Connecting rural Wisconsin: The economic necessity of broadband

A report by the Wisconsin Technology Council

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Executive summary

At first glance, it seemed an unlikely collection of people: Ranchers, farmers, economic development professionals, technologists and small business owners, all descending on Washington, D.C., to talk about an issue that might easily get lost among other priorities on Capitol Hill.

That issue was improving broadband connections – essentially, high-speed internet connectivity for voice, data and more – in parts of the country that often lack good connections today. For much of rural Wisconsin and similar regions nationwide, adequate broadband service can make the difference between prosperity and stagnation.

A group called "Broadband WORKS for Rural America" brought that message to Capitol Hill in early October at a time when creating small businesses is crucial to America's economic growth. Representatives from about 20 states, including Wisconsin, offered personal evidence that U.S. broadband connectivity remains middle-of-the-road among the world's developed nations – and that rural America is less connected than the country as a whole.

In fact, the Federal Communications Commission has reported that 26 million in 9.2 million households are currently not served by broadband. About 664,000 of those people live in Wisconsin, the FCC reported. If those numbers are correct, rural Wisconsin is much like the rest of rural America when it comes to broadband connections – and perhaps even a bit more disadvantaged.

This report urges federal, state and private-sector efforts to make broadband coverage more pervasive in rural Wisconsin, and explains the likely economic benefits of doing so. Those benefits include:

- Helping small businesses, which account for most new jobs in Wisconsin, to expand their markets reach and customer bases.
- Creating more businesses related to information technology, one of the fastest-growing segments of the U.S. economy.
- Enabling hospitals and clinics to make better use of telemedicine.
- Providing rural Wisconsin residents with greater access to higher education or continued education through "distance learning" systems.
- Making rural Wisconsin more likely to attract large data centers, which are the information storage citadels of today's IT-driven businesses and corporations.
- Enhancing tourism, which today involves making the right sales connections on the front end – and keeping visitors connected during their stay.
- Increasing public safety.

Specific actions could include:

1. Continue to push for a National Wireless Initiative, as described by President Obama, to make high-speed wireless services available to 98 percent of all Americans by 2016.

2. Follow through on recent rounds of federal broadband grants, which are assisting communities in Wisconsin and beyond by leveraging private dollars.
3. Reform the Universal Service Fund to support broadband deployment, as recently recommended by the FCC.
4. Clear old regulatory barriers and resist creating new barriers, especially if the market can be encouraged to operate more freely.

Who we are

The Wisconsin Technology Council contributes to the state's high-tech and entrepreneurial economies through its policy work, collaborative projects, educational forums and networking events.

The Tech Council is an independent, non-profit 501c3 organization led by a board of 50 members who represent tech companies of all sizes, research institutions, law, education and the investment world. These 50 leaders – who hail from all parts of the state – volunteer their time and more to help grow the state's high-tech economy. They share in the vision of a Wisconsin powered by a "knowledge-based economy" that will keep us competitive in an ever-changing world.

Our partners and affiliates work with us on projects ranging from the Governor's Business Plan Contest to the Wisconsin Angel Network. They help us develop a policy agenda for review by the governor and the Legislature. In addition to the above, our programs include the Wisconsin Innovation Network (with six chapters statewide), the Wisconsin YES! youth business plan contest, the Wisconsin Security Research Consortium, the Wisconsin Early Stage Symposium and the Wisconsin Entrepreneurs' Conference.

Our staff, boards and consultants believe Wisconsin has the expertise, resources and tools needed to compete in the 21st century economy. The Tech Council believes in building on those assets so that all corners of Wisconsin may share in the opportunity for economic prosperity.

Past Tech Council reports have focused on policy recommendations to the governor and the Legislature, including biennial reports such as "Looking to the future: A case for bold action," (2010, 2008, 2006 and 2004), "Vision 2020: A model Wisconsin economy" (2002/2003); "The economic value of academic research and development in Wisconsin" (2004, 2009); The Wisconsin Portfolio (2008, 2009, 2010); The Wisconsin Edge (2008, 2009, 2010, 2011); "Educating a Tech-Savvy Workforce" (2009); and other reports to the public, press and policymakers.

