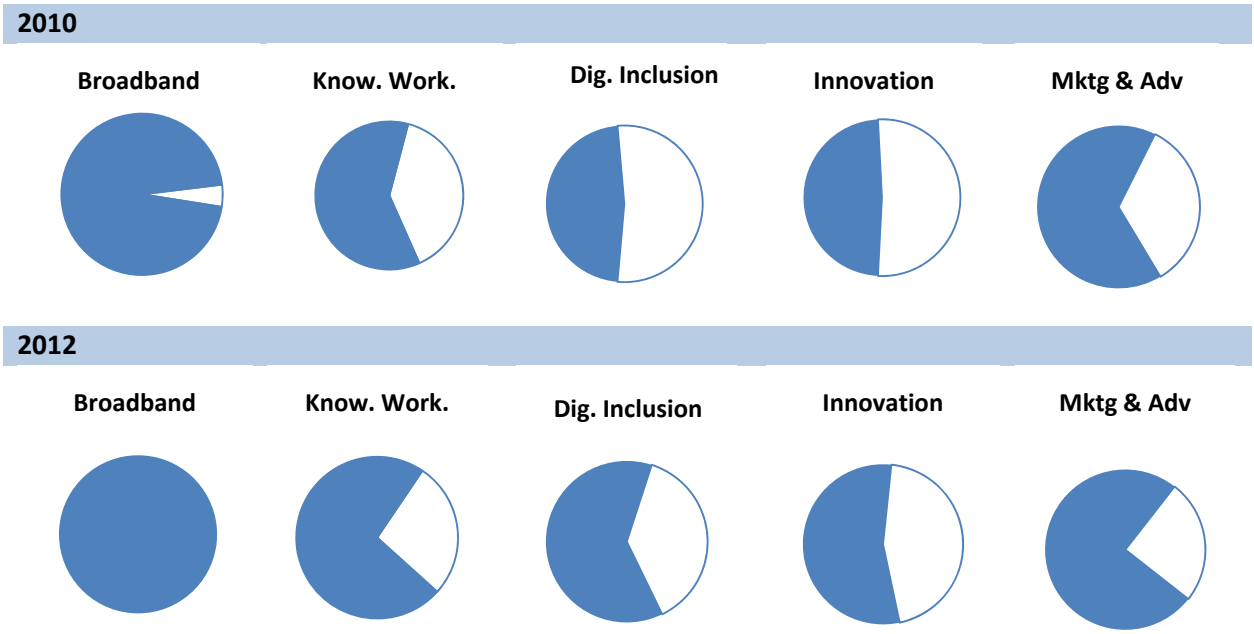
The MIRC program in Stevens County provided funds for the following projects:

- Online equipment was purchased to provide tele-speech therapy through Midwest Special Ed Cooperative, saving travel time and expense, while allowing therapists to spend more one-on-one time with students.
- The Morris and Hancock Public Libraries received computer equipment to provide more public access to electronic Information.
- Morris Housing and Redevelopment Authority (HRA) received funds to create an online presence for its Rental Housing Licensing program and other HRA client services.
- Stevens County Historical Society upgraded its Web site, placing a significant amount of cemetery records and other historical information online, for genealogical or other research.
- American Legion Post 29, Morris, purchased telecommunications equipment making the Legion's building a Community Internet Access Center (CIAC). The CIAC is available to members and the general public, saving travel time and expense and improving public access.
- Resource Connections, a local resource group benefitting nonprofits in Stevens County, placed public access computers in local business locations throughout Stevens County.
- Stevens Forward (a volunteer community development organization) developed its Web presence.

- Morris Area Chamber of Commerce received funding for hardware and software support for its electronic information services (Friday Fax, etc.).
- University of Minnesota Extension provided numerous workshops for businesses education concerning Internet use, thereby significantly improving the online presence of many Stevens County businesses.
- The PCs for People nonprofit provided 24 refurbished computers that were distributed at no cost to qualified individuals and families.

Stevens County in Numbers

With a population of 10,000 people, Stevens County is one of the four most sparsely populated counties among the Demonstration Communities – but one that improved its MIRC scoring by an impressive 12.9% overall since 2010.



Broadband. Despite its low population density, Stevens County scored highly in 2010 in the Broadband indicator, with 19.11 out of 20 for availability, penetration and the number and different types of providers. An increase in broadband penetration over the next 18 months gave the county a perfect score of 20 in 2012.

Knowledge Workforce. In 2010, Stevens County had a below-average score in this metric, reflecting the county's high proportion of community college graduates but few citizens with undergraduate or graduate degrees, as well as a lack of in-house tech training for public school teachers. By 2012, Stevens County notched up a 20% higher score by reporting the availability of in-house training for teachers and staff at its schools, demonstrating a higher level of commitment to integrating ICT into education.

Digital Inclusion. In 2010, Digital Inclusion was the lowest-scoring area for Stevens County, because of very high average costs for broadband and only moderate Internet availability in homes and public spaces. By 2012, the county more than tripled the number of locations at which it reported offering public access to Internet-connected computers, which produced a 32% improvement in its Digital Inclusion score.

Innovation. The county's Innovation scores were also below average in 2010, at 9.67 out of 20, due to the low number of new business starts per capita, lack of reported grants and subsidies for start-ups, and lack of transaction capability on the county government Web site. In 2012, the county reported the availability of public-sector grants and subsidies for business start-up, which boosted its score by 13.8%.

Marketing & Advocacy. Stevens County was rated a strong marketer and advocate in 2010, when it outperformed every other DC except Kandiyohi County. The county showed marked leadership in creating a task force, developing and documenting a strategy and putting programs into place, though the quality of its online marketing was ranked fairly low. By 2012, the county had filled in the gaps in its marketing and received higher rankings for its economic development Web presence and the shaping of a message promoting its strengths as an Intelligent Community. The result was a 13.6% improvement in its score.

Conclusions & Recommendations

As an MIRC Demonstration Community, Stevens has made substantial progress on its journey to become an Intelligent Community. It used MIRC funding to successfully target improvements in technology in schools and the lives of the digitally excluded, as well as improving its external marketing.

There is one remaining near-term opportunity that the county could seize, which is to introduce interactive and transactional capabilities to its Web site in order to deliver services to citizens and businesses more efficiently. Such projects typically repay their costs by automating processes that are now performed manually.

The next steps in the journey are more challenging: to nurture innovation in the public and private sectors in order to make the county a destination for innovative employers and talented individuals seeking a high quality of life in a rural setting. The route to this destination will require county government and municipalities to build partnerships with secondary and post-secondary schools that align learning with local opportunity and involve instructors as mentors to local business. Given the improved broadband infrastructure available in many parts of the county, it may also involve bringing distance education to underserved schools to ensure educational excellence.

The work will require a clear strategy and long-term commitment by government, business, institutions and citizens committed to building a more successful county. It also demands that the county government become even more familiar with risk funding options available to its businesses and communicate them effectively.

Upper Minnesota Valley in Words

As the only regional MIRC community, the Upper Minnesota Valley Regional Development Council (UMVRDC) faced unique challenges in cultivating broadband access and use across five rural counties in western Minnesota. With only 15 people per square mile, the region is the most rural of the MIRC Demonstration Committees. To maximize impact, the steering committee prioritized strategies that touched all parts of the region, with local ownership that would drive sustainable success.

