# LA CROSSE COUNTY

## Broadband Study Summary Report

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# 1 FINDINGS AND RECOMMENDATIONS

In early 2023 La Crosse County became *Telecommuter Forward!* and *Broadband Forward!* certified, a designation given from the Wisconsin Public Service Commission. The designations indicates that La Crosse County has identified a point of contact for broadband projects and has simplified permitting processes to ensure a timely experience for contractors. In May of 2023, La Crosse County applied for and was awarded a BEAD Planning grant through the Wisconsin Public Service Commission.

In June 2023, La Crosse County formed the La Crosse County Broadband Committee that has met on a monthly basis to determine goals, identify barriers, establish partnerships with internet service providers, and has prepared for the anticipated BEAD Challenge process. In August 2023, La Crosse County hired Design Nine, a consulting firm that specializes in broadband planning, to produce this plan. This report summarizes the finding of the study, and the complete study and all survey result data is available in a separate document.

## 1.1 THE CURRENT STATE OF INTERNET IN THE COUNTY

La Crosse county is typical of many other U.S. counties, where a portion of the county is a mix of higher density urban and suburban areas, and a larger portion of the county is predominantly low density small towns and rural residents. In those higher density areas, cable internet service is widely available, and some fiber-based internet is available in many of those areas.

In the rural areas of the county, many residents still struggle with slow DSL internet service, and more recently Fixed Wireless Access (FWA) has become more widely available, both from Wireless Internet Service Providers (WISPs) and cellular providers. Starlink, the Low Earth Orbit (LEO) internet service offered by SpaceX, is available in all rural areas of the county and offers much improved internet access compared to copper-based DSL.

There are fifteen ISPs that offer services in La Crosse county; twelve are terrestrial wired or fixed wireless providers, and three are satellite internet providers. This number of providers is higher than many other counties in the U.S. This puts the county in a good position for future improvements in the affordability and availability of high speed broadband: multiple provides creates more competition for customers, and more competition creates incentives for providers to make improvements in broadband speeds and customer service.

As part of this study, meetings were held with stakeholders, interested parties, utilities, and service providers. More than a dozen in-person, phone, and videoconferences were held with the public, County staff, members of the County Broadband Committee, ISPs, and other stakeholders.

The survey data collected as part of this study indicates that residents and businesses are anxious for better internet service.

- 93% of respondents are interested in having access to Gigabit fiber internet.
- 88% believe that local government should help facilitate better internet access.
- 34% of residents report the quality of internet service is affecting where they choose to live.
- 83% of businesses reported that they need employees able to work from home.

# 1.2 MOVING FORWARD

La Crosse County has much to offer to the new class of workers and entrepreneurs who are seeking great small towns, low cost of living, traditional neighborhoods, a wide range of recreation opportunities, good schools, and a sense of place. This new class of workers and their families make relocation decisions based on quality of life only where there is abundant and affordable broadband, because broadband is the enabler of this new approach to personal and work life.

If La Crosse County can use Federal and state grant funds, other grant opportunities, and some local funds to make carefully targeted infrastructure investments and to develop constructive public/private partnerships, most homes and businesses in La Crosse could have Gigabit fiber service within the next four to six years.

Broadband is a community and economic development issue, not a technology issue. The essential question is not, "What system should we buy?" or "Is 5G wireless better or cheaper than fiber?" Instead, the question is:

***"What do businesses of and home-based workers of La Crosse County need to be able to compete globally over the next thirty years?"***

In short, large areas of the county today have "little broadband" in the form of DSL or have to use fixed wireless services, which can vary in quality and speed, along with"big broadband" in the form of fiber to some businesses and residents. If the County creates public/private partnerships and/or makes investments in broadband and telecommunications infrastructure, it is absolutely critical that those investments and partnerships are able to scale gracefully to meet business and economic development needs for decades. To close that gap between the FCC definitions and what the county needs to support future work opportunities and to support K12 and higher education school work, the goals in the table below can provide a road map.

### *Broadband Service Targets*

| BROADBAND SERVICE | TARGET DATE | TECHNOLOGY | WHERE NEEDED |
|---|---|---|---|
| 25 Mbps download<br>10 Mbps upload | 2025 | Wireless | In many rural areas in the county |
| 100 Mbps download<br>20 Mbps upload | 2026 | Fiber | In many currently unserved and underserved locations in the county |
| 100 Mbps download<br>100 Mbps upload | 2027 | Fiber | Available to a minimum of 50% of residents and businesses in the county |
| 1 Gbps download<br>1 Gbps upload | 2029 | Fiber | In most business and commercial areas, and widespread availability throughout the county, including rural areas |
| 10 Gbps download<br>10 Gbps upload | 2030 | Fiber | Available to a majority of homes and businesses in the county |