Specifically, the Tech Council has commented on broadband development and telecom competition on a number of occasions. That began with our board's first major publication – "Vision 2020: A model Wisconsin economy," and continued through our recent endorsement of legislation to update Wisconsin's telecom regulations. Members of the Tech Council staff or board have testified on several occasions before the Legislature's standing committees and the state Public Service Commission of Wisconsin on appropriate issues.

What this report covers

This report will examine the economic impact of greater broadband penetration in Wisconsin, especially in rural areas that are often seen as underserved.

It will note specific areas where greater broadband penetration would have a tangible effect on economic growth and job creation, such as telemedicine, eCommerce, tourism, distance education and "farm-shoring," which is the practice of bringing home data center and call center activities from abroad.

This report is issued within the context of continuing public and private efforts to speed development of broadband in Wisconsin. Those efforts include:

- Implementation of a major telecommunications regulation update signed into law earlier this year;
- Continuing efforts by the Public Service Commission of Wisconsin to monitor telecom trends, regulation, access and pricing for the good of consumers and communities through efforts such as the LinkWisconsin interactive broadband mapping project at www.link.wisconsin.gov;
- Release of federal broadband development grants in Wisconsin, which are being use by a number of carriers to extend service in rural areas;
- Proposed reform of the Universal Service fund to support broadband, and;
- The proposed merger of AT&T and T-Mobile, which could affect the overall "footprint" for broadband access and quality in Wisconsin.

Defining the technology: What is broadband?

Broadband is fast becoming an essential communications tool for families, businesses, schools, hospitals and virtually any other institution in America. In fact, during his 2010 State of the Union speech, President Obama called for connecting 90 percent of all Americans to the Internet within a decade.

According to the Institute for Policy Innovation, broadband means enough bandwidth to carry multiple voice, video or data channels simultaneously. Channels are separated by "guard bands" (empty spaces) to prevent interference.

The technical definition of broadband continues to be a moving target; broadband is now said to transmit at least 1.5 Mbps (existing networks more commonly offer about 500 Kbps). Sometimes, broadband refers to any high-speed, always-on Internet connection like DSL and cable. Wireless broadband services such as WiMax are being rolled out, promising to bring low-cost broadband to remote areas.

The FCC has sought to classify cable broadband service as an "information service" rather than a "telecommunications service" and thereby keep broadband lightly regulated. This decision was upheld by the U.S. Supreme Court in 2005. The FCC also has classified telecom-provided DSL broadband as an information service. This makes sense from a federal as well as a state perspective; all forms of broadband data access should be regulated on an equal basis.

The FCC has also recognized that broadband barriers would impede the investments needed to build out broadband networks. The threat that additional rules would be imposed on broadband, or that natural market consolidations cannot take place, is one reason that deployment in the United States now lags behind that of some other countries.

What is the problem with broadband in Wisconsin?

Wisconsin ranks low within the United States in some important broadband categories. It is among the worst-ranked states in terms of high-speed broadband Internet access and the percentage of households with multiple wire line providers, according to a 2011 report by the National Telecommunications and Information Administration.

Wisconsin ranked 43rd out of the 50 states, the District of Columbia and U.S. territories in the percentage of households with access to broadband at download speeds of greater than 3 mbps. It ranked 44th in percentage of households with greater than three wire line broadband providers.

The data was compiled for the NTIS National Broadband Map, a searchable map and database of broadband coverage nationwide.

While Wisconsin broadband coverage is more favorable by some FCC standards, a report issued in March 2011 noted that Wisconsin's percentage of residential broadband (2000 kbps) connections was 84.7 percent, which was lower than comparable percentages in all but 10 states.

Greater broadband availability in Wisconsin also appears to be a priority for executives in the state's tech sectors. A survey of tech executives in Wisconsin by The Luminis Group on behalf of the Tech Council and WisBusiness.com asked the following: "How important is improving broadband Internet access to the state's economic growth?" Eighty-two percent of the 100 respondents ranked it "very important" or "somewhat important."

Sizing up the economic potential of greater broadband penetration in Wisconsin

An arm of the United Nations recently noted that 2010 was the year when the world hit 5 billion cell phone users and 1 billion mobile broadband subscribers. Think about that for a second. That's almost as many cell phone users as there are people on the face of the planet.

It's a remarkable commentary on the revolution in telecommunications that has swept across the world. From Singapore to the Serengeti, people are using mobile, wireless devices to access the internet for reasons that range from the personal to the professional.