The following projects were implemented in UMVRDC:

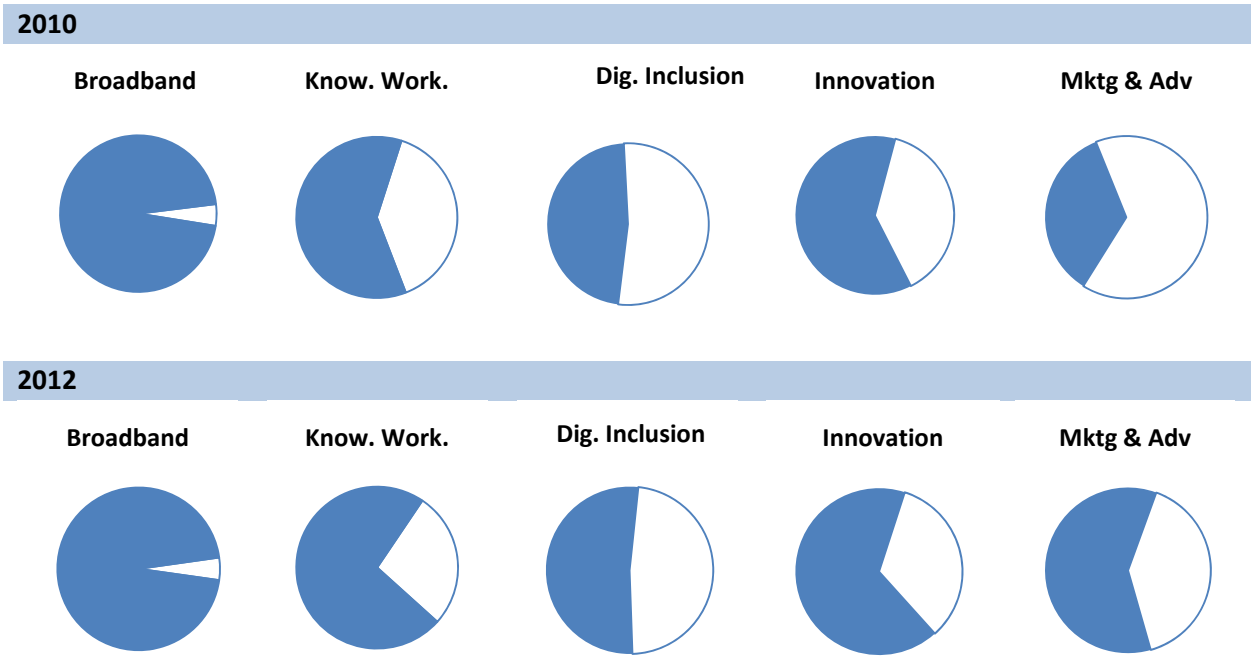
- Big Stone County improved online access to government information and resources including forms, county highway project status, and GIS information. A growing number of businesses subscribe to the GIS/property database service.
- Dawson-Boyd Schools created community capacity through a Multimedia Collaboration Center, a Student Tech Team, and a hybrid Teacher/Community Training Academy.
- Johnson Memorial Hospital beta-tested a home health service using broadband-based remote support tools and enhanced family engagement with an aging population.
- The Computer Commuter is a small bus with a mobile computer lab, which serves multiple communities in Lac qui Parle County in a partnership with local telephone companies and Lac qui Parle EDA. With a regular schedule, community members obtain broadband access and computer skills.
- The Ortonville EDA led efforts to create business Web sites and connect students to the community. Multiple Web sites were created and significant progress made in exposing Ortonville organizations and businesses to the opportunities presented through broadband.
- Pioneer Public Television created an excellent documentary focusing on western Minnesota individuals and organizations affected by a lack of broadband availability. This segment has been included on national public television program.
- The UMVRDC developed the capacity to assist the Cities of Bellingham and Echo to create and maintain their community Web sites.

Upper Minnesota Valley in Numbers

The largest of the DCs, the Upper Minnesota Valley region has a population of 50,000 people and is one of five Demonstration Communities with population density of under 20 people per square mile. Though application of MIRC funding and the Intelligent Community funding, it achieved a 12.1% improvement in its scoring from 2010 to 2012.

Broadband. In 2010, the Valley received a high broadband score of 19.11 due to high availability, moderate-to-high penetration and a reasonable if not lavish choice among broadband providers. Based on new penetration data, however, its score remained unchanged in 2012.

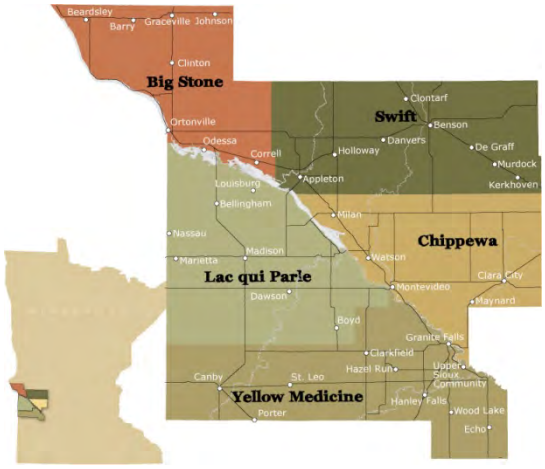
Knowledge Workforce. The 2010 Knowledge Workforce score of the region was below the group average, with a profile typical of the more rural DCs: a large percentage of the population with community college degrees and much smaller percentage with undergraduate or graduate degrees. The PC-to-student ratio in elementary and high schools, however, put the region in the top ranking for that factor. By 2012, the Valley posted a 20% improvement in its score when it reported that in-house technology training was now available to public school teachers.



Digital Inclusion. This was an area of weakness in 2010, due largely to the high average price of broadband at $119 per megabit per month. The region was one of four DCs in which the average monthly cost per megabit for terrestrial broadband was actually *higher* than for satellite broadband. For all other factors, the region scored at an average level for the group. By 2012, the region added locations providing public access to Internet-connected computers, which raised its score by 11%.

Innovation. The 2010 Innovation score was slightly above average, despite the fact that new business starts were at the low end of the scope, due to the presence of several risk-funded businesses, an average percentage of businesses in the top growth sectors for employment, and good transactional capabilities on government and school Web sites. MVRDC was unable to improve on this scoring in 2012, because the "low-hanging fruit" had already been harvested and further gains required substantial time and effort to bring about.

Marketing and Advocacy. This was another area of weakness in 2012. The region scored well for the quality of its online marketing and inclusion of Intelligent Community messages, but was adversely affected by the lack of any documented strategy, goals, organized group or programs. By 2012, the Valley had achieved a 71% improvement in its score by using its MIRC program to make impressive progress on all of these fronts.



Conclusions & Recommendations

Having been a strong performer in Broadband and Innovation in 2010, the Upper Minnesota Valley made improvements in technology implementation in schools and at digital inclusion facilities, but devoted most of its efforts to forming a group of champions, setting strategy and outlining programs for the future. The Valley thus ended the MIRC process primed for further advances, and experienced in managing multiple programs to achieve its goals.

With easy victories out of the way, these advances will require a focus on expanding broadband options for the region in collaboration with private providers, or to explore a public or public-private partnership approach to deploying high-capacity broadband, probably through wireless towers. This will contribute both to Broadband and Digital Inclusion rankings. As with all other DCs, the region can also profitably focus on building relationships among business, local governments and secondary and post-secondary institutions within driving distance, and using these to spur company creation and growth through incubator or business acceleration programs.

Thief River Falls in Words

With a high-quality local broadband infrastructure available, Thief River Falls put an emphasis on helping low-income families get online, and on improving the use of technologies by small business in the community. The community also built a strong public-private partnership steering team committed to moving forward on Intelligent Community concepts.

Case in point: as active participants in the Thief River Falls' MIRC program, "Computers for Our Community," three local communications companies have combined good works with good business. Sjoberg Cable, Wikstrom Telephone and Garden Valley Telephone Companies are providing discounted broadband services to low-income families, which also receive refurbished computers and digital literacy training. The result is that over 80 percent of participating families indicated they plan to continue their broadband subscriptions when the trial period ends.

Other notable Thief River Falls projects included:

