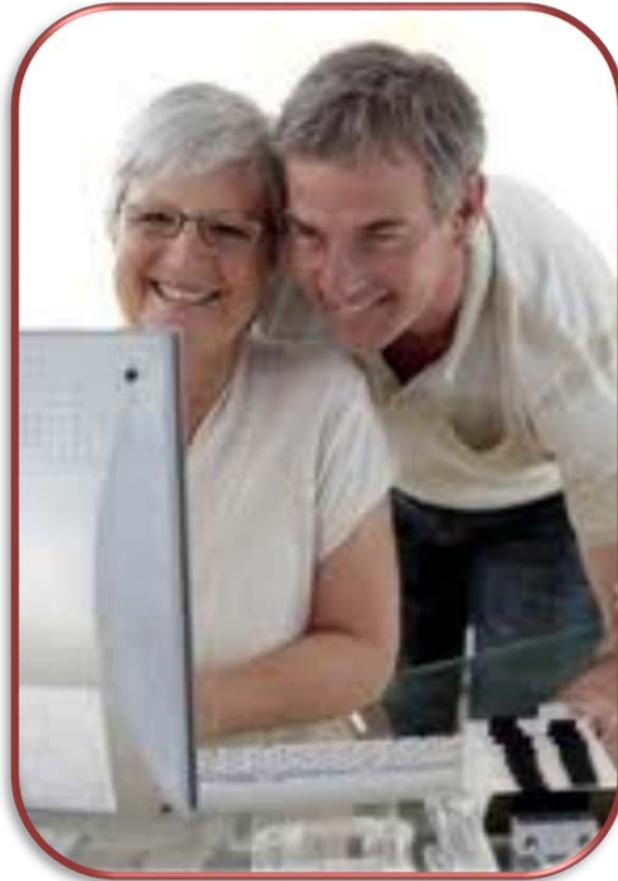


## Chapter 13: Broadband Technology

- Coordinate Village and Town policies, procedures, and infrastructure to facilitate broadband internet expansion
- Link broadband expansion with economic development and quality of life initiatives

The Village and Town of Weston will facilitate greater access to higher-speed internet communications to businesses and residents as a pathway to opportunity. The communities will partner with broadband providers in the Weston area to expand affordable broadband internet above current speeds. Weston will also work to increase broadband internet usage among businesses and in the community to increase the likelihood of system upgrades.

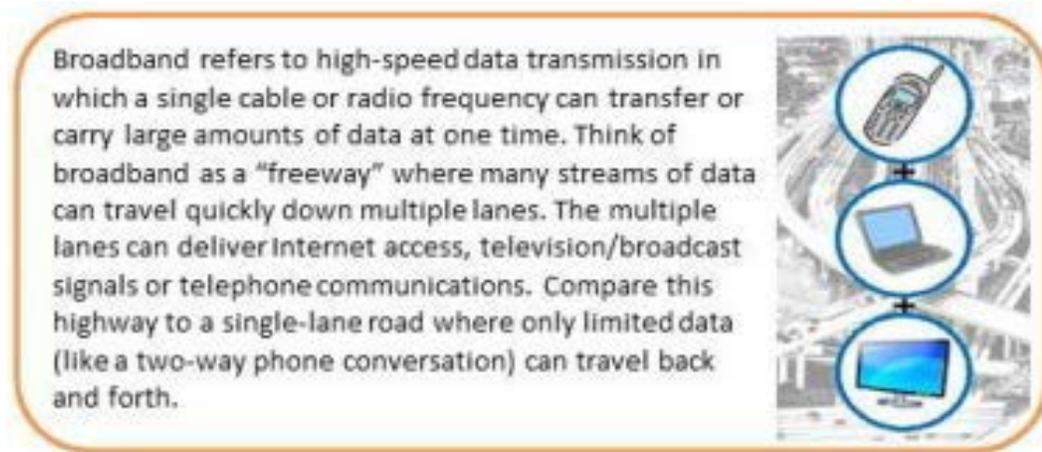


### Priority Initiatives

<b>Initiative</b> <small>(Follow link for further details)</small>	<b>Description</b>	<b>Funding</b>	<b>Responsibility</b>
<a href="#"><u>Help Change the Funding “Bottom Line” for Broadband Expansion</u></a>	Pursue grant funding, other collaborative opportunities, and creative use of local funding beyond property taxes to expand broadband infrastructure. Organize a consortium of business stakeholders to assess needs.	Federal, state and regional grant. Consider TIF, development impact fees, or area-wide assessments. Partner with service providers.	Planning and Development Department
<a href="#"><u>Implement a “Dig Once” and Joint Trench Use Policy</u></a>	Encourage public-private collaboration on fiber installation in conjunction with road and utility projects. Reduce excavations for communications and utilities infrastructure in public rights-of-way.	General fund; development fees. Funded concurrent with other projects, such as road reconstruction.	Planning and Development and Public Works and Utilities Departments
<a href="#"><u>Collaborate on Mapping Efforts Aimed to Promote Economic Growth</u></a>	Improve sharing of mapping/data resources for the common goal of increasing business activity. Include infrastructure locations, current service areas, and business growth areas.	Service area information to be provided by providers. Village mapping efforts supported by general fund.	Planning and Development Department, in partnership with service providers
<a href="#"><u>Target Broadband Expansion to Specific Underserved Areas</u></a>	Facilitate new or expanded broadband infrastructure in two specific, underserved areas: Business and Technology Park – South and nearby areas and residential areas in the north parts of the Village and Town.	Collaboration among Town and Village, Marathon County and internet service providers; tower lease revenues; road improvement funds	Public Works and Utilities Department, in collaboration with the Town of Weston and potentially other partnerships

### 13.1. Purpose

Technology and broadband expansion cut across many aspects of community development. Broadly speaking, increasing access to high speed, affordable broadband internet service will support economic development and quality of life efforts. Specific linkages to other Comprehensive Plan chapters are as follows:



Public Service Commission of Wisconsin's definition of Broadband

- **Economic Development.** High speed internet access drives business location decisions. Businesses need the ability to connect, network employees, and reach customers in the global economy. Readily-available broadband technology will allow Weston to attract new firms, investment, and jobs. Weston seeks to ensure that broadband internet service becomes basic economic development infrastructure that is available to businesses growing in, and coming to, the community.
- **Housing and Neighborhood Development.** Access to high speed internet is becoming an expectation in homes. That being said, expansion of broadband requires sufficient demand before it makes financial sense to extend fiber or deploy other necessary technologies. Broadband technology is important to serve families already in the community. It also will make new neighborhoods attractive to potential new residents.
- **Community Facilities and Utilities.** Modern public safety and emergency medical response relies on advanced communication technology. The internet is also an efficient tool to keep residents, boards, and commissions informed and involved—if they are properly connected. Health care increasingly relies on broadband access, and opportunities like “tele-health” can increase access to an aging, rural population.
- **Intergovernmental Cooperation.** Broadband is critical or schools, libraries, and education. Curriculum is increasingly technology-driven. Distance education is a growing trend that relies on broadband.

Broadband technology is a dynamic area of inquiry. The municipal strategies advanced in this Chapter will build on State, north-central region, and private sector initiatives to expand broadband access. To prepare this Chapter, technology experts, regional providers, and other sources were consulted. This Chapter includes a synthesis of this information to better understand the extent and scope of technology infrastructure already on the ground, pending, and possible in the Weston area.

## 13.2. Goal

Maximize access to affordable broadband service in the Weston area to improve quality of life and provide the connectivity necessary to compete successfully in the global economy.

## 13.3. Objectives

1. Strengthen relationships with broadband service providers and regional entities to expand broadband access.
2. Promote extension of fiber and other broadband technology to support growth of local businesses and attract new businesses.
3. Increase awareness and usage of internet services in the area, thereby making expansion proposals more cost-effective.
4. Integrate broadband expansion goal into all decisions, such as new infrastructure projects.
5. Enhance internet service available to residents throughout the Village and Town of Weston.