And yet, a good deal of Wisconsin still seems trapped in a time when "telecom" meant a plain black analog telephone hanging on the wall.

Today, telecommunications is defined broadly to reflect a tidal wave of change in the age of digital computing and the Internet. The early 21st century meaning of telecommunications is the transmission and distribution of multiple forms of data – voice, text, video, music and more – through a variety of means. Seemingly overnight, the revolution in telecommunications has shattered rules that generations believed to be unwavering.

Rethinking barriers tied to the landline era are part of Wisconsin's overall effort to ensure that its telecom systems are world-class and that all regions of Wisconsin, from its major cities to its rural areas, have a chance to compete in the 21st century marketplace.

While Wisconsin is getting more aggressive about deploying broadband networks and even using federal stimulus dollars to do so, the law and the regulatory culture haven't kept up. In fact, efforts to nudge Wisconsin's regulatory structure closer to the times sometimes come across as painfully slow.

Within five years, the United Nations predicts, Internet access by people on the move – such as laptop computers and "smart" mobile devices – will exceed web access from desktop computers.

In order for Wisconsin to compete in that changing world, all geographic regions need to move beyond 20th century land-line service. Wisconsin is still a state of small towns and rural communities. Some of these areas lack the critical mass of people, institutions and capital to easily attract high-tech businesses.

But that does not mean they are bereft of assets. Rural communities and small cities can offer a quality of life that is attractive to many workers. They can supply highly motivated workers with a commitment to quality. They can offer lower business costs for land and construction. For rural Wisconsin to prosper in the Real-Time Economy, however, it must fully participate in the global communications revolution.

After all, 5 billion cell phone users worldwide can't all be wrong.

Why greater broadband access and cell-phone service is important to rural Wisconsin

Much like other rural communities across the United States, rural Wisconsin would benefit directly and indirectly from enhanced broadband connections. Here are some reasons why:

- It allows small businesses, which account for most new jobs in Wisconsin, to expand their markets and customer bases to the national and even international levels through greater penetration in eCommerce sales channels.

- It creates more opportunities for creation of businesses related to information technology, one of the fastest-growing sectors in the U.S. economy. Wisconsin is 21st among the

states in IT employment, according to the latest CyberStates survey, and is poised for growth in development of software, mobile applications and Internet solutions. Growth in these areas would be facilitated if the right communications "highways" are opened to all parts of the state.

- It enables hospitals and clinics to better utilize telemedicine applications. An example might be rapidly locating digital medical records and medical images that can be easily transmitted to doctors or clinics in remote locations. This can save lives and improve health. Wisconsin is a hotbed of electronic medical record innovation through companies such as Epic Systems and the Marshfield Clinic, and greater broadband penetration could help capitalize on that.

- It provides rural Wisconsin residents with greater access to higher education through distance learning systems. Most schools are wired, but many students cannot tap into those networks at home. Because there is presently an unsettled situation involving proposals to expand broadband through the University of Wisconsin System or private providers, the market would appreciate some degree of certainty through established providers.

- It makes rural Wisconsin more likely to attract large data centers, which are the information storage citadels of today's IT-driven businesses and corporations. This is a good fit with our financial services, business services and insurance agencies.

- It will enhance tourism. Wisconsin continues to be a prime tourism destination in summer as well as winter months, but some providers of tourism services find themselves losing opportunities to make or close sales if broadband service is unavailable or slow. Also, today's tourists want to stay connected during their stay. They don't want to send postcards that reach home days later; they want to e-mail, use Facebook or Twitter to stay in touch with family, friends and colleagues.

- It will enhance public safety by allowing more rapid response to emergencies, whether those are medical emergencies, police emergencies or events related to natural disasters.

Why small business start-ups are vital – doomed to fail without broadband

If there's one part of the economy that constantly aspires to chug uphill, even during hard times, it's the start-up sector. The U.S. and Wisconsin economies undergo constant renewal through the creation of small businesses that provide innovative products and services, and which help foster markets where none existed before.

In a 2010 report, Tim Kane, a senior research analyst at the Ewing Marion Kauffman Foundation in Overland Park, Kan., concluded that start-ups aren't everything when it comes to job growth. They're the only thing.