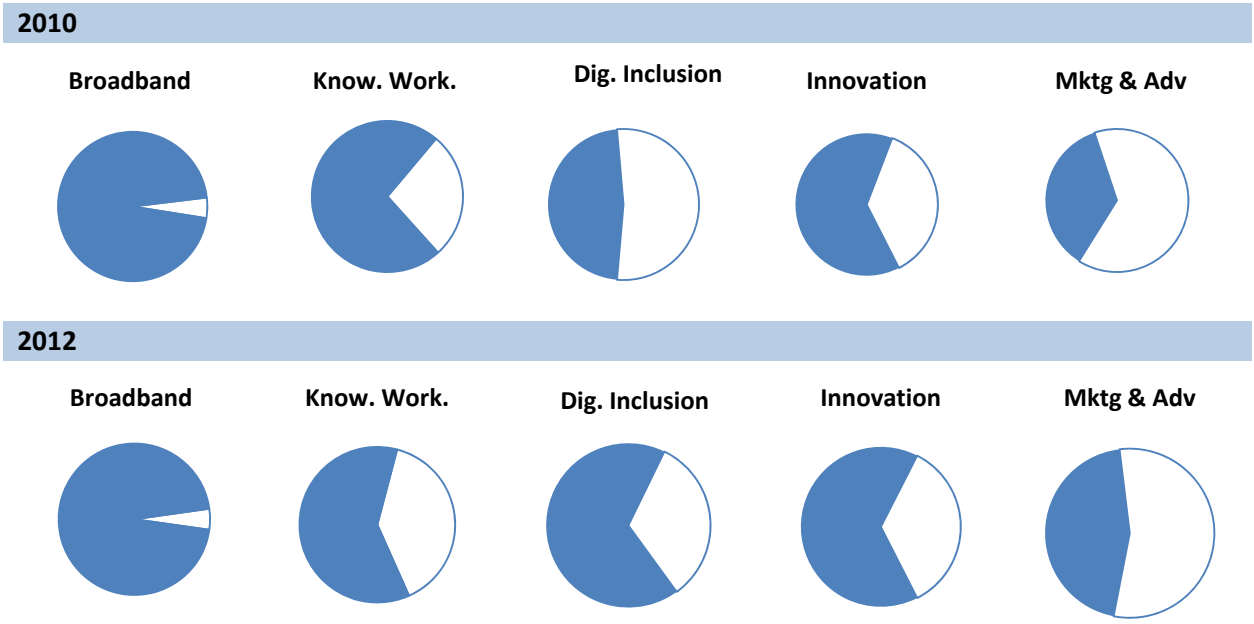
- "Computers for Our Community" used workforce programs to connect area youth to technology initiatives. High School students were engaged in the program from computer refurbishment through delivery to participating families. Community education staff made use of the Technology Connection Center to provide up to eight hours of training for computer recipients.
- The Thief River Technology Expo, held at the local college, brought together a variety of private sector technology vendors to deliver multiple demonstrations and classes on broadband technology and its applications for several hundred residents.
- The Thief River Falls Technology Connection Center recently moved from temporary space into the newly renovated Carnegie Library. Businesses and the general public alike now have easy access to high-speed Internet, computers and training classes. In addition, there is space for business incubation at the Center.
- Now that the Technology Connection Center is complete, the Thief River Falls MIRC team is planning a series of business e-learning experiences for local business owners and executives.

The Thief River Falls community is committed to providing the infrastructure and talent to support its technology-oriented major employers while encouraging small business entrepreneurs to take full advantage of broadband and technology.

Thief River Falls in Numbers

Thief River Falls, with 8,400 people, is the most densely populated of the DCs, which gives it advantages in terms of connecting people to each other and to opportunity. From 2010 to 2012, it achieved an 11% improvement in its MIRC scoring, concentrated in digital inclusion and marketing & advocacy.

Broadband. Thief River Falls scored near the top in 2010, with high residential availability and a meaningful number of different providers. But residential penetration, at 59%, is lower than in all but four of the other DCs. A 2012 market study revealed no measurable change in penetration and its 2012 score remained the same 19.11.



Knowledge Workforce. The municipality's second highest score in 2010, slightly above average at 14.56 out of 20, was for Knowledge Workforce, based on a good PC-to-student ratio and in-house access to technology training for teachers. The community had the usual high proportion of community college graduates but low percentage of citizens with undergraduate or graduate degrees. There was no change in this metric in 2012 because the excellent projects initiated did not target the factors measured.

Digital Inclusion. In 2010, Thief River Falls ranked below average in this indicator, as a result of a low number of public access facilities and programs designed to provide training to the digitally excluded. The municipality's other scoring was in the moderate-to-high range. By 2012, the city had added a second public access facility to serve the digitally excluded, which boosted its score by 10.6%.

Innovation. Thief River Falls was also slightly below average in this metric due to a low number of new business registrations per capita, a relatively high average number of employees per business and a low number of risk-funded companies per capita. On the positive side, the municipality reported on the existence of public-sector grant programs, and had a significant percentage of its businesses in the growth sectors of the economy. Both government and schools offered effective Web sites with transactional capabilities. From 2010 to 2012, however, there was no change in score.

Marketing & Advocacy. This indicator was the weakest area for Thief River Falls in 2010, due to the quality of online economic development marketing and the lack of a documented strategy or goals for Intelligent Community development. By 2012, however, the municipality had improved its score by 97% through the launch of a task force, creation of a documented strategy and the implementation of programs that achieved results.

Conclusions & Recommendations

Thief River Falls has the opportunity going forward to achieve gains in the more challenging areas where its score was unchanged from 2010 to 2012, as well as to increase the progress in areas that saw limited improvement. Of these, continued expansion of public access computer facilities will yield the fastest results. More challenging opportunities for progress include:

- Engaging with secondary and post-secondary institutions within driving distance to develop tailored training programs for existing businesses and build relationships between educators and employers
- Developing entrepreneurship training, business incubation and business acceleration programs for existing and prospective business owners, and communicating sources of grants, subsidies and angel investment to entrepreneurs

Worthington in Words

When Glenn Thuringer, EDA Director in Worthington, received a call from a Bioverse executive, it was bad news. Worthington had been in the running for the company's next site expansion but Bioverse had decided to locate in South Dakota instead.

Thuringer asked for one chance to meet with the executives and show them the city's new Biotechnology Advancement Center (BAC). After seeing the site – with its available start-up space, state-of-the-art computer lab and telecommunications equipment purchased in part through the Blandin Foundation's MIRC program – Bioverse executives not only made the decision to switch their expansion plans from South Dakota to the BAC, they moved their headquarters into town as well.

In 2010, with backing from MIRC , a local steering committee helped city residents, businesses, and organizations better utilize high-speed Internet to not only promote their community as a center for bioscience business, but also as one wired for the 21st Century economy.

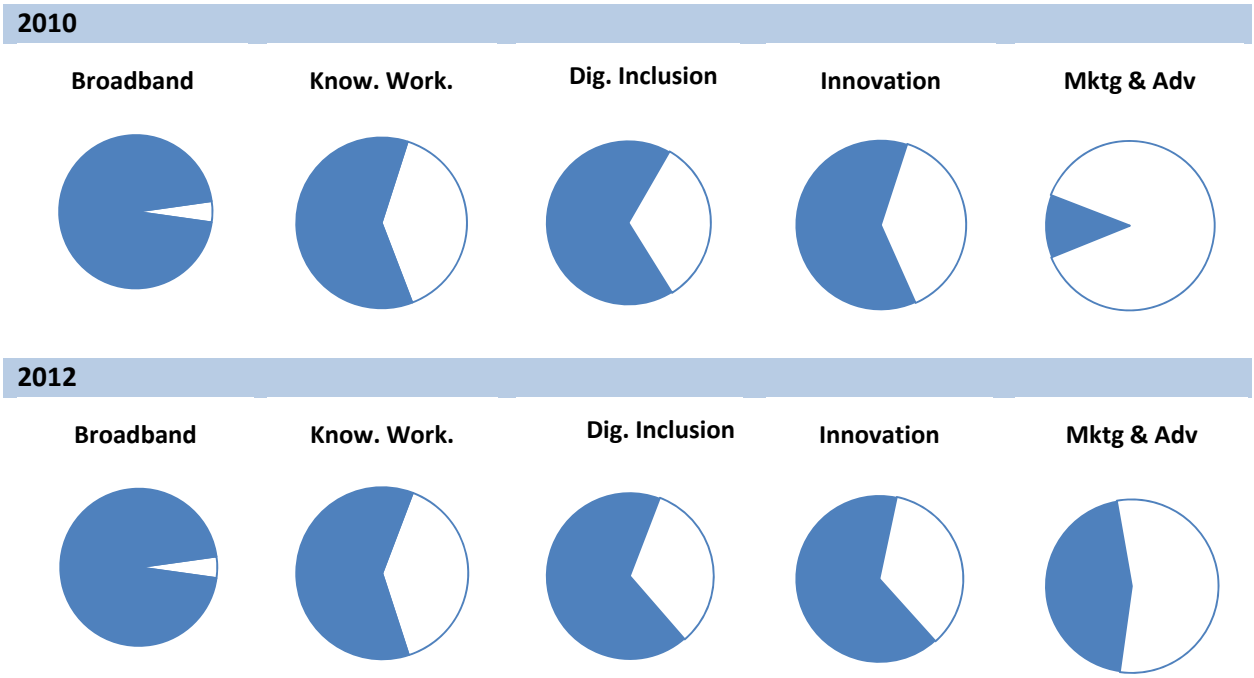
By updating its economic development Web site, developing a marketing strategy, and forming a local steering committee, Worthington has successfully used the MIRC process to nearly triple its rating in Marketing and Advocacy in two years, according the ICF's benchmarking tool. These efforts helped Worthington make a significant improvement (11 percent) in its overall ICF ratings.