## 13.4. Policies

1. Secure grants and other resources to expand broadband in business parks and the community.
2. Explore creative use of tax incremental financing and other development-funded sources of revenue to assist with broadband expansion.
3. Include facilities and provisions to expand broadband access when public infrastructure investments are being planned or installed.
4. Share information and facilities with others in Weston area who are interested in expanding broadband here. 
5. Assure that Village policies and ordinances support the expansion of broadband service, while protecting other community interests. 
6. Expand familiarity, comfort, and use of the internet as a communication tool. 
7. Encourage public libraries, Northcentral Technical College, the UW-Extension, and other institutions to serve as centers of technology training and to raise awareness. 

### Case Study: Fixed Wireless as Alternative to Broadband

Also motivated by the importance of broadband for economic opportunity and quality of life, Racine County leadership implemented an innovative partnership to fill gaps in service.

Specifically, the County decided to partner with an Internet Service Provider (ISP), to provide fixed wireless access to subscribers in areas that did not have a broadband service option. The ISP rents space on water towers and other tall assets owned by the County (and by towns in the County). Racine County is one of a growing group of counties and municipalities across the state pursuing methods of giving private providers access to these assets to expand broadband options and coverage in these communities.”

Fixed wireless connections to service providers use radio signals rather than cables. See more information on Fixed Wireless technology in the Issues and Conditions report.

Source: Public Service Commission of Wisconsin. March 2013. Wisconsin Playbook for Broadband Expansion.

8. In areas where fiber extension is less financially feasible, promote options for other technologies to provide high speed internet communications.
9. Work to expand internet coverage and particularly to enhance speeds in residential areas throughout the Village and Town, as a mechanism to maintain property values, deliver educational services, enable rural entrepreneurship, and improve communication and minimize isolation for aging residents.

### 13.5. Initiatives

The following pages further describe the implementation priorities included on the cover page of this Chapter, and other initiatives the Village and Town may undertake or promote. Under Wisconsin’s comprehensive planning statute, these are referred to as “programs.”

#### 13.5.1. Help Change the Funding “Bottom Line” for Broadband Expansion

Private providers will expand broadband service to areas only where they determine that the rate of economic return is high enough and the risk of the expansion is low enough. The Village and Town will attempt to affect that equation and potentially lead to greater expansion to business areas in particular via the following efforts:

- **Pursue grant funding** to extend fiber throughout Village business, commercial, and industrial areas to support growth of local businesses and effectively recruit businesses with high data usage. Examples are listed in the sidebar to the right, with a description of these and other programs in the accompanying Conditions and Issues volume of this Comprehensive Plan.
- **Pursue creative use of existing local funding**, beyond property taxes, as means to expand broadband infrastructure in Weston. These may include utilizing tax incremental financing (TIF) as a means to assist private providers with service extensions or businesses with technology investments.

Such use may require appropriate inclusions or amendments to associated tax

#### Promising Broadband Expansion Grants

- **PSC Broadband Expansion Grants:** Administered by the Wisconsin Public Services Commission to improve broadband communication facilities, targeted to underserved areas. The Village and private sector partners were awarded funds through this program in 2014. The funds will be used to extend infrastructure to serve business and technology employment areas south of STH 29. This program may also be a viable funding source for other broadband expansion projects in the Weston area.
- **Wisconsin Economic Development Corporation Grants:** Supports community development efforts and provide financial incentives for shovel-ready projects. Grant recipients must demonstrate significant, measurable benefits in job opportunities, property values, and/or leveraged investment by local and private partners.
- **Community Development Block Grant:** Offers both public facilities and economic development grants, which can be leveraged to support infrastructure and facility projects.
- **USDA Community Connect Grants:** Offers grants to fund acquisition or leasing of facilities to serve residences and businesses, as well as community access points.

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incremental district project plans, so that they include the potential for funding for such technology. Other potential local tools include development impact fees and area-wide assessments, if the broadband infrastructure will be publicly owned.

- **Organize a consortium of business stakeholders** to assess needs against the levels of service that are available, identify the needs that are not being met, and explore new opportunities to expand use. This consortium could be connected to service providers.

### **13.5.2. Establish Policy Direction to Working with ISPs on Broadband Expansion**

As discussed in the section above, internet service providers (ISPs) make decisions for where and when they will place broadband service largely based on the business case, or expected return on investment (ROI). Communities like Weston may face challenges in attracting ISPs to provide service to the community, while balancing community interests of meeting community needs for service levels and price points. The Village has attempted to work directly with existing ISPs in the area to expand broadband service to priority areas that are currently unserved. Challenges the Village is facing in getting commitments from ISP to install and operate include expectations that the Village will fully pay the costs of expanding broadband infrastructure, thereby “subsidizing” the costs of ISPs. Relatedly, demand on and opportunities for many ISPs is so high at this time that they are only serving areas that have the greatest positive impact on corporate profit, maximizing ROIs. In the past, ISPs have reportedly over-built facilities. As a result, ISPs now evaluate more closely each expansion request, usually based on a short term (e.g., 3 year) ROI projection.

The Village hopes to convince ISPs of the “business case” (expected ROI) of locating broadband infrastructure in the area, while at the same time facilitating provision of a range of reasonable marketplace choices to serve residents. Given the unique challenges and limitations to providing broadband infrastructure in Wisconsin, the Village will explore the following policy questions to help guide future strategies toward service provision:

- How should the Village best facilitate and structure partnerships with private sector ISPs to make an attractive business case for expanding service?
- How should the Village most fairly facilitate provision of a fair market and meet consumer goals of choice and variety?
- What is the most effective way to balance private sector expense with public sector expense when providing broadband infrastructure? For ISPs? For business users?

The Village intends to explore the above questions in more depth, and establish a priority matrix for addressing the above questions.

### **13.5.3. Explore Opportunities for Village Leadership in Broadband Infrastructure and Service**

As suggested above, there are challenges to convincing private ISPs to provide broadband service to underserved parts of the community. The Village may therefore explore opportunities to take a more active role in directly providing broadband infrastructure and service.

Wis. Stat. § 66.0422 sets forth the requirements that must be met before a municipality is permitted to provide broadband services directly or indirectly to its residents. Specifically, § 66.0422(2) prohibits a village or other municipality from enacting an ordinance or



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adopting a resolution authorizing the municipality to construct, own, or operate any facility for providing broadband service to the public unless all of the following are satisfied:

1. The municipality holds a public hearing on the proposed ordinance or resolution;
2. The municipality provides notice of the public hearing to all parties potentially affected by the proposed ordinance or resolution; and
3. No less than 30 days before the public hearing, the municipality prepares and makes available for public inspection a report estimating the total cost of the proposed ordinance or resolution, and revenues derived from constructing, owning, or operating the facility, including a cost-benefit analysis of the facility for a period of at least three years.

There are exceptions to this prohibition that do not require satisfaction of the three above steps. One exception is if the Public Service Commission has determined that the local government is an “alternative telecommunications utility” as of November 1, 2003. (There are 31 municipalities that qualify as an “alternative telecommunications utility”, including area communities like Marshfield, Antigo, Shawano and Waupaca.) Another exception is if a majority of the village board votes to submit the question to the electors in an advisory referendum and a majority of the voters who vote in the referendum support the operation of such a facility. A third exception requires the village to ask each broadband service provider within the boundaries of the village whether the provider currently provides broadband service to the area or intends to provide broadband service to the area within nine months. The village may enact an ordinance or adopt a resolution authorizing the village to construct, own or operate a broadband service facility if no provider responds in writing, within 60 days, to the village that the provider currently provides broadband service to the area or intends to provide broadband service to the area within nine months.

Finally, under § 66.0422(3m), municipalities can build broadband infrastructure and lease it to private entities to operate and deliver broadband service to residents using that infrastructure. The leasing of any community-owned infrastructure must be done on a non-discriminatory basis.

#### **13.5.4. Implement a Dig Once and Joint Trench Use Policy**

“Dig once” and joint trench use policies are local government efforts to reduce the number and scale of repeated excavations for the installation and maintenance communications and utilities infrastructure in public rights-of-way. They require a coordinated effort among public and private entities for installing infrastructure when there are plans for excavation. According to Federal Highway Administration, such policies are sensible solutions to expedite the deployment of fiber along main routes when implemented as part of a cooperative planning process.

The Village and Town could adopt a dig once and joint trench use policy with the following components. To fully implement aspects of the policy marked with an asterisk (\*) below, adjustments to ordinances and engineering design standards are also necessary or advisable.

- **Share Village and Town capital improvement programs** with utility, telecommunication companies, and non-profit entities like WCAN to enhance likelihood of coordinating projects.



- **Coordinate with broadband services providers for joint trenching and simultaneous projects** when undertaking the engineering/design and pre-construction phases of all road and utility projects. The communities could also include fiber/conduit as part of the bid document, and in any case will coordinate on timing.
- **Require coordination between road and utility construction projects**, no matter which agency or business initiates such projects, to the extent permitted by state and federal law. This should include sharing of engineering/design plans for comment and contribution, invitations and attendance at pre-construction meetings, and joint trenching wherever possible. Joint trenching for electrical and fiber lines are particularly feasible and even desirable.\*
- **Include the simultaneous installation of fiber conduit within all Village and Town infrastructure installation projects**, including local infrastructure installed by developers in new subdivisions and business parks, unless infeasible from a cost, public safety, or available space standpoint. Conduit serves as “place holder” for future service providers to maximize future opportunities for broadband network expansion.\*
- **Adapt Village engineering standards for designing roads and utilities (including developer installation) to ensure that conduit will be of a feasible size, design, and placement** for future fiber installation and to maximize joint trenching. Also, establish standards advising the scope of project for which conduit would be required to be installed (e.g. major corridors or all roadways?)\*
- **Add “broadband / fiber” to the list of required public improvements in new subdivisions** and other developments at the expense of the developer, and specify design requirements and construction standards / scope for installation of conduit and fiber infrastructure.\*
- **Restrict the frequency of road excavation** for the purpose of installing utility, communications, or other underground infrastructure. This is designed to protect street investments, encourage earlier collaboration, and enable other alternatives like directional boring and small cells. Directional boring is a trenchless method of installing underground pipes, conduits, and cables along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on the surrounding area. Small cells are devices that can be attached to poles and/or buildings to increase network capacity via a wireless signal instead of excavation.\*
- **Encourage or require different techniques to minimize the impact of excavation**, where the Village or Town determine that road excavation is required. For example, micro-trenching involves digging a small trench just inches under the road surface along the curb line to install fiber optic lines.\*
- **Encourage the County and State to coordinate with telecommunication providers and install conduit for fiber** in accordance with Village standards, when participating on technical teams supporting or advising on County and State highway projects.
- **Investigate and follow WisDOT standards for facilitating highway corridors for broadband infrastructure**, and explore possible relationships that may result in expansion of facilities from providers in the Green Bay market area utilizing the Highway 29 corridor.

### 13.5.5. Collaborate on Mapping Efforts for Economic Growth

There could be better sharing of mapping and data resources between the Village, private communications service providers, and regional entities for the common goal of increasing business activity. It appears that competitive concerns and in some cases lack of awareness impedes map and data sharing. The Village intends to:

- **Create and share a database of map and attribute information** to facilitate private provider access to existing towers, alternative support structures, trenches, and right-of-way and easement resources.
- **Obtain and assemble maps from internet service providers** of their broadband facilities (both lit and dark fiber) or service areas. Competitive concerns suggest that the Village not, for example, publish such maps on the internet. Other legal arrangements to limit access ought to be explored. However, having access to such maps would greatly aid the Village in its economic development efforts, recruiting and guiding new businesses to locations with good service. If necessary, the Village may be able to require that this information be provided as a condition of renewing franchise contracts or using Village rights-of-way.
- **Assess current broadband service hot-spots and gaps**, by comparing locations of existing and planned commercial, office/research, healthcare, business/industrial, and community/institutional development. Work with providers to close each gap.

### 13.5.6. Work to Expand Access to Residential Customers

Broadband service providers repeatedly indicate that a critical mass of demonstrated demand is necessary for expansions to businesses and residences. Within the Weston area, perceived or real lack of demand is a particular problem limiting service to rural areas. It does not appear that any of the current providers are anticipating land-line expansions to rural subdivisions or clusters in the near future. In short, there is no magic bullet to increasing internet speeds in the rural parts of Weston.

As a component of this process to update the Village's Comprehensive Plan, a survey was made available to residents and some questions asked about internet usage. For the small number of respondents who stated they do not have access to internet in their home, the top reasons where that internet service was too costly or that they were able to access service on their smart phones. Respondents were also asked

#### Case Study: Three Lakes Town Action Group

A small, Northwoods community organized a Town Action Group (TAG) to form relationships with internet service providers and support expansion of coverage and options. Governmental and private sector leaders conducted meetings to inform the community of the benefits of broadband; mapped areas where there were unmet demands; and sought out providers willing to make the needed investments. As a result, nearly 90 percent of the Three Lakes Area residents spread across 90 square miles can now choose from up to five broadband providers.

Three Lakes' economic development and attraction strategy includes marketing the areas': "Personalized and Tech Oriented Education," "More Broadband Coverage & More Options," and "One of the 3 Best Libraries in the State."

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about Weston's biggest internet service challenges that need to be addressed. Top responses were:

- Lower costs (73% of respondents)
- Increased number of internet service providers (51%)
- Increased internet speeds in my area (37%)
- Improved quality of internet service providers (28%)
- Improved service reliability in my area, or from my internet provider (22%)

The communities can encourage participation in LinkWISCONSIN's Broadband Demand Survey (<http://wisconsindashboard.org/console>). This survey identifies un-served and under-served locations specific to consumer/business addresses. This information will be used to understand and analyze broadband gaps, and hopefully lead to opportunities to address gaps. Partnering with agencies like UW-Extension to increase subscribership may also demonstrate general demand in the area. Efforts like that undertaken by Three Lakes (see case study to right) could also be pursued.

Other options beyond fully wired connections may be the most viable in rural areas, including:

- **Increase the actual speeds of 4G LTE cellular service** for mobile, tablet, and other devices with such access. This can mainly be accomplished by encouraging better tower-to-fiber access, where advertised 4G LTE speeds are often lost.
- **Support high-speed, high-capacity wireless internet routers** on existing or future tall structures, working with an ISP to provide wireless point-to-point internet service to customers within the tower's wireless range.
- **Encourage expansion and use of satellite services.** Still, such services suffer from the lag associated with transmitting information to and from space.
- **Explore other new technology options**, such as providing Broadband over Power-line (BPL). BPL has not been applied in Wisconsin, but encouraging collaboration with ATC as power lines are added and replaced is encouraged.

Providing and supporting alternate locations for free- or low-cost broadband service is an alternative to connecting every home. It also provides for a more "connected" community, which can be used as an economic development and marketing tool. Locations and opportunities include free wireless hotspots at public facilities such as parks and the Village and Town Halls. Encouraging private businesses such as restaurants and coffee shops to provide internet service can increase activity and business. The communities may also help connect residents to locations that have access to computers for the underserved, replicating places like the "Neighbors Place" in downtown Wausau. Some communities, such as Wood County, have developed and supported efforts to provide refurbished computers to families in need.

### **13.5.7. Target Broadband Expansion to Specific Underserved Areas**

The Village will work to facilitate new or expanded broadband infrastructure in at least two specific, underserved areas. The Village will accomplish this using techniques described through the other initiatives in this chapter.



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The first underserved area is the Business and Technology Park – South, the adjacent Highview Business Park, and surrounding planned development areas south of Highway 29. Proposed broadband expansion to this area would facilitate technology-based business location and expansion in this area. One potential route would extend fiber from its current terminus at Zinser Street and Technology Drive south along Zinser Street. Directional boring would be used to bring the line under Highway 29 still following along Zinser St, which dead-ends at Highway 29 from both the north and south. Once south of Highway 29, broadband lines could follow Service Lane to the west and Weston Avenue to the east to Progress Way. Further extension of this line would start at the southeastern intersection of Progress Way and Weston Avenue, following Weston Avenue east to the Highway 29/J interchange area. The Village, together with private sector partners including Charter, was awarded grant funding of close to \$74,000 through the Wisconsin Public Service Commission Broadband Expansion Grant Program to serve this location. Funding was awarded to facilitate this expansion in the fall of 2014.

An additional proposal to further serve this area may involve using wireless technology. The Mosinee Tower could be used to relay high speed service to the Everest Tower, then the Weston Park Tower, then to broadband customers south of Highway 29.

The second underserved area includes the northern neighborhoods of the Village and nearby residential areas in the Town of Weston. Proposed broadband expansion to this area would facilitate greater internet speeds for home-based education and employment. When Ross and Kramer Avenues are reconstructed, or when multiuse paths are built along either of these avenues, the Village will work to ensure that broadband infrastructure is included from the Ross Avenue roundabout to the Machmueller Park, unless another route of broadband is available. In addition, the Village and Town could collaborate to connect this service to a new telecommunications tower in or near Machmueller Park. This could be a publicly- or privately-owned tower. Other potential locations for a tower to expand access to the area could also be explored. The tower could host a range of important services, perhaps including:

- **A high-speed wireless internet router**, working with an ISP to provide wireless point-to-point internet service to area homes and Machmueller Park users.
- **Village of Weston communications equipment**, including the Water Utility Radiometric Read System, Sewer Utility SCADA system, Public Safety Tornado Sirens.
- **Public safety dispatch and communications equipment** owned and operated by Marathon County, leased by Marathon County to help defray tower costs.
- **Antenna arrays of other cellular and internet service providers.**

The Town may work independently or with partners to explore opportunities for grants or other funding assistance to help with infrastructure costs.

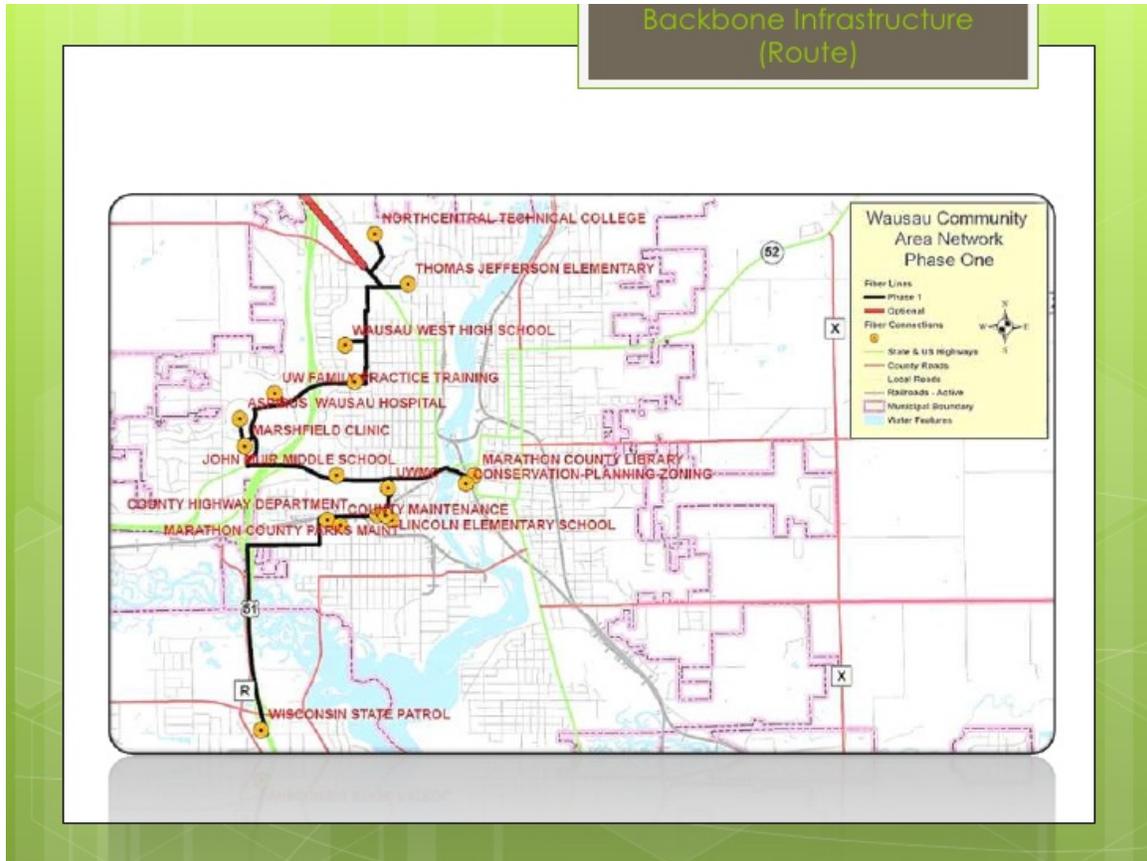
### **13.5.8. Participate in the Wausau Community Area Network**