In his report on "The Importance of Start-ups in Job Creation and Job Destruction," Kane drew upon federal data from 1977 through 2005 and which crystallized what most economists and development experts have believed for years: Start-up companies drive job growth.

"… Without start-ups, there would be no net job growth in the U.S. economy," the paper noted. "That fact is true on average, but also is true for all but seven years for which the United States has data going back to 1977."

The report went on to explain that companies in their first years are largely "job creators" but older firms – five years old and older, generally speaking – are net "job destroyers." It's the latest empirical evidence to support the decades-old concept of "creative destruction," a term that describes how the economy constantly remakes itself from the bottom up as new ideas and companies replace the old.

In today's knowledge-based economy, start-up companies cannot survive in an environment that does not include access to broadband. In rural Wisconsin, the fate of economic development rests, in part, on those companies being able to compete far outside their communities. In a world where a growing percentage of consumers use the Internet to shop for goods and services, many companies cannot afford to be confined by geography when it comes to attracting customers.

How broadband drives R&D and medical innovation

It's hard to think of an academic research field today that isn't driven by the ability to analyze, send and receive huge sets of data.

From genomics to astronomy, and from biotechnology to medical imaging, scientific research today is inexorably linked to high-end computing and network connections.

Consider the Morgridge Institute for Research, which recently opened as the private R&D arm of the Wisconsin Institutes for Discovery in Madison. Its research projects are all "interdisciplinary," meaning they involve a mix of sciences: biotechnology, medical devices, medical imaging, information technology and nanotechnology.

"At the Morgridge Institute, we're very dependent on our ability to connect with leading-edge networking technologies," said Dr. Sangtae Kim, director of the institute. Kim was once a division chief within the National Science Foundation, which worked to build high-end cyber-networks for researchers.

Those networking technologies are dependent on high-quality broadband, which is the pipeline for moving large amounts of data.

The Morgridge Center intends to work with other UW System campuses, which means broadband accessibility throughout the 13 four-year UW campuses will be essential. Consider the following projects facilitated through the WiSys Technology Foundation, which provides intellectual property services to UW System campuses outside Madison.

- Mensa Systems LLC of Menomonie is developing a cost-effective digital network that will provide real-time alerting to Wisconsin dairy farmers when there are changes in the health status of their cattle, which will reduce cattle loss;
- Shamrock Energy Corp. of Oshkosh is developing a high-density energy storage and management system for automobiles and industrial uses;
- Xolve Inc. of Platteville is exploring development of graphene, a nanomaterial that holds great promise in improving the strength of industrial materials. This project links researchers at the UW-Platteville with others in UW-Madison and beyond.

Predicted savings in health care represent a significant benefit of broadband diagnosis, monitoring and other services. Broadband can be used in a variety of new ways, including the monitoring of elderly, infirm, or individuals with disabilities at their current residences or less expensive community healthcare centers, and the delivery of medical care directly through "telemedicine," or two-way video communication between patients and health care providers.

These benefits are estimated to accumulate to at least $927 billion over 25 years (measured in 2005 dollars), which is equivalent to half of what the United States currently spends annually for medical care for all its citizens ($1.8 trillion).

Consider these comments from Edna Devries, division medical director for the Marshfield Clinic, which serves patients across northwest Wisconsin:

"Many people think of access to broadband as an economic issue, or maybe a social issue. Speaking as someone who is in the business of saving lives, I believe broadband is a health care issue… We leverage broadband to optimize medical care. The Marshfield Clinic serves most of northern Wisconsin through 43 regional centers, with more than 1,000 physicians and non-physician providers.

"At the core of our care is our transformation to chartless campuses. By the end of 2007, all our centers were chartless, and we now have electronic health records on more than 2 million patients. Because we have moved patient information to an electronic form, physicians can use tablet computers to access and update patient information regardless of their location. As patients move through the system, between offices, clinics and specialists, their up-to-date records are immediately available…. In remote areas, telemedicine is a growing need that will depend entirely on broadband access."

How broadband can help develop Wisconsin's "cleantech" industries

Unless someone strikes oil in Oshkosh, discovers natural gas in Necedah or mines coal in Colfax, the state of Wisconsin is destined to remain largely dependent – perhaps for decades – on outside sources of energy that power its homes, businesses and vehicles.