In addition to the above, Worthington implemented the following projects:

- New computers for the Nobles County Integration Collaborative (NCIC), providing Internet access and skills training for new immigrants.
- 40 iPads purchased and utilized in Worthington Schools to create innovative and interactive learning.
- Worthington Schools received wireless routers for increased student and public Internet access.
- St. Mary's Schools received Smart Boards and other technology to upgrade learning opportunities.
- WGTN-TV was able to create a new Web site that allowed live-streaming of their program, as well as archiving shows. They also partnered with NCIC for cultural programming.
- Local youth helped businesses create on online presence by claiming their Google Places sites.
- University of Minnesota Extension provided numerous workshops for businesses on Internet use for business.
- Over 50 refurbished computers have been distributed to low income families at a very low cost.

Worthington in Numbers

Worthington is a sizable municipality in the context of the Demonstration Communities, with a population of 11,000 and a density of 1,600 per square mile. It achieved an 11% improvement in its overall scoring from 2010 to 2012.



Broadband. Worthington had a strong broadband score in 2012, with high availability, medium penetration and a selection of 4 broadband providers, at the low end of the range of the DCs. There was a 6% increase in broadband penetration from 54% to 60% over the period. While very valuable, it was not sufficient to push the city's score to a higher level in the analysis.

Knowledge Workforce. In 2010, Worthington received below-average scores for Knowledge Workforce, due to a low PC-to-student ratio in public schools, offset by the availability of in-house teacher training, and a low number of undergraduate and graduate degrees among the population. There was no change to the indicators from 2010 to 2012 and no resulting change in scoring.

Digital Inclusion. Worthington scored above average in 2010 for this indicator, based on a moderate-to-high percentage of residents with Internet access, low average cost for broadband, and good availability of free public access to computers and training programs for the digitally excluded. This being an area of strength for the city, the MIRC project did not focus on it and there was no change over the period.

Innovation. This indicator was one of Worthington's highest scores in 2010, reflecting the existence of public grant and loan programs for business start-up, a high percentage of businesses in top growth sectors, and a moderate average number of employees per business, reflecting a reasonable number of smaller companies in the economy. There were also areas of weakness, including a low number of new business registrations per capita, absence of reported risk-funded companies and lack of transactional capability on the local government's Web site. In 2010, Worthington's score was 5% higher after the city reported the presence of one risk-funded company.

Marketing & Advocacy. In 2010, this was an area of glaring weakness that brought down Worthington's total score, largely because the municipality did not report on the existence of a task force, programs, strategy or goals, which produced zero scores in these critical areas. In 2012, Worthington filled in the gaps, which produced a 275% improvement in its scoring. By 2012, the city had formed a task force and begun to develop a strategy but appeared to be still in the early stages of formulating a program and putting it into practice.

Conclusions & Recommendations

Worthington's work during the MIRC project made moderate progress toward fulfilling its potential as an Intelligent Community and exceptional progress in Marketing & Advocacy. There is considerable opportunity remaining, however, to improve its competitiveness and ensure that citizens and organizations can participate fully in the global economy. Areas for future development include:

- Improving the PC-to-student ratio in its schools, so that the teachers who have received training have an opportunity to truly integrate ICT into learning in the classroom
- Engage with community colleges and technical schools in the region to understand their issues and develop partnerships with employers to better match student skills with opportunities
- Identify sources of risk-based funding and help local company gain access to grants, loans and angel investment
- Make the strategy-setting, program planning and implementation begun in the MIRC program a core aspect of city management

Cook County in Words

Cook County's participation in the Minnesota Intelligent Rural Community (MIRC) program came at a very opportune time – just as final financing was obtained and construction began on a countywide fiber-to-the-home network. Arrowhead Electric Cooperative, ARRA and Cook County funding supported this project. When network services are turned up in the coming months by Arrowhead Electric, Cook County's connectivity will be transformed to an unlimited bandwidth environment.

Community leaders in Cook County have a long history of working to improve Internet access and use in this remote northeastern Minnesota community. Located along the north shore of Lake Superior, Cook County is home to the Boundary Waters Wilderness Canoe Area and shares a long border with its Canadian neighbors.

The Cook County steering committee has successfully used the MIRC process to educate the community about the potential uses of the new network. By prioritizing the use of video and mobile technologies, the community has revolutionized the way community members and visitors access local information. Because the network was under development during the period of the analysis, this intensive level of innovation is not fully reflected in the benchmarking data.

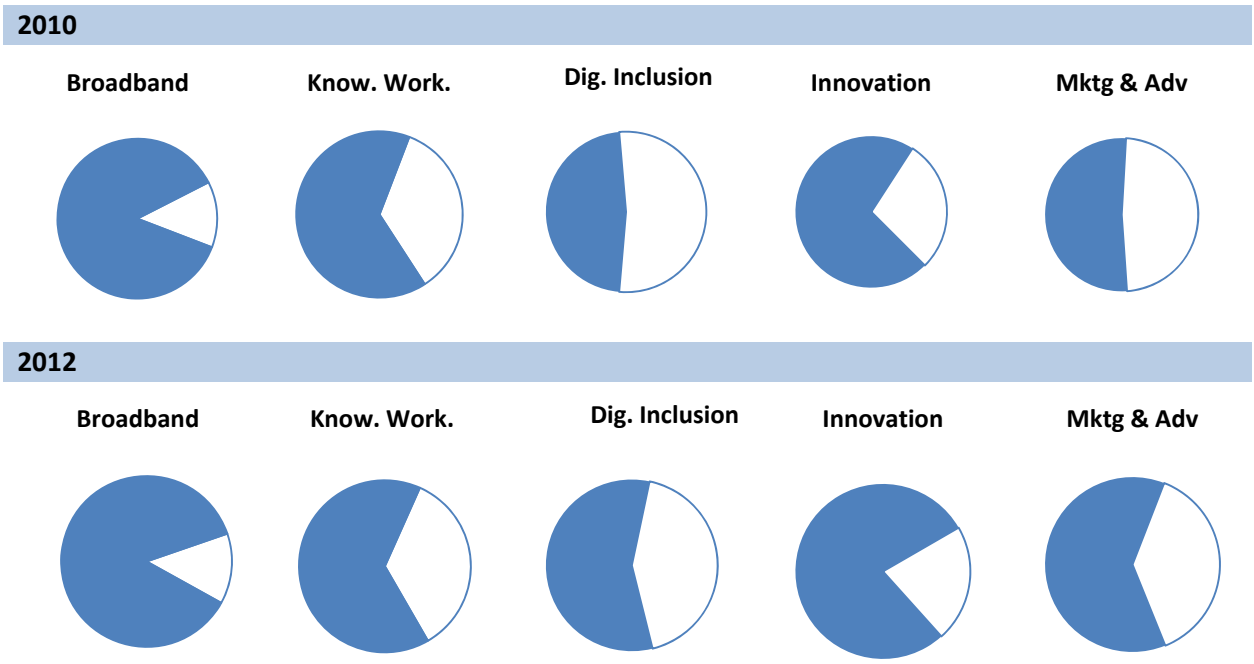
Cook County implemented the following projects with the support of MIRC funding:

- Boreal Access, a local ISP, increased its ability to create, upload and stream locally produced video content. This project supports many local partners.
- Cook County Higher Education created and equipped a computer lab to support both access and digital literacy training for Cook County residents, including access to distance and online education resources.
- Cook County Visitors Bureau supported the transformation of area tourism Web sites to be mobile compatible.
- Cook County Historical Society is implementing a systematic approach to digitize its entire collection and make it available through an online searchable database.
- The local school district is now able to stream sporting and other events from the school campus in partnership with WTIP radio.
- The Sawtooth Medical Clinic has enabled the community to interact electronically with clinic staff and has created a series of videos that provide community health information. In addition, the clinic has implemented online tools that support community health initiatives.
- WTIP, the local public radio station, now includes video content on its Web site to support its programming and community events.

Cook County in Numbers

Cook County is the least densely populated of the DCs, with a population of 5,000 and only 4 persons to the square mile. Low population density is a challenge to economic development on many fronts, yet Cook County achieved 7.6% improvement in its overall MIRC score from 2010 to 2012. And this scoring did not reflect the major digital infrastructure improvements being put into place.