There are area, regional, and state efforts that the Village and Town of Weston will continue to monitor and consider direct participation. These include the Wausau Community Area Network (WCAN). WCAN is a Wausau-area institutional broadband network currently comprised of the City of Wausau, Marathon County, Wausau School District, Northcentral



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Technical College, UW-Marathon County, the UW-Extension, and non-profit institutions like hospitals/healthcare. WCAN currently owns and operates 12 miles of fiber connecting many of these institutions, which went “live” in late 2013. WCAN is not an internet service provider. The “Phase 1” WCAN fiber network is indicated on the following graphic.



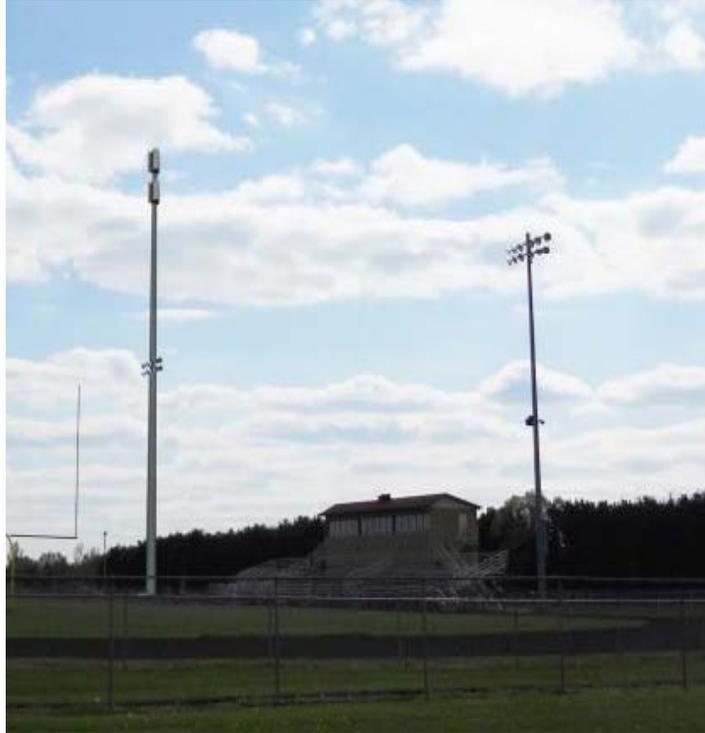
WCAN may also be the best vehicle for the Village and Town to connect with other related opportunities. These include a statewide fiber line along Highway 29, and Northcentral Technical College’s efforts to connect with its satellite campuses via the WCAN and Highway 29 lines.

At the time this Chapter was prepared, the existing WCAN lines and the fiber along Highway 29 lines may only serve participating public and non-profit institutions via a very high speed network (e.g., 10 gb). These currently include the Village, Town, and many healthcare organizations currently operating in Weston, including Ministry St. Clare’s Hospital. Membership in WCAN is available. Also, excess capacity may also be available for lease to other qualifying organizations. It is conceivable that, over time, the universe of potentially eligible users could expand, and certainly collaboration with private providers in the area is possible. The Village will pursue Village connection to the CAN, as well as help facilitate and encourage DC Everest School District connection.

### 13.5.9. Collaboratively Plan for Tall Structures

High speed internet service is becoming increasingly available through 4G LTE cellular networks in the area, and may be the most viable means of providing higher-speed service to rural customers in the near term (see above). Such services depend both of the location and placement of antenna arrays on tall structures, and on connections of those arrays to fiber networks.

The Village also needs tall structures to provide water service and for public safety communications, and reviews tall structures proposed by others as part of its zoning function. Whenever upgrades to or installation of new water towers or public safety communication towers occurs, the Village will engage private cellular providers to determine whether their needs could be integrated into the design (ideally with cost-sharing). Also, when conducting zoning reviews of tall structures proposed by others, the Village will encourage the entity engaging in the construction project to connect with telecommunication providers to co-locate their facilities.



Example of “stealth” telecommunication facility placement at a high school athletic field complex.