That economic dependency can be slowly but steadily reduced, however, if Wisconsin builds on its emerging expertise around development of new sources of energy. Those sources of energy

will be coordinated through "smart grids" and other control systems, all of which will require interruptible communications links.
Alternative energy will bring opportunities for emerging companies throughout Wisconsin – but especially in rural parts of the state. If those locations lack strong broadband connections, however, development could be slowed or actually take place elsewhere.

A current example is wind energy. While not all of Wisconsin is geographically ideal for wind generation sites, the state is home to a number of companies – many of which are located in rural areas – that produce wind power components.

Wisconsin's manufacturing foundation has given rise to companies that build parts for wind turbines, and its historic strengths in batteries and electrical controls might someday yield storage systems that hold wind-generated electricity. That could transform wind from an intermittent power source to electrical power that more closely matches peak demands.

The potential for biomass as a source of electric generation is still emerging. Switchgrass, for example, is highly efficient in terms of net energy produced, can be grown on marginal lands and could become an important cash crop for Wisconsin farmers. Real-time connections to get supplies to collection points are essential, however, for generating systems to work.

In addition to wind and biomass, Wisconsin's emerging energy technologies include next-generation biofuels (such as cellulosic ethanol and "green" gasoline), new engine technologies, advancements in nuclear fission and fusion research, energy storage and solar power. Through the state's engineering colleges and other centers such as the U.S. Forest Products Laboratory and the Great Lakes Bioenergy Research Center, work continues on a mix of technologies that will position Wisconsin for the years and decades ahead. Broadband would facilitate connections between researchers in major centers and companies located remotely.

Wisconsin has a huge economic stake in building a more diverse, cost-effective energy base. It also has the research base, natural resources and industry mix to do so. Building a stronger communications infrastructure that includes broadband will allow that transformation to take place statewide.

How broadband can build Wisconsin's workforce participation rate

Wisconsin's workforce participation rate has historically exceeded the U.S. average. That rate is a measure of how many adults are actually employed, even if they are employed part-time. In December 2010, Wisconsin's workforce participation rate was about 69 percent compared to about 65 percent nationally.

But experts believe the state's workforce participation rate will drop as Wisconsin's population ages, there are fewer two-earner families, or the state fails to attract the kind of highly skilled workers – many of whom are from other states or nations – needed to expand the economy. Greater broadband penetration will be a factor in enhancing workforce participation.

Because Wisconsin is the nation's No. 2 state in per capita manufacturing employment, perhaps it's no surprise the state would also be No. 2 in the number of workers gaining advanced certifications – often earned online. Such certifications are a leading indicator of the modernization of Wisconsin manufacturing, which continues to increase productivity thanks to commitments to safety, quality, technology and improved processes. Nearly 3,000 manufacturing workers in Wisconsin earned advanced certificates in 2010, the Department of Workforce Development reported.

Wisconsin is not without its workforce challenges, of course. The percentage of adults with four-year college degrees continues to run behind the U.S. average – about 25.7 percent in Wisconsin versus 27.9 percent nationally, 31.5 percent in Minnesota and 30.6 percent in Illinois. That's mitigated, at least in part, by the state's above-average number of degree-holders from two-year colleges, such as the Wisconsin Technical College System.

Wisconsin may also be losing an edge in two-earner families as more women simply drop out of the workforce rather than find part-time or limited-term jobs. Richer broadband connections in rural Wisconsin would allow the state to compete with other locations – including off-shore locations – for jobs in call centers and other information centers. The "off-shoring" phenomenon is seeing a partial reversal, especially in information technology, as companies discover they can accomplish higher quality work for comparable pay in rural America.

Wisconsin needs skilled workers of all types – from recent college grads to older workers who have sought retraining, to people from outside Wisconsin who want to live and work here. Greater broadband penetration will enhance distance education and other efforts to attract and retain workers. And in communities that worry about keeping their young workers at home, broadband offers one more reason to stay.

How broadband is a "must" in the venture economy

Angel and venture capital are important drivers of the entrepreneurial economy. However, areas of the country that lack adequate broadband access will find they are mired in venture "no-fly zones" unless online access to businesses and markets are improved.

In fact, it is not an over-dramatization to say areas of Wisconsin that lack adequate broadband penetration are also areas that can expect little or no angel and venture capital investments.