Broadband. In 2010, only 37% of Cook County residents had access to broadband, although nearly 60% of these had adopted it. With its small population holding little appeal to commercial providers, the county saw no change in its score of 17.33 from 2010 to 2012. With the launch of the local electric cooperative's new countywide FTTH network, almost every resident and businesses will have access to affordable and robust broadband by the end of 2013, enabling significant gains in adoption.



Knowledge Workforce. Cook County scored well in 2010 on most of the Knowledge Workforce factors, including a high percentage of community college graduates and moderate percentage of undergraduate and graduate degrees in the population, as well as a high PC-to-student ratio and in-house tech training. On a second measure – the number of degrees issued within the county per capita – the county's ranking was lowered by the limited number of educational institutions located there. It should be noted that the county's educational offerings include an innovative virtual education institution, the Higher Learning Partnership, serving hundreds of students; its activity is not, however, captured by the data set. There was no change in the scoring over the measurement period.

Digital Inclusion. In 2010, the county scored well on some Digital Inclusion characteristics, including the percentage of schools and government facilities with Internet access and availability of public access computers. Scores were somewhat lower on residential Internet access, which is soon to undergo significant improvement. There were no reported digital inclusion programs to train the excluded, which further reduced the county's score. By 2012, however, the county improved its score 21% by doubling the number of public-access facilities with computers and broadband connectivity.

Innovation. The 2010 scoring for this indicator was above average. The most significant factor was a high rate of business starts and a resulting small average number of employees per business. Entrepreneurship appears to be a driving force in the local economy, despite the fact that there was no reported availability of public-sector grants or subsidies and a small number of risk-financed ventures. In the 2012 data, the county reported on the availability of such grants or subsidies, which produced a 9% improvement in its score.

Marketing & Advocacy. In 2010, this indicator scored above average, based on high-quality economic development messaging and the existence of a task force promoting Intelligent Community development. By 2012, Cook County had put in place a documented strategy and achieved some of its goals, which led to a 19% improvement in its score.

Conclusions & Recommendations

For Cook County more than any other of the DCs, the MIRC analysis was a snapshot of a work-in-progress, with the most important results to appear in the future. The new FTTH network, launching in 2013, will eliminate the low rate of broadband availability across this large rural county which has been a major obstacle to the county's development. This network will provide a platform for advancements in Knowledge Workforce, Innovation, Digital Inclusion and Marketing/Advocacy as well.

While waiting for startup of the network, Cook County concentrated its efforts appropriately on improvements in Digital Inclusion and Marketing & Advocacy, where relatively quick wins were available within the funding provided by the MIRC program. The county also increased its Knowledge Worker capacity through the enhanced distance learning system deployed at the Higher Education Partnership.

The Innovation score, based on evidence of entrepreneurship in the county, remains impressive for a community with such low population density. Even more than other DCs, the county may be able to use broadband to foster partnerships between business and secondary/post-secondary schools, which will improve access to the specific skills that business needs, while involving educators in entrepreneurial opportunities.

Itasca County in Words

Improving access and use of broadband Internet for all residents of this north-central Minnesota County was a priority of the Itasca MIRC steering committee. While Grand Rapids and some parts of the county have excellent broadband services, other areas are unserved. In addition, lack of a computer or the income to subscribe to broadband services limits the ability of others to gain access.

The steering committee took seriously the federal ARRA Sustainable Broadband Adoption program goal – to increase broadband subscriptions. The committee targeted projects that increased residents' knowledge of how to use broadband, provided public access and training as a gateway to broadband subscriptions and provided computers to low-income families paired with discounted broadband subscriptions.

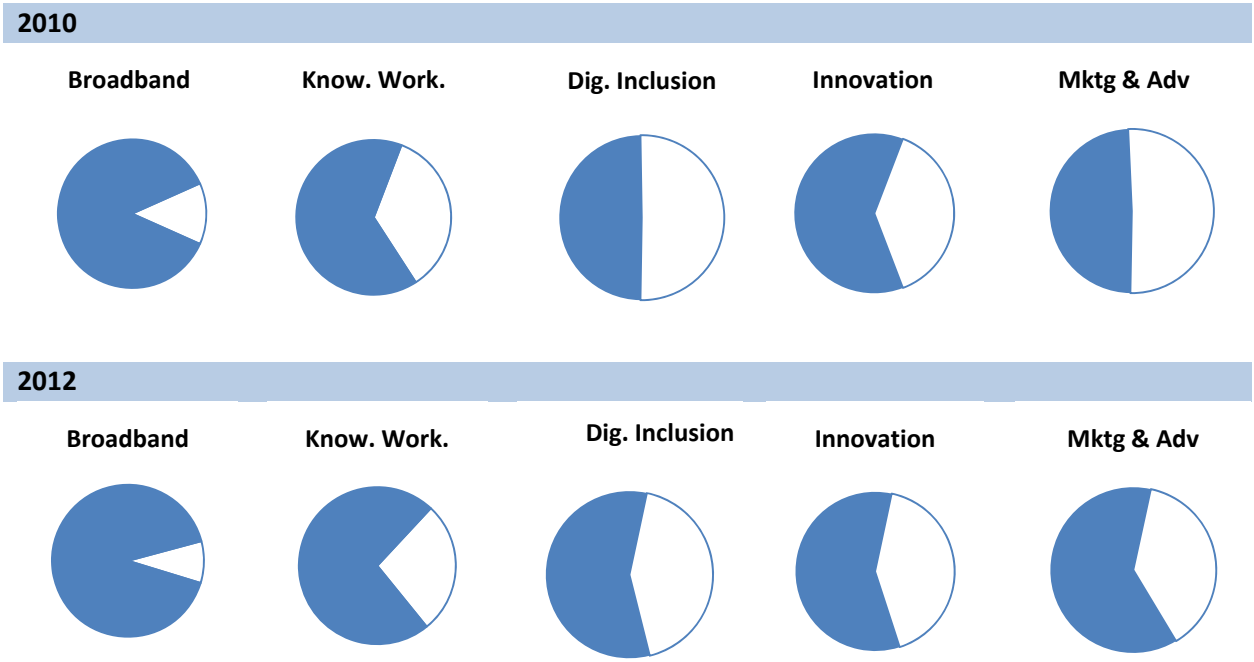
The following projects were implemented in Itasca County:

- Senior E-literacy training provided through a partnership of the Elder Circle and several banks in the county. In addition to the more standard Internet skills training, the programs included significant information specific to online banking and Internet security.
- The Grand Rapids Library provided computer hardware, software and training to expand the understanding, use and availability of broadband Internet. The library purchased equipment for a mobile computer lab that is available to groups outside the library.
- The YMCA Wi-Fi Access Project provided computer hardware, software and training to expand the understanding, use and availability of broadband Internet, targeting the senior citizen population utilizing the Bruce Bauer Senior Center. Public access is now available throughout the YMCA with computers available for checkout.
- Through Kootasca Community Action – the local, social service agency – low-income families were able to obtain refurbished computers and discounted broadband subscriptions. Partnerships were established with Internet Service Providers, local school districts and area community colleges, and the Leech Lake Band of Ojibwe.
- The local public access television station began streaming local government meetings so that all county residents could view them. Local content increases the value of broadband services and provides another reason for residents to subscribe. Streaming will provide improved community access to government and community information, with hardware improvements that will allow for seamless delivery of video to online viewers, particularly those in rural parts of Itasca County, who are not served by cable access.

Itasca County in Numbers

With 44,000 citizens, Itasca is the most populous county in the region but its geographic size yields a population density of only 17 people per square mile. From 2010 to 2012, it posted a 7.4% improvement in its MIRC score.

Broadband. In 2010, Itasca County received its highest score for this indicator but ranked fifth among the 11 DCs. By 2012, the broadband penetration rate had increased from 63% to an impressive 70%, which raised the county's score by 5%.



Knowledge Workforce. The county scored above average for this indicator in 2010, based on a high percentage of residents with community college degrees and a large number of degrees awarded. Itasca County appeared to make no further progress in this area, however, and ended the 18-month period with the same score it had initially received.

Digital Inclusion. For 2010, Itasca County's Digital Inclusion score was slightly below the group average, despite the availability of broadband priced in the middle of the DC range (average $53 per megabit per month) and reasonable levels of basic Internet access. The controlling factor in the analysis was limited availability of broadband-equipped computers at publicly accessible facilities. By 2012, however, the county had improved its score by 28% through a tripling of the locations it reported having public access computers with broadband connectivity.