# 1.3 ACHIEVING SUCCESS

There are three parts to solving the broadband challenges in La Crosse County and the U.S.: Availability, Affordability, and Adoption. All three must be addressed appropriately. Many of the larger incumbent telecom providers focus on availability while ignoring the affordability of their services. Services that are available but unaffordable leave many households and businesses with sub-standard internet service. Similarly, good quality, affordable service may be under-utilized by some households and businesses if they lack the knowledge and training to adopt improved services. The table below summarizes these characteristics.

| Availability | Affordability | Adoption |
|---|---|---|
| Sufficient infrastructure and coverage to deliver reliable wired or wireless broadband service. | Ability to pay for the total cost of being connected to reliable high performance broadband and internet service. | The training, skills, and knowledge needed to obtain access to reliable high performance internet and the software and tools needed to use the internet. |

Compared to many other localities, La Crosse County has several advantages when evaluating broadband options, challenges, and opportunities: An engaged and committed group of local leaders determined to address the problem, excellent K12 schools with good internet connectivity, and wireless and wireline internet Service Providers (ISPs) that are interested in working with the County to improve internet service in the county.

The recommendations below provide a road map for meeting the County goals for getting affordable and high performance broadband services to all homes, businesses, schools, health care facilities and institutions.

## The County should not become an internet provider

The County should focus on developing public/private partnerships with local ISPs. Provision of internet service is best left to the private sector because of the fast changing nature of the technology, services, and applications. La Crosse has at least fifteen internet providers, and the twelve terrestrial wireline and wireless providers are all potential partners. The County already has worked vigorously to reach out to providers and develop productive discussions about how to improve broadband internet in the county. The County's role is most appropriate as a facilitator of these conversation, as a conduit for grant funds where appropriate, and to encourage providers to adopt the County's goal of great internet for all.

## Pursue grant funding opportunities

The Federal government has been steadily increasing the amount of grant funding available for broadband infrastructure, with USDA and HUD both having programs that are designed to help underserved and unserved areas construct new broadband infrastructure. Because BEAD (Broadband Equity, Access, and Deployment) funding will exceed the previous Covid funding program (ARPA, CARES), La Crosse's share of Federal funds should be substantial and a portion of it could cover a large part of the needed broadband infrastructure improvements. BEAD funding typically requires a public/private partnership with an ISP (internet Service Provider). Discussions with providers should start well in advance of developing an application for funds.

USDA ReConnect grants can be excellent opportunities for deploying improved broadband service in rural areas, but the grant application typically requires more work to prepare than some other grant opportunities. If La Crosse County is interested in applying for a 2025 ReConnect grant, work on the application should begin no later than mid-fall of 2024.

The Wisconsin Digital Equity program has nearly $1 million allocated for planning digital equity projects, and the WBO expects to award $24 to $30 million over a five year period. These two programs can be used for broadband adoption efforts for targeted communities, which can include the elderly and rural residents.

Meetings with healthcare officials and library officials identified significant digital literacy and equity issues for rural residents of the county and the elderly. La Crosse should be able to qualify for a grant for digital literacy programs. The program will be accepting applications through the end of 2024. The County Broadband Task Force should assemble a broadband grant team. Some grants, like the USDA ReConnect program, require a significant effort to assemble the required forms, letters, and supporting information needed for the grant application. All grants will require a well-structured technical and operational plan. Team members should have grant-writing experience and should also have a good understanding of the basics of broadband infrastructure.

For grant requests that are focused on public/private partnerships, coordination with the private sector partner is critical. While the private partner may be responsible for developing some or most of the technical detail, many ISPs and WISPs have little or no experience writing grant applications and managing the paperwork required by a grant program. The broadband grant team should be careful not to delegate too much responsibility for developing the grant application to the private partner.

The County should have regular contact with the Wisconsin Broadband Office, which is responsible for administering and awarding grant funds.

## Expand County capacity to support broadband initiatives

The County should make use of some of the BEAD planning and other grant and funding opportunities to expand the capacity of County staff to support broadband initiatives. Important activities that require County staff and leadership include:

- Regular and continuous outreach and relationship development with ISPs and WISPs over the next five to seven years to ensure that any County, state, or Federal funding is coordinately with providers.
- Increased use of County GIS systems to track fiber and telecom construction in the county and to maintain and update broadband survey and speed data, which is important for supporting grant applications.
- Support for the development of broadband grant applications to ensure that the County can apply for all appropriate funding opportunities.
- Increased attention to digital literacy awareness and technology training issues to ensure residents can take advantages of broadband programs like the Wisconsin PSC Lifeline program and telehealth services.

Additional resources that may be needed include increased GIS staff hours to support the broadband initiatives and the services of a professional grant writer. The grant writer would report to the County Broadband Task Force and be responsible for ensuring that broadband funding applications are completed on time, tracking the work of partners and stakeholders needed to contribute to the grant application, and ensuring the application has all required sections and answers.