Through its Wisconsin Angel Network, the Wisconsin Technology Council works with 24 angel networks or funds across Wisconsin, including several in areas of the state that could benefit from more entrepreneurial activity. Networks in northern Wisconsin include the Northwoods Angels, the St. Croix Valley Angels, Central Wisconsin Business Angels, the Lake Superior Angel Network and the NEW Fund. Managing directors or partners in those funds report that broadband access is instrumental to their investment decisions.

"Broadband is absolutely essential for economic development in rural areas such as northern Wisconsin," said Dick Leinenkugel, a former Wisconsin secretary of Commerce and one of the

founders of Northwoods Angels. “Early in the last century, Wisconsin invested in a farm-to-market road system that helped build the diary industry. Today, we need to build a different sort of ‘highway’ system for telecommunications.”

Why is venture capital important? Venture-backed companies in the United States represent 21 percent of GDP – at an investment rate of about .2 percent. That’s a huge return. Those companies also represent 11 percent of the nation’s private employment. That’s 11.87 million jobs.

If Wisconsin had received its proportional share of venture capital over time, that would mean 259,215 jobs today versus the 60,156 venture-rooted jobs created over time. Access to rich broadband connections would enhance the ability to build and attract venture and angel investments.

Wisconsin has 1.84 percent of the nation’s population but roughly one-half of 1 percent of U.S. venture capital investments, based on five-year averages. Worse yet, it has about one-tenth of 1 percent of all venture capital under management. That’s mostly because there are so few venture firms in Wisconsin, which otherwise has all the ingredients for success.

The state’s assets include a strong tradition of entrepreneurship, above-average research and development investment, high production of patents and other intellectual property, and a skilled work force created, in large part, by the state’s education system. Wisconsin also has one of the strongest angel capital foundations in the country. But it lacks venture capital, which is often needed to bring young companies to the next stage.

How broadband can spur job creation

A major reason why policymakers should embrace efforts to speed broadband deployment is to attract new investment to the communications sector so consumers can receive the services they want at competitive prices. New investment in telecom is necessary to deliver this result, and the states that attract it will also reap the added rewards of job creation and economic growth.

- Every $5 billion invested in broadband infrastructure would directly create 100,000 new jobs in the telecommunications and information technology industries alone in the year in which the spending occurs, according to President Larry Cohen of the Communications Workers of America.

- An analysis by the Information Technology and Innovation Foundation found that $10 billion of investment in one year in broadband networks will support an estimated 498,000 new or retained jobs throughout the entire U.S. economy for a year. These include direct jobs, such as technicians to deploy broadband cable and equipment; indirect jobs created to supply the materials; and induced jobs, such as jobs in restaurants and retail stores created as the newly employed or retained workers spend their paychecks.

- If the AT&T/T-Mobile merger takes place, the combined company will invest $8 billion over seven years in a stronger infrastructure. That includes investments in 4G LTE coverage, which is expected to reach 97 percent of all Americans. The Economic Policy Institute found that AT&T's planned investments would generate at least 55,000 new and direct jobs over time. That number is consistent with other studies.

- A study by the Brookings Institution found that 300,000 private non-farm jobs are created throughout the entire economy for every 1 percentage point increase in broadband penetration. The authors concluded that employment in both manufacturing and services industries (especially finance, education and health care) is positively related to broadband penetration.

- Another study by Connected Nation estimates that just a 7 percent increase in broadband adoption – similar to the higher household broadband adoption in Kentucky versus national growth that was achieved by addressing local supply and demand issues – would create or save 50,748 new jobs per year in Wisconsin.

The Connected Nation Study also projects the following additional benefits assuming a 7 percent increase in broadband in Wisconsin:

- ✓ $1,863,975,895 in direct annual income growth
- ✓ $12,308,818 in average annual health care costs saved
- ✓ $69,731,928 in average annual hours saved
- ✓ $615,732,922 in annual value of hours saved
- ✓ $120,871,181 in average annual mileage costs saved
- ✓ $61,224,784 in average annual pounds of CO2 emissions cut.

The total economic impact of accelerating broadband access and use in Wisconsin is about $2.6 billion, according Connected Nation.

Economists have found higher residential property values and more jobs and businesses in communities with broadband, particularly in smaller, more rural and economically distressed areas. Wage and salary jobs, as well as the number of proprietors, grew faster in counties with early broadband Internet access.