Innovation. In 2010, Itasca's Innovation score was the highest among the DCs, due principally to the presence of risk-funded young companies in the county and reasonable availability of public or private

risk capital. On other factors, Itasca's scores were comparable to the majority of the DCs, with a relatively high average number of employees per company and low level of new business starts. There was no change in this area of strength from 2010 to 2012.

Marketing & Advocacy. The county had an above-average score in 2010, based on good quality economic development messaging, organization efforts for the creation of a task force to guide development, and early development work on a written strategy and plan. By 2012, the county improved its score by 14.5% through complete development of its task force, which was actively engaged in developing a written strategy and formulating an ongoing set of programs for economic and social development.

Conclusions & Recommendations

Itasca County took effective action on Digital Inclusion and Marketing & Advocacy during the 18 months of the MIRC project. One area where it could have made progress but did not was Knowledge Workforce. Here the opportunities include:

- Improving the computer-to-student ratio in public schools
- Implementing a program of in-house technology training for teachers
- Engaging with community colleges and technical schools in the region to begin the development of school-government-business partnerships that improve skill development and better serve the recruiting needs of employers

While the county is relatively strong in Innovation, it should also pursue opportunities to increase the density of innovative companies in specific fields in order to fashion clusters that can spur an increased pace of economic growth.

Leech Lake Band of Ojibwe in Words

The Leech Lake Reservation in north central Minnesota covers over 1,100 square miles of lakes, woods and communities and villages. Through the MIRC planning process, the tribal government prioritized improving both access and use of broadband by members of the tribe.

Improving the computer skills of tribal members of all ages was a primary focus of the Leech Lake Band of Ojibwe's (LLBO) MIRC efforts – from improving workplace skills for adults to distributing computers and training to kids and families. These efforts will be sustained for lasting impact.

The Leech Lake Band of Ojibwe implemented the following projects:

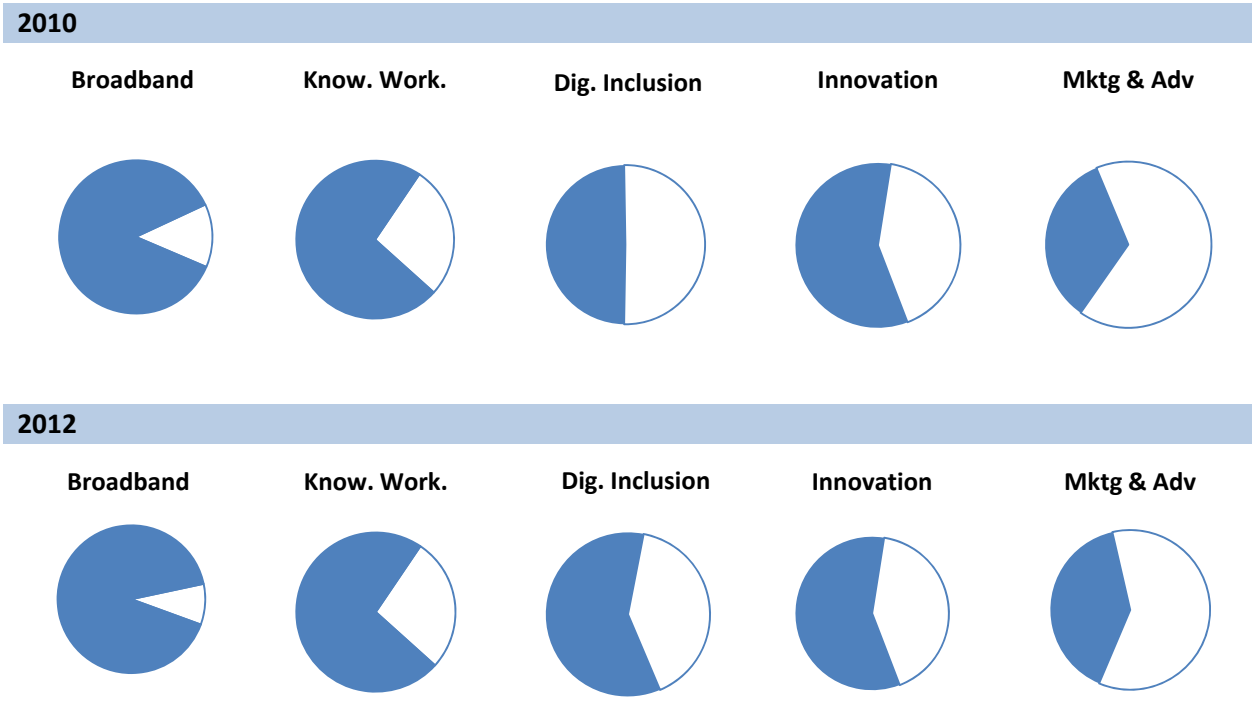
- The LLBO Temporary Employment Program (TEP) created computer labs in four community centers and provided computer and Internet training to approximately 500 LLBO members. These computers are available to tribal members for public access. The TEP partnered with the Minnesota Workforce Center on digital literacy curriculum and engaged tribal college students as tech tutors in the centers.
- LLBO created a Club Tech Center at the Boys and Girls Club through the purchase of computers and networking hardware, curriculum-specific hardware and software, and facility preparation. This center provides access and training on a daily basis year-round for Club participants. In addition to serving youth, the Center will provide computer and Internet access and support to community members.
- The LLBO Division of Resource Management conducted GIS mapping capacity of tribal lands, improving the capacity of the Division and the Tribe as a whole. Partnering with county and federal agencies, the division is creating and sharing vital new information, as well as encouraging other divisions to discover the power of GIS technologies.
- The LLBO Environmental Department worked with PCs for People to implement a computer recycling system for low-income band members. They provided desktop computers and an introduction to computers training course for community families associated with Leech Lake Head Start.

Leech Lake Band of Ojibwe in Numbers

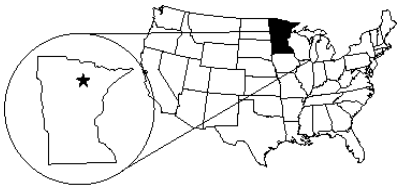
With a population of 10,000 the Leech Lake Band of Ojibwe is second-to-last among the DCs for population density. From 2010 to 2012, it used the MIRC program to achieve an overall 6.4% improvement in its Intelligent Community scoring.

Broadband. In 2010, the Leech Lake Band of Ojibwe had average broadband availability for the DCs – no small feat given the population density – but penetration, at 49%, was the lowest in the group, just

below the 50% reported by Cook County. By 2012, broadband penetration had risen to 53.4%, which was sufficient to increase scoring for this indicator by 5%.



Knowledge Workforce. The 2010 score in this indicator was above average for the DCs at 14.56 due to a high PC-to-student ratio and in-house technology training for teachers in the schools. Like other highly rural DCs, the Leech Lake Band of Ojibwe has a population with a higher percentage of community college degrees but relatively fewer residents with undergraduate or graduate degrees. These factors did not change over the 18 months, and the 2012 score was identical to that for 2010.



Leech Lake Ojibwe

Digital Inclusion. In 2010, the score for this indicator was below average, because of low levels of access to basic residential Internet access and lack of reported digital inclusion programs. On the positive side, the tribe had a moderate number of public access locations with computers and broadband, and the average residential price of broadband is in the low range ($44 per megabit per month) for those who have it. By 2012, the number of public access locations nearly doubled and new training programs were introduced, which improved the score by more than 20%.

Innovation. The 2010 score for Innovation was below average due to a low level of new business starts, high average age of businesses and a lack of transaction capabilities on the tribe's Web site. The tribe did have a high percentage of businesses in growth sectors, however, and reasonable levels of access to public-sector grants and loans. These fundamental conditions did not change over the period and the 2012 score was identical to that for 2010.

Marketing & Advocacy. The tribe's score for this indicator in 2010 was also below average, because its otherwise effective online marketing did not include Intelligent Community messages and there was no evidence of an organized task force, documented strategy or goals for Intelligent Community development. By 2012, the Leech Lake Band of Ojibwe improved its score by nearly 15% through formation of an MIRC task force to guide its work.

Conclusion & Recommendations

The analysis indicates that the Leech Lake Band of Ojibwe made effective use of MIRC funding to achieve gains in areas where the 2010 analysis revealed weaknesses and where funding could have meaningful impact in the short term.

Looking to the future, the Web site indicates that tribal government is quite active already in offering development programs for its members. The most effective next step, therefore, may to align existing programs with the priorities of the MIRC project, which will cement the gains already achieved and, with the leadership of the MIRC task force, lay a foundation for more progress. In particular, the Leech Lake Band will benefit over the long time from a focus on building a more knowledgeable workforce, stimulating the formation of micro-enterprises and small businesses to employ it, and finding ways to bring funding to those with the potential for growth.

Winona in Words

Winona is a port city located in the southeast corner of Minnesota on the Mississippi River. As a college town, a tourism destination, a medical hub and a manufacturing center, Winona has a strong diversified economy. As the home of Hiawatha Broadband Company, a regional competitive telecom provider, Winona is increasingly well-connected in a competitive broadband marketplace. Winona is also a melting pot of diverse traditions, languages and ethnic backgrounds.

Through MIRC-funded digital literacy training programs, Winona's Project FINE offers training in multiple languages including English, Spanish and Hmong to recent immigrants. According to Project FINE Executive Director Fatima Said, the interaction between the students has been an additional benefit of the program. "Not only are the students helping each other to learn computers, they are becoming friends."

With a subcommittee of the Winona Port Authority serving as the lead, the Winona steering committee selected and supported a diverse group of projects designed to improve broadband access and use in the community using the Intelligent Community indicators as a guide.

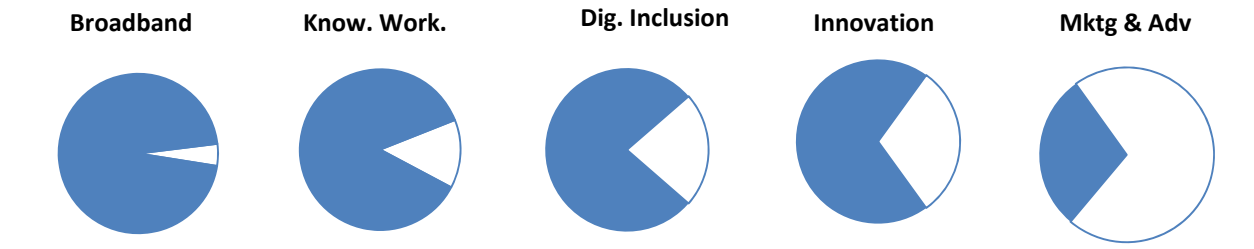
- The City of Winona's Web site was redesigned to serve as a digital front door for the community, with links to key community organizations.
- The City has partnered with Hiawatha Broadband Company to provide free Wi-Fi at four public locations and in all public meeting locations within City Hall. The City now streams all public meetings held in the City Council Chambers.
- Project Fine, noted above, provides Internet and digital literacy training to immigrants and refugees in multiple languages In addition, Project Fine distributed computers with discounted Internet to project participants and was able to use college students as tutors for these families.
- The Winona Workforce Center created a mobile computer lab that is used for business training and workforce testing and certification.
- The Winona Workforce Center created a Web site targeted at small business use of technology called the "Digital Perch".
- The city created public relations material promoting Winona's MIRC efforts and its Intelligent Community assets to be used on the City Web site and as the splash page on the local free wireless hotspots.

Winona in Numbers

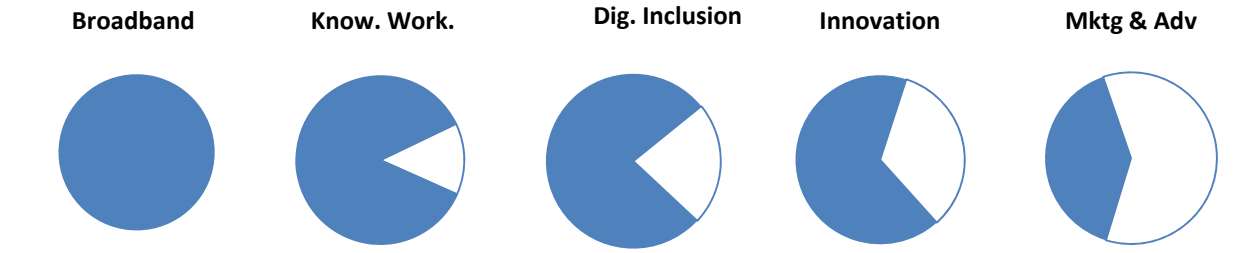
Winona, the third-most densely populated municipality among the DCs, with 27,000 citizens and a labor force of 15,000, scored well in 2010 with an overall score of 71.60 out of 100. Given its high ranking in 2010, it made only a modest 4% overall improvement by 2012.

Broadband. This was one area of positive change for Winona. Residential penetration rose from 69% in 2010 to 73% in 2012, which raised its score 4.7% to 20 out of 20.

2010



2012



Knowledge Workforce. In 2010, Winona had the highest score among the DCs for this indicator, due to a larger percentage of residents with community college degrees and moderate number of undergraduate and graduate degrees, and the availability of post-secondary education within driving distance. These factors are hard to improve upon in an 18-month period, and Winona showed no change in its score from 2010 to 2012.

Digital Inclusion. Winona also had the highest Digital Inclusion score of the DCs in 2010 based on moderate-to-high basic Internet access, excellent broadband affordability and multiple programs for public access and digital training. As with Knowledge Workforce, the city made no improvement in its standing from 2010 to 2012.

Innovation. In 2010, the municipality's Innovation score was above average overall thanks to a concentration of businesses in growth sectors and better than average access to start-up capital. It was weaker, however, in business starts per capita and a high average number of employees per business, suggesting the dominance of larger companies in the local economy. These being difficult metrics to change in a short period of time, the 2012 results showed no change in this indicator from 2010.

Marketing & Advocacy. Winona showed its greatest weakness in this area in 2010. Though possessed of reasonably good basic economic development marketing materials, Winona scored low based on absence of Intelligent Community themes and lack of a task force, strategy or programs. By 2012,

however, Winona saw a 38% improvement in its score due to improved marketing content and introduction of programs dedicated to Intelligent Community development.

Conclusion & Recommendations

The area in which Winona showed its greatest improvement was the one that the 2010 analysis identified as its clear weakness. This shows an effective targeting of effort and funding. The 2012 analysis suggests, however, that Winona has considerable potential that has yet to be realized.

The formation of a task force, strategy and clear goals is a crucial step that can pay off handsomely in the long term for the city. Creating such a plan provide an opportunity to bring together the key stakeholders who will contribute to its success, align their priorities, and develop the collaboration that is fundamental to the work of Intelligent Communities. It also provides continuity in a changing political and economic landscape.

The presence of community colleges and universities in Winona also gives it much greater potential than many of the DCs to spur new business formation and acceleration through business-academic partnerships or the development of business incubation and acceleration programs. Long-term this may be the single most important means for Winona to improve its economic performance.

Kandiyohi County in Words

In 2010, New-London Spicer High School received enough iPads to create an iPad Lab, allowing students to bring English literature stories to life by watching video segments from plays. The lab was also made available to the public, through community education classes, for people with an iPad or thinking about buying one. Wireless routers in the schools also made using personal devices an educational tool, rather than distraction. With the award of a small amount of funding from the MIRC program, the school was able to improve its educational technology and lay the groundwork for a successful technology referendum passed in 2011.

In 2010-2012, through participation in MIRC, a local steering committee helped Kandiyohi County residents, businesses, and organizations better utilize high-speed Internet, and promoted the community as a center for technology-based industry, wired for the 21st Century economy. Improving educational opportunities was a key focus of the group, helping to ensure that their current and future workforce has similar opportunities for improving skills as their urban counterparts. They also funded a high-tech video-conference classroom at the Minnesota West Technology Campus.

In addition to the above, Kandiyohi County implemented the following projects:

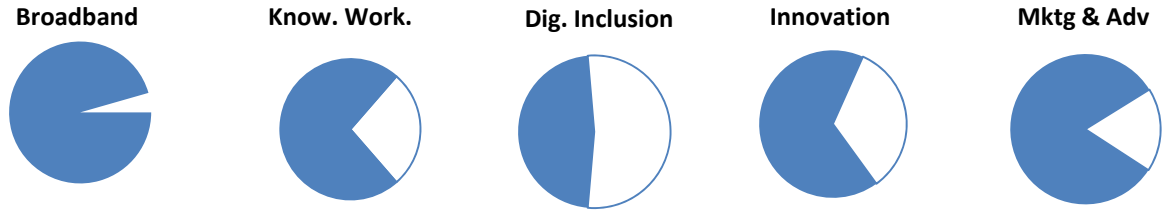
- Starting a local PCs for People affiliate at Kandi Comp, refurbishing hundreds of donated computers and getting them out to income-eligible families.
- Testing the use of technology with seniors, allowing them to stay in their homes longer and decrease isolation, by providing touch-screen computers to ten elderly residents so they could stay in touch with family and their friends.
- Providing funding to the Willmar Women and Family Center to allow for basic computer training to many new immigrants who have not had access to computers or training before.
- Providing matching funds to businesses for the development of new Web sites.
- The University of Minnesota Extension provided numerous workshops for businesses on Internet use, significantly improving the online presence of numerous area businesses.

Kandiyohi County in Numbers

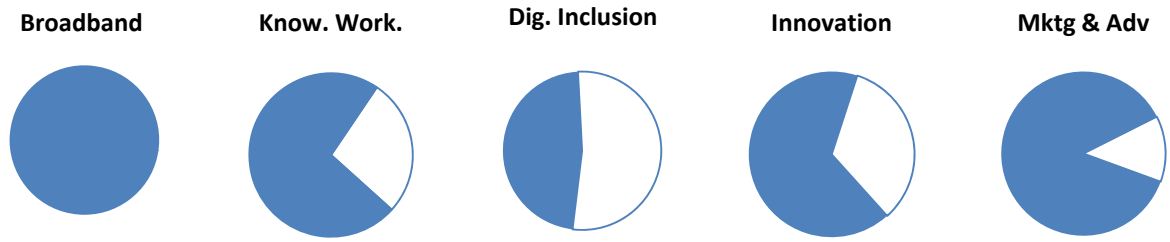
Kandiyohi County has a population of 41,000 and the second-highest population density among counties in the Demonstration Communities. It was the top-scoring community in 2010 and saw only a 2.5% further improvement in its overall score in 2012.

Broadband. The county scored in the top group for Broadband in 2010, based on high residential availability and penetration of broadband and a large number of competitive broadband providers. By 2012, an increase in broadband penetration from 64% to a very high 72% boosted its broadband score 5% to 20 out of 20.

2010



2012



Knowledge Workforce. In 2010, the county scored at the top of the "needs improvement" range with 14.56 out of 20 for Knowledge Workforce, reflecting a low percentage of residents with undergraduate or graduate degrees, offset by a high PC-to-student ratio and the existence of in-house technology training for teachers. The 2012 results saw no change in its score from 18 months earlier.

Digital Inclusion. This was the lowest-ranked indicator for Kandiyohi County in 2010, with 9.44 out of 20, as a result of high average broadband costs, offset by reasonable levels of basic Internet access, and moderate access to public computer facilities and training programs. There was also no change in the data or the county's scores in 2010.

Innovation. In 2010, the county scored above average in the "needs improvement" range with 13.33 out of 20, due to a high percentage of growth-sector businesses, reported access to public-sector grant programs and transaction capabilities on government and school Web sites. The 2012 data showed no change from 2010 in this indicator and no change in score.

Marketing & Advocacy. Kandiyohi had the highest score among the DCs for this indicator in 2010, based on high-quality economic development marketing content and the presence of a task force with programs based on a documented strategy. By 2012, the county was able to further improve its score by 6% by achieving more of the goals in its strategy, under the effective leadership of the task force.

Conclusions & Recommendations

Kandiyohi clearly benefited from broadband stimulus spending that motivated private-sector providers to expand their networks and deepen penetration. As in other DCs, MIRC funding went to Marketing & Advocacy, where achievement of goals drove improved performance.

Lack of progress on the other indicators is somewhat puzzling. Digital Inclusion was low-ranked in 2010, and other DCs have demonstrated how adding public-access facilities can have a sharp impact on the score and, more importantly, on the digitally excluded in the county.

The potential gains in Knowledge Workforce and Innovation require long-term focus and substantial commitment, and it is no surprise that the analysis revealed no change over an 18-month period. But the county faces the same challenge and opportunity as other DCs: to develop government-business-educational relationships that ensure local employers have access to the skilled people they need, that young people have greater economic opportunity within the county, and that ideas for new businesses, products and services have a better chance of finding their way to market.

Conclusion

The Demonstration Communities may be at the end of the MIRC project, but they stand also at the threshold of the 21st Century. The progress they have made in the past 18 months has been within "the art of the possible" – that apt description of how things get done in politics. There remains much more to be done.

In the Broadband Economy, rural towns, cities and counties have an opportunity that the world has never seen before. They face, quite literally, something new under the sun. It is the opportunity, regardless of distance or location, to plug into the planet, to bring home the world's learning and culture, and to become vital, connected and exciting places to live and work. They already have the beauty, the peace and the sense of place that their residents treasure – through the Intelligent Community process, they have the chance to add to it the richness and complexity of life that their urban neighbors have long enjoyed. In the Broadband Economy, the "middle of nowhere" is increasingly a state of mind, as Intelligent Communities around the world are demonstrating every day.

The 2010 report closed with some broad recommendations for all of the Demonstration Communities, which apply equally well to rural communities across the United States. While much has changed in 18 months, the recommendations for the next steps on the journey remain as valid today as when they were first issued.

1. Higher Education.

The DCs clearly have a strong network of community colleges, which are an immensely valuable resource for citizens and employers. But the competitive global economy in which we all operate puts a high premium on skills development. The low percentage of residents with undergraduate or graduate degrees is a weakness of most of the Demonstration Communities, and can best be addressed on a regional or statewide basis.

The relatively high penetration of broadband among the DCs creates an opportunity for distance learning to fill the educational gap. University-level coursework is already available online but it requires persistence and discipline to take advantage of it. There should be a role for foundations or government agencies to evaluate and recommend programs, promote them to citizens, and create local support networks that help students find what they need and maintain their motivation over time. Several of the Demonstration Communities have taken steps in this direction.

The time and resources invested in creating this capability will only produce results if there are job opportunities that require undergraduate and graduate education. A regional or statewide effort to offer an online education should include *employers* to provide reality testing, advice and leadership. Many of the most successful Intelligent Communities in the world speak of an "innovation triangle" involving business, academia and government. In the rural DC area, such an innovation triangle will not materialize by itself but can be cultivated by patient effort.

2. Encouraging Business Starts

The low level of new business starts is another weakness across most of the DCs. From our study of Intelligent Communities, we know that entrepreneurship requires an ecosystem of talented people, knowledge, ambitious ideas and funding. Such ecosystems arise naturally in some places but they can also be fostered through counseling, incubation and acceleration programs for entrepreneurs and small businesses.

In a February 23 story in *The Cleveland Banner*, the president of Cleveland State Community College spoke at the groundbreaking for a business incubator on his campus and said, "Every community college should have a business incubator." Hyperbole aside, there is a core of truth in his words. The strong community college network among the DCs has the potential to provide essential counseling, incubation and acceleration services for local entrepreneurs. Today, the leadership of these schools is no doubt challenged just to maintain their current programs as public budgets are under attack. This creates an opportunity for the nonprofit sector to step in and outline a strategy, encourage collaboration and fund the formation of such a support network, which will help attracts more students to the schools. Once such a network is in place, it will create opportunities to increase access to risk funding from public and private sources, as described below.

3. Risk Financing

In the information submitted by the DCs, it was striking that some reported having access to public-sector grants and loan programs while others did not. Yet such programs are, in most cases, state or nationally funded, making them available to every community. As every foundation knows, it can be remarkably hard to give away money. Grant and subsidy programs always face a challenge of awareness. But there is a clear benefit to each of the DCs in learning about programs that exist and publicizing them to the community at large and the students at local community colleges. It should be a priority for all.

In addition to public sources, the DCs doubtless have individual investors and angel networks seeking opportunities. Matching such investors to local opportunities is a huge challenge. If a business incubation and acceleration network of community colleges can be put in place, it will be a natural fit for angel investors. It may even be possible to create a fund that mixes private angel investment with nonprofit or governmental funding in order to seed new companies. The example of JumpStart (www.jumpstartinc.org) in Northeast Ohio is worth studying. This nonprofit organization exists to identify, counsel and accelerate small businesses, and acts as a "feeder" to a network of angel and venture capital organizations, which have come to count on JumpStart to provide deal flow.

We thank the Blandin Foundation for its leadership in the Minnesota Rural Intelligent Communities program and salute the Demonstration Communities for tackling the challenge of Intelligent Community development. ■

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STRENGTHENING RURAL MINNESOTA

Minnesota Intelligent Rural Communities, a project administered by the Blandin Foundation