## Develop partnerships with WISPs and ISPs

Telecom has always been a public/private partnership; in the twentieth century, local governments gave private companies access to right of way to deploy telecom infrastructure. Throughout the U.S., many ISPs and WISPs are aggressively pursuing Public-Private Partnerships (PPPs) with local governments. Ideally, a public/private partnership combines government oversight, some public funding, and private sector expertise to improve broadband infrastructure in a locality.



A typical partnership is a long term contract between a government entity (e.g. La Crosse County) and a private sector telecom firm, in which the private partner assumes much of the business risk and management responsibility in return for public funding.

The advantage of a PPP is that the ISP or WISP typically is responsible for most of the day-to-day management of the network assets, as opposed to County or regional responsibility for assets.

These partnerships may include a variety of strategies:

- Collaboration on a grant opportunity,
- Shared costs of developing a new tower site,

- Shared fiber infrastructure where the County finances a portion of the construction cost but receives fiber strands to connect schools and county facilities,
- Revenue sharing,
- Fee waivers, and other kinds of cost and revenue sharing.

Selected providers should be evaluated carefully. Prospective partners must be able to show technical competency and have a demonstrable track record of managing substantial fiber and/or wireless builds on time and within budget.

It will also be important for any public/private partnership agreement have a claw-back agreement. When public funds are transferred to a private company, the County should have the ability to "claw back" the built infrastructure for a minimum of five to ten years.

Conditions for a claw back could include bankruptcy of the ISP, sale to a third party (where substantial profit taking leverages the public funds), poor service, unreasonably high cost of service, and/or poor service reliability.

## County GIS should map and maintain fiber infrastructure in the county (optional)

Any company using public right of way on roads in the county to install fiber cable is required to get permits and provide as-built drawings. Ensure that as-built drawings of completed fiber infrastructure are provided, and that County GIS staff uses as-built data to map and track fiber infrastructure. Work with providers to encourage them to provide up to date information about cable routes that may not currently be in the County GIS system. By tracking this information, the County can help encourage and coordinate "dig once" and shared trench policies where it is practical. Doing so can reduce construction wear and tear on right of way, sidewalks, and roadways, and reduce the cost of new fiber installation for providers.

## County GIS should maintain data on demand and internet speeds (optional)

The FCC uses its broadband maps to allocate billions of dollars in subsidies, but it relies on data supplied by internet service providers. Companies can report that a census block is served even if only one household has internet service, which leads to overstating access. Location-based survey data can help strengthen broadband grant applications.

The broadband study has already collected valuable speed data for many residential and business locations in the county. This data can be maintained as a layer in the County GIS system to help identify areas of demand, which may be needed for grant applications. Locally collected "hard data" on upload and download speeds can also be very important as part of grant applications, especially where the local data shows unserved and underserved areas that may not be identified on the national broadband map.

Local schools can help improve broadband mapping—most schools have purchased devices for students, and schools could play an important role in collecting data on actual usage and speed. For example, every school-provided laptop could have a speed-test link or application that could be used to continuously collect location-based data.
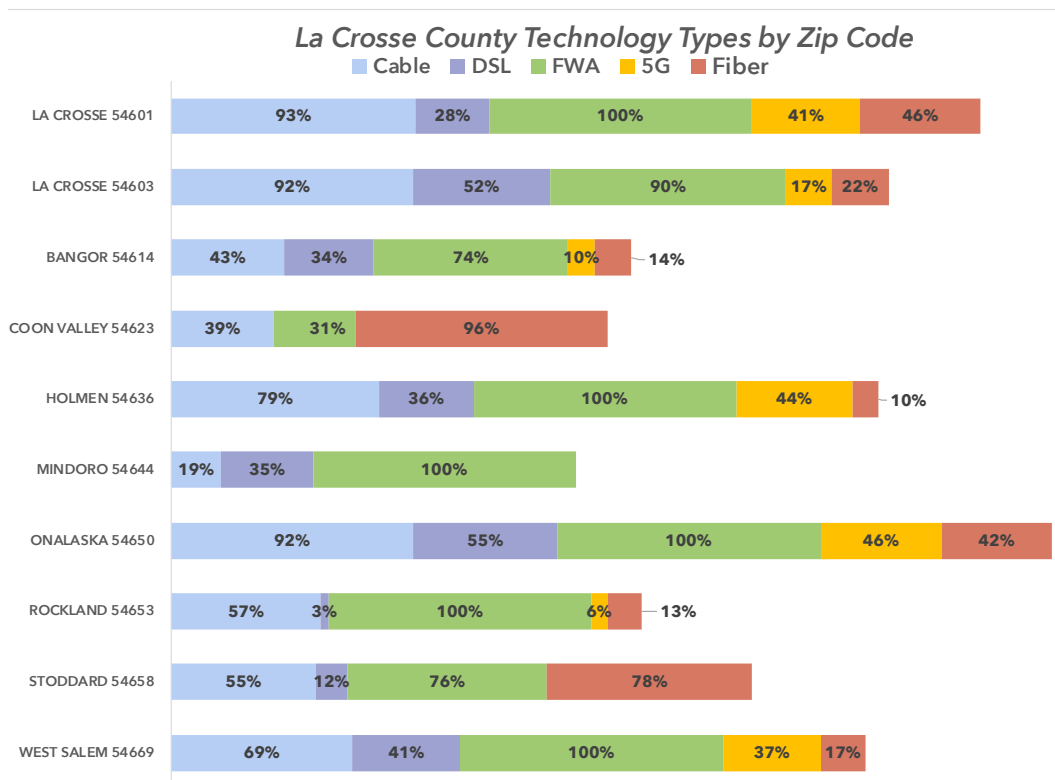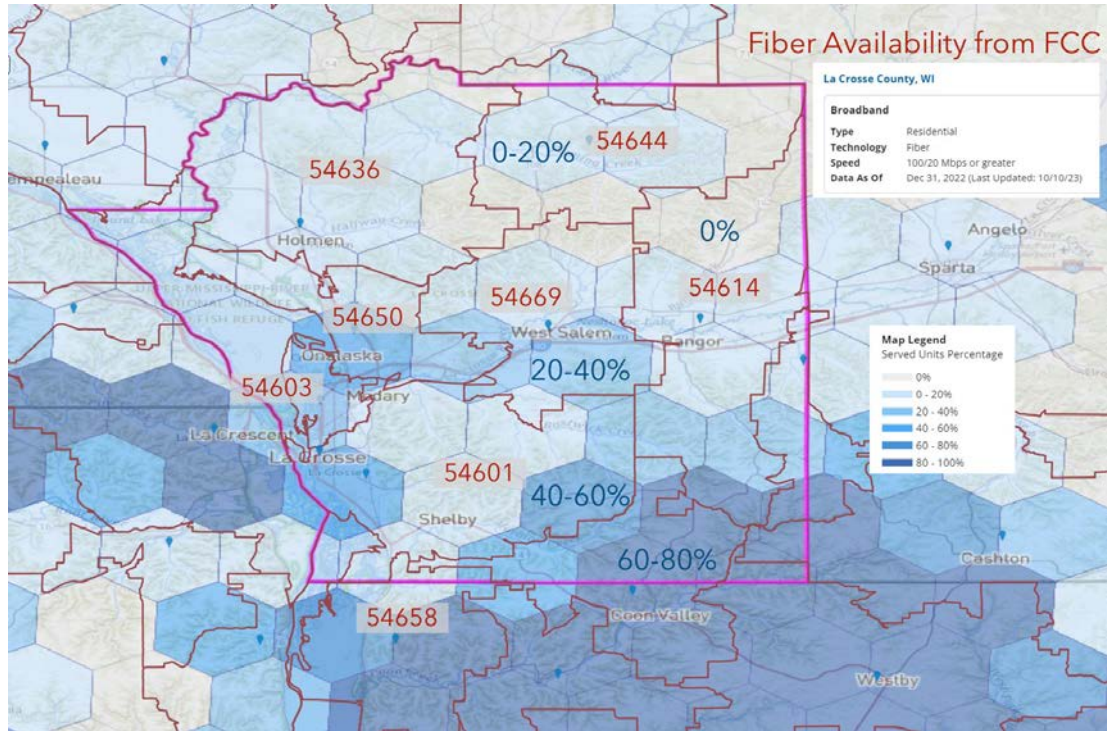
## 2.1 BROADBAND AVAILABILITY IN THE COUNTY

In La Crosse County, cable Internet is the predominant technology available for internet access. There are limited amounts of fiber-based internet service in many areas of the county, with the higher density communities on the west end of the county more likely to have some fiber internet availability.  Fixed wireless service is available in most zip codes, with the majority of that provided by the cellular providers.

We estimate that 15% of La Crosse County residents access the internet only with their smartphone or 5G services. There are 5.5% of residents that only have satellite internet access. Another 5% use DSL services.  Those 25.5% of residents using cell phone, satellite internet, or DSL for internet would be unable to do serious computer-work-from-home jobs. Consumer Reports recently stated that 84% of their members in March 2022, agreed that internet service is "as important as water or electricity." National surveys mirror those numbers with the latest number there being an April 2020 survey showing 80% of all surveyed consumers agreeing.

Pew Reach Center reported in September 2021, that during the pandemic, "connection quality has been important for school, meetings and virtual social encounters. Roughly half of those with a high-speed internet connection at home (48%) have problems with the speed, reliability or quality of their home connection often or sometimes."

### La Crosse County Technology Types by Zip Code

Legend: Cable, DSL, FWA, 5G, Fiber

| Zip Code | Cable | DSL | FWA | 5G | Fiber |
|---|---|---|---|---|---|
| LA CROSSE 54601 | 93% | 28% | 100% | 41% | 46% |
| LA CROSSE 54603 | 92% | 52% | 90% | 17% | 22% |
| BANGOR 54614 | 43% | 34% | 74% | 10% | 14% |
| COON VALLEY 54623 | 39% | 31% | | | 96% |
| HOLMEN 54636 | 79% | 36% | 100% | 44% | 10% |
| MINDORO 54644 | 19% | 35% | 100% | | |
| ONALASKA 54650 | 92% | 55% | 100% | 46% | 42% |
| ROCKLAND 54653 | 57% | 3% | 100% | 6% | 13% |
| STODDARD 54658 | 55% | 12% | 76% | | 78% |
| WEST SALEM 54669 | 69% | 41% | 100% | 37% | 17% |

Fiber availability is over-estimated on the FCC map in a few zip codes but most notably in 54601 and 54603. This is due to Lumen fiber still being represented in the data along with new data from Brightspeed. They are one and the same, not two networks.





Online Estimates of Fiber Broadband Availability in La Crosse County

| Zip Code | Fiber |
|---|---|
| LA CROSSE 54601 | 46% |
| LA CROSSE 54603 | 22% |
| BANGOR 54614 | 14% |
| COON VALLEY 54623 | 96% |
| HOLMEN 54636 | 10% |
| MINDORO 54644 | |
| ONALASKA 54650 | 42% |
| ROCKLAND 54653 | 13% |
| STODDARD 54658 | 78% |
| WEST SALEM 54669 | 17% |

■ Fiber
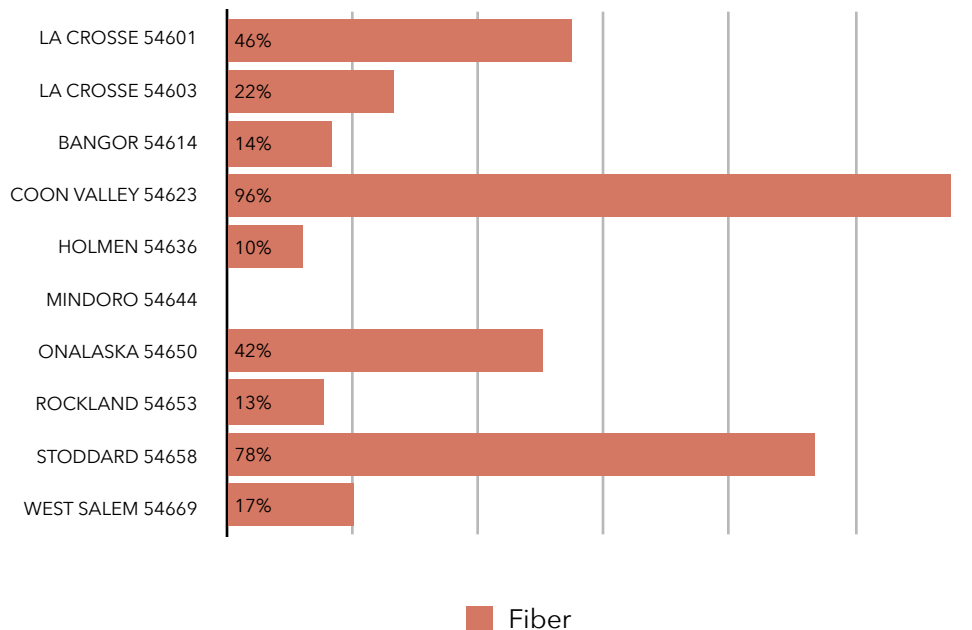
## 2.2 TOWERS IN THE COUNTY

A variety of publicly-owned and privately owned towers are shown here. Tower data is collected from an FCC database, County data, and other public and commercial data sources. The FCC database usually includes most towers that are in a locality, and generally includes all or nearly all cellular towers. Tower ownership data is not always updated in a timely manner in the FCC database.

Towers can be divided approximately into two categories: publicly owned towers and privately owned towers. Publicly owned towers can be owned by local government, by regional authorities, or by the state. In the county, privately owned cellular towers are the most common type of tower, and are generally clustered along major roadways and higher density population areas.
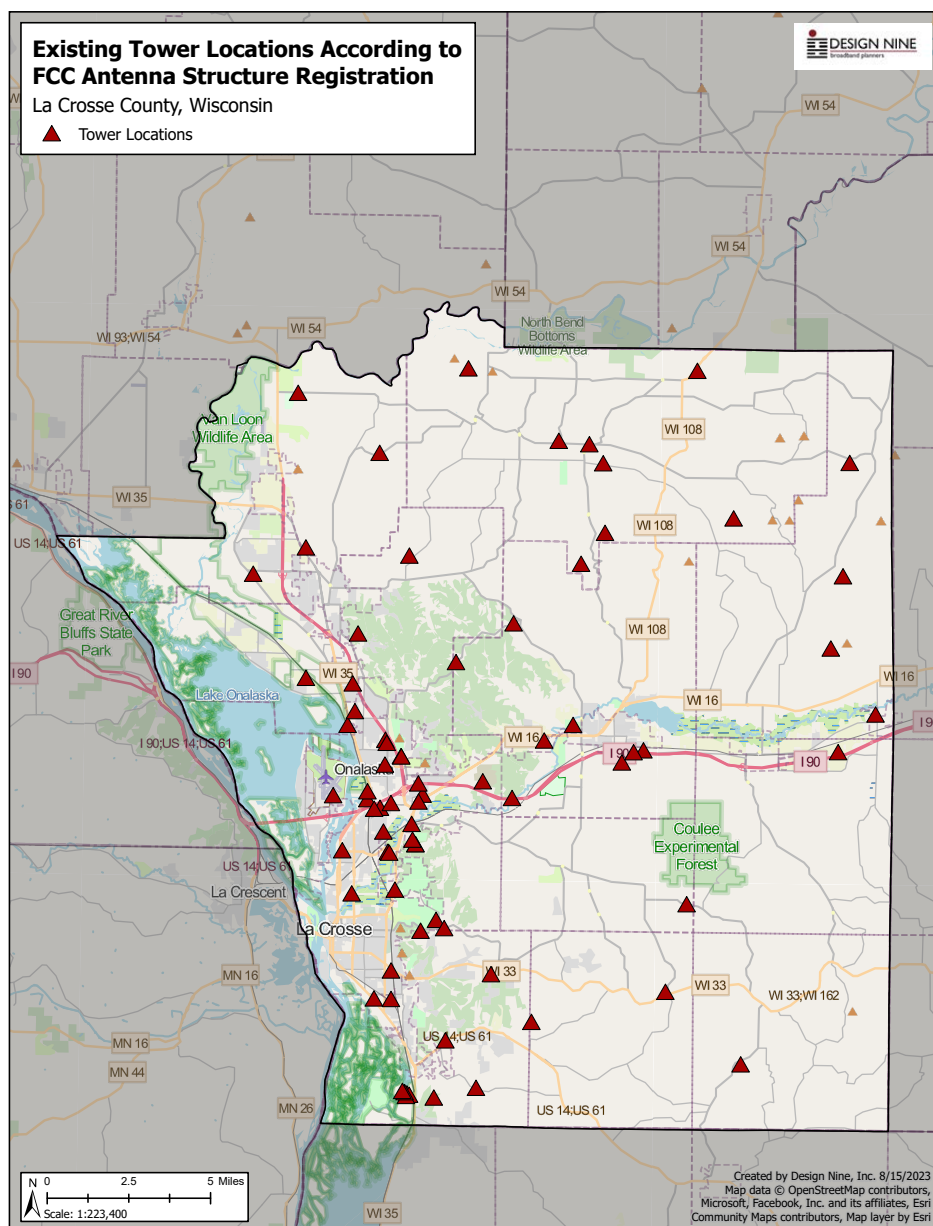
## 2.3 FIBER ROUTES IN THE COUNTY

Fiber route data is compiled from publicly available sources. Some telecom providers do not share their route data. The county has mostly long haul fiber routes. Large areas of the county have no middle mile fiber availability, which creates a challenge for local and regional WISPs (wireless internet providers) who need affordable transport and internet backhaul fees.

Many internet providers and carriers lease fiber strands on a cable owned by a third party. Where the colored lines indicate two or more carriers on the same route, it is very likely that those carriers are all using the same cable (but leasing different strands in that cable). As noted on the previous page, several telecom companies have fiber on the east-west Interstate 90 corridor but do not offer any services in the county.
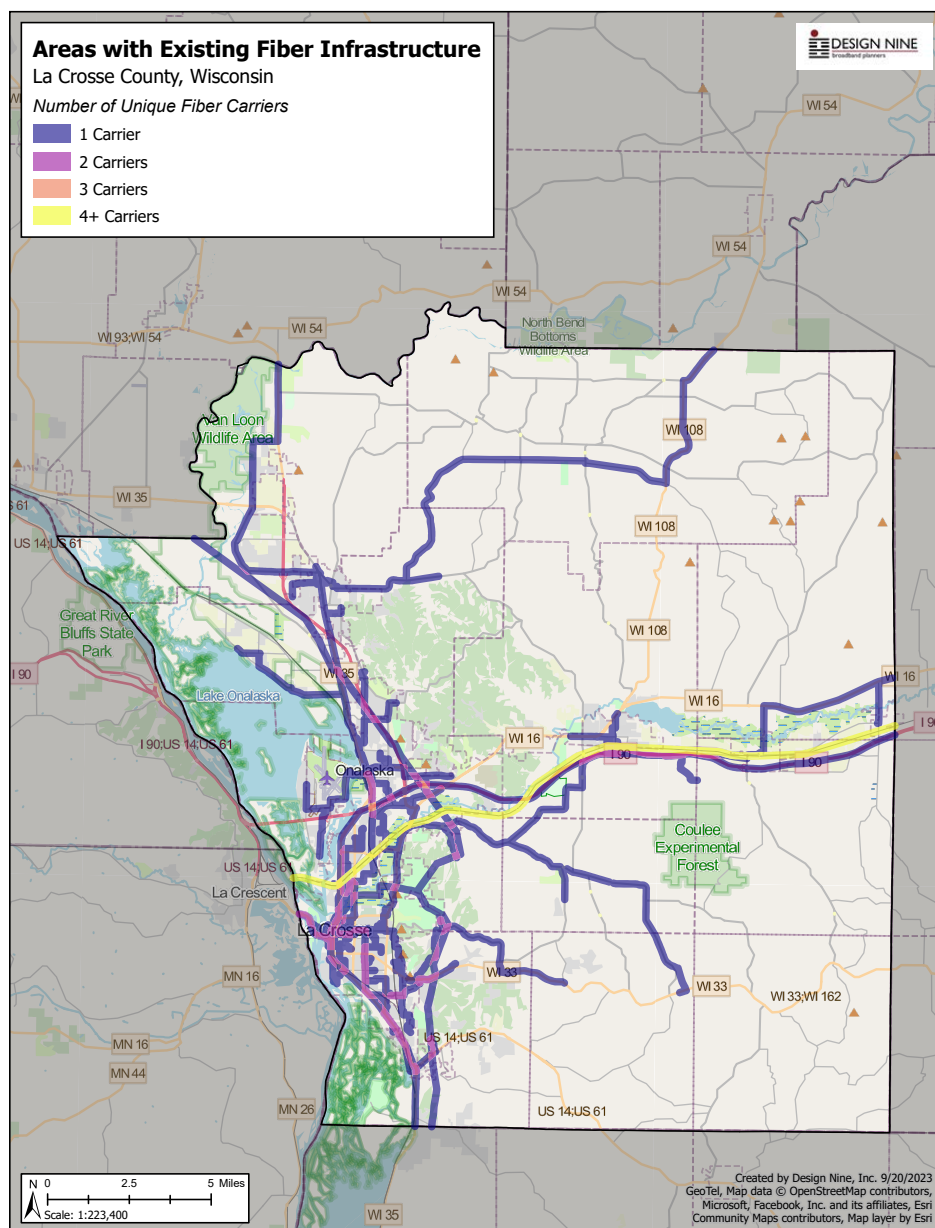
## 2.4 DOWNLOAD AND UPLOAD SPEEDS

The areas on the map on the next page have been identified by the Wisconsin Broadband Office using a variety of data sources. The FCC defines service areas according to the follow designations:

**Unserved** – Less than 10 Megabits down/1 Megabit up

**Underserved** – At least 10 Megabits down/1 Megabit up and less than 25 Megabits down/3 Megabits up

**Served** – Equal to or better than 25 Megabits down/3 Megabits up

Recent Federal grant programs give preference to grant applications that can deliver speeds of 100 Megabits down and 20 Megabits up. Virtually all fiber to the home broadband infrastructure build within the past several years use standard off the shelf network equipment that can deliver 1000 Megabits down (1 Gig) and 1000 Megabits up (1 Gig). 10Gig network equipment costs have decreased sharply, and most new fiber construction will use 10Gig XGS-PON systems that can deliver up to 10Gig down and 10Gig up. Most home and small business computers and laptops cannot make practical use of the highest speeds; ISPs that have implemented 10Gig networks are typically offering 2Gig and 5Gig services.

Fixed wireless access (FWA) uses both licensed and unlicensed frequencies. The newer 4G and 5G wireless cellular services now being marketed can usually exceed the 100/20 threshold, and the cellular Internet service may be either a short term or a long term Internet access solution in some areas of La Crosse county.

Because speed data is often self-reported by the ISPs, there are some issues. The FCC National Broadband Map uses the self-reported data:

- The ISPs typically report their most optimistic internet speeds. In practice, customers may not always get the reported speeds.

- A single customer receiving service in a census block means that the provider can indicate that the entire census block is counted. So if one household receives 25/3 service, all households in that census block are counted as receiving that level of service. This can distort the actual availability of a particular service in a census block.

In 2015 Wisconsin defined an "unserved" area as one that is not served by at least one fixed wireless or wireline provider offering upload and download speeds that are at least 20% of speeds defined by the FCC. "Underserved" areas are defined by the legislature as having fewer than two service providers.

# LA CROSSE COUNTY CONNECTIVITY SUMMARY
## Presented by the Wisconsin Broadband Office

**La Crosse County Internet Speeds**

Includes Wireline and Fixed Wireless Technologies
Download Speed / Upload Speed
(Megabits per Second)

- Body of Water
- 25+ Mbps Down / 3+ Mbps Up
- 10 Mbps Down / 1 Mbps Up
- 3 Mbps Down / .768 Mbps Up
- Less than 3 Mbps Down / .768 Mbps Up
- Unserved for Fixed Internet Access

0   1.5   3   6 Miles
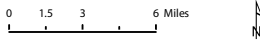
## Broadband Expansion Grants

**Grant recipients impacting La Crosse County**

(Project Name, Fiscal Year of Award, Award Total)

None at this time.
Contact the Wisconsin Broadband Office to find out how to apply for a grant in your community.

## broadband forward! Community

**Certified communities impacting La Crosse County**

Town of Farmington

## telecommuter forward! Community

**Certified communities impacting La Crosse County**

None at this time. Consider certifying your community.
Contact the Wisconsin Broadband Office for more information.



TREMPEALEAU · JACKSON · MONROE · LA CROSSE · Holmen · 53 · 108 · 162 · West Salem · 90 · Rockland · Bangor · Onalaska · 16 · 162 · La Crosse · 35 · 33 · 14 · MINNESOTA · VERNON
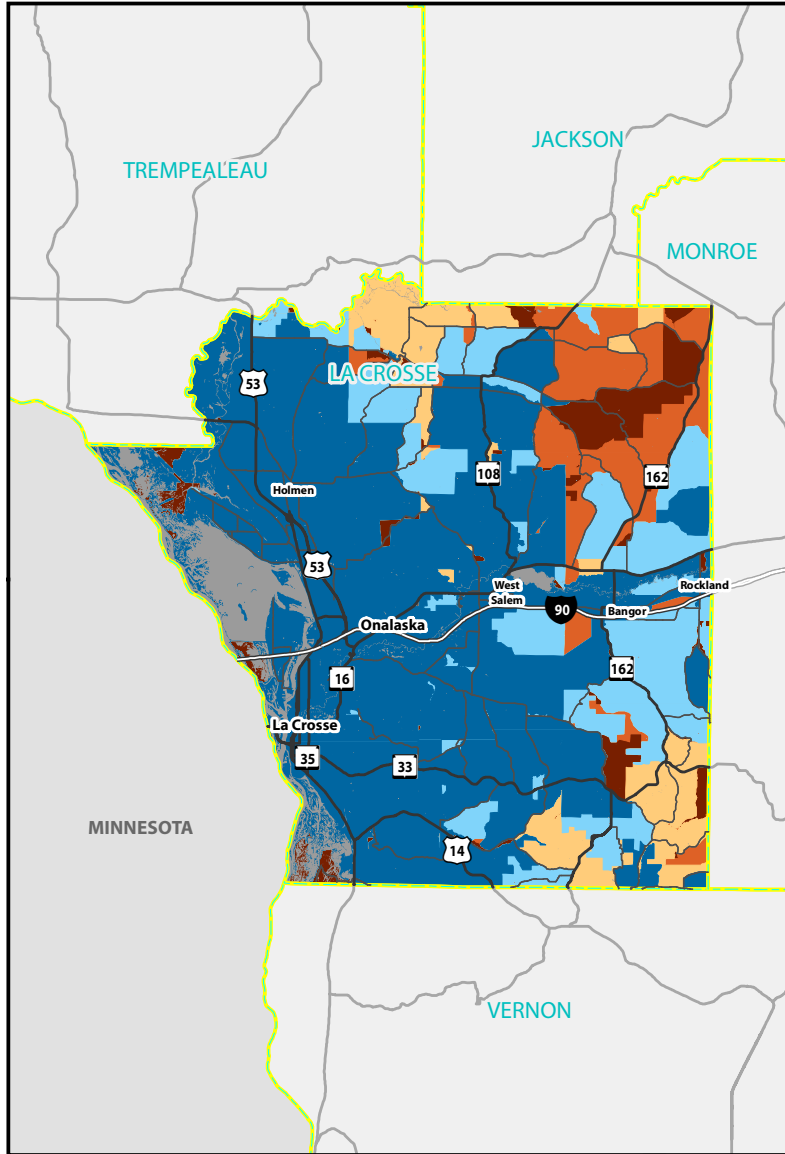
**Disclaimer:** This map displays areas of the state that may have fixed internet access, but does not guarantee that said coverage exists in specific locations. Fixed internet access includes all wireline and fixed wireless services. Please contact any internet provider of interest to verify availability at a specific location. Access data are retrieved from internet providers and the Federal Communications Commission's Form 477. Map includes data as recent as December 31, 2018. For more information, view the Wisconsin Broadband Map at https://maps.psc.wi.gov/apps/WisconsinBroadbandMap/ **Map Drafted:** 7/31/2019

# 2.5 CELLULAR COVERAGE IN THE COUNTY

The following maps show cellular broadband coverage data taken from the FCC's new Broadband Data Collection (BDC) System. Cellular coverage is broken down into categories based on the technology of transmission. The map below shows 4G LTE coverage level and the map on the following page shows the coverage levels for 5G. Additionally the cellular coverage in each area is sorted into two levels of quality. "Outdoor stationary only" represents areas where the given service is only attainable when outside and stationary. This can be considered a less reliable level of cellular coverage. The "In-vehicle and outdoor stationary" is a service level which can be considered more reliable and capable by comparison.