Estimates of the net consumer benefits from home broadband are on the order of $32 billion per year. Further deployment of broadband infrastructure is needed to ensure that all people of the United States have access to broadband capability.

According to FCC Chairman Julius Genachowski, roughly 14 million Americans and many small businesses do not have access to broadband. He also estimates that more than 100 million Americans do not have broadband either because they cannot afford, do not know how to use it, or are not aware of its potential benefits.

Broadband can empower under-served communities

A report by the U.S. Department of Commerce points out that broadband use at home varies significantly across demographic groups. Persons with high incomes, those who are younger, Asians and whites, the more highly educated, married couples, and the employed tend to have higher rates of broadband use at home. Conversely, persons with low incomes, seniors, minorities, the less-educated, nonfamily households, and the non-employed tend to lag behind other groups in home broadband use.

A recent Pew Internet survey also finds demographic variances in broadband adoption. It shows that percent of white households have broadband, compared to 52 percent black and 47 percent Hispanic (English- and Spanish-speaking) households. Meanwhile, it also reveals that those who have accessed the Internet wirelessly via their laptop or handheld device were 62 percent Hispanic (English- and Spanish-speaking) 59 percent black (non-Hispanic) and 52 percent white (non-Hispanic).

The foregoing research tracks the findings of the National Center for Health Statistics concerning wireless substitution. It found that adults living in poverty (36.3 percent) and adults living near poverty (29 percent) were more likely than higher income adults (19.6 percent) to be living in households with only wireless telephones. And Hispanic adults (30.4 percent) and non-Hispanic black adults (25 percent) were more likely than non-Hispanic white adults (21 percent) to be living in households with only wireless telephones.

The popularity of mobile Internet access among minority groups is helping to "close a looming digital divide stemming from the high cost of in-home Internet access, which can be prohibitive for some," according to a New York Times report.

Another recent Pew survey found that from 2006 to 2008, internet use among Latino adults rose by 10 percentage points, from 54 percent to 64 percent. In comparison, the rates for whites rose 4 percentage points, and the rates for blacks rose only 2 percentage points during that time period. Though Latinos continue to lag behind whites, the gap in Internet use has shrunk considerably.

While statistics related to these minority groups may not directly apply, it is worth noting that northern Wisconsin is home to a significant native American population. In Ashland, Bayfield and Sawyer counties in northwest Wisconsin, for example, native American populations make up between 10.6 percent and 16.7 percent of the population, according to the U.S. Census Bureau.

Conclusions: Why Wisconsin needs greater broadband access

Access to broadband is becoming increasingly important for employment, education, news, health care, public safety, entertainment and conducting business. It has been a boon to those consumers who have access; it has been an albatross around the necks of those who don't.

In today's fast-changing world, broadband is not a luxury. Rather, it is a necessity – a "must-have" for consumers and businesses alike.

Wisconsin should continue to pursue a mix of options to expand broadband access. Those include efforts to implement federal grants on schedule; expansion efforts by carriers within Wisconsin; continued monitoring of regulatory hurdles; and a thorough examination of company mergers and acquisitions that could affect service.

For example, the proposed merger between AT&T and T-Mobile stands to improve the quality of voice calls as well as data service in significant portions of Wisconsin. The service "footprint" created by the merger would especially help extend coverage in northern, western and central Wisconsin. The question for policymakers familiar with this proposed merger will be maintaining adequate consumer choice. If any market has reacted to consumer choice in the past 20 years, however, it has been telecommunications. Today, 90 percent of Americans can choose from five or more cell-phone companies.

Enriched broadband penetration in Wisconsin will increase eCommerce opportunities for start-up companies, allow more start-up companies to take root, allow them to be considered for private equity (angel and venture) investments, improve telemedicine, enhance research and development activities, enhance workforce participation at a time Wisconsin needs more trained workers, support emerging industries ranging from software to "cleantech," provide a foundation for farm-shoring and generally help under-served communities.

A number of trends are coalescing to create greater broadband access in Wisconsin. Those includes actions by public bodies such as the PSC, the arrival and deployment of federal broadband grant dollars, proposed FCC reforms and actions by many carriers to improve service through new investments. Collectively, those steps can help close the broadband divide in Wisconsin – and improve the state's economy.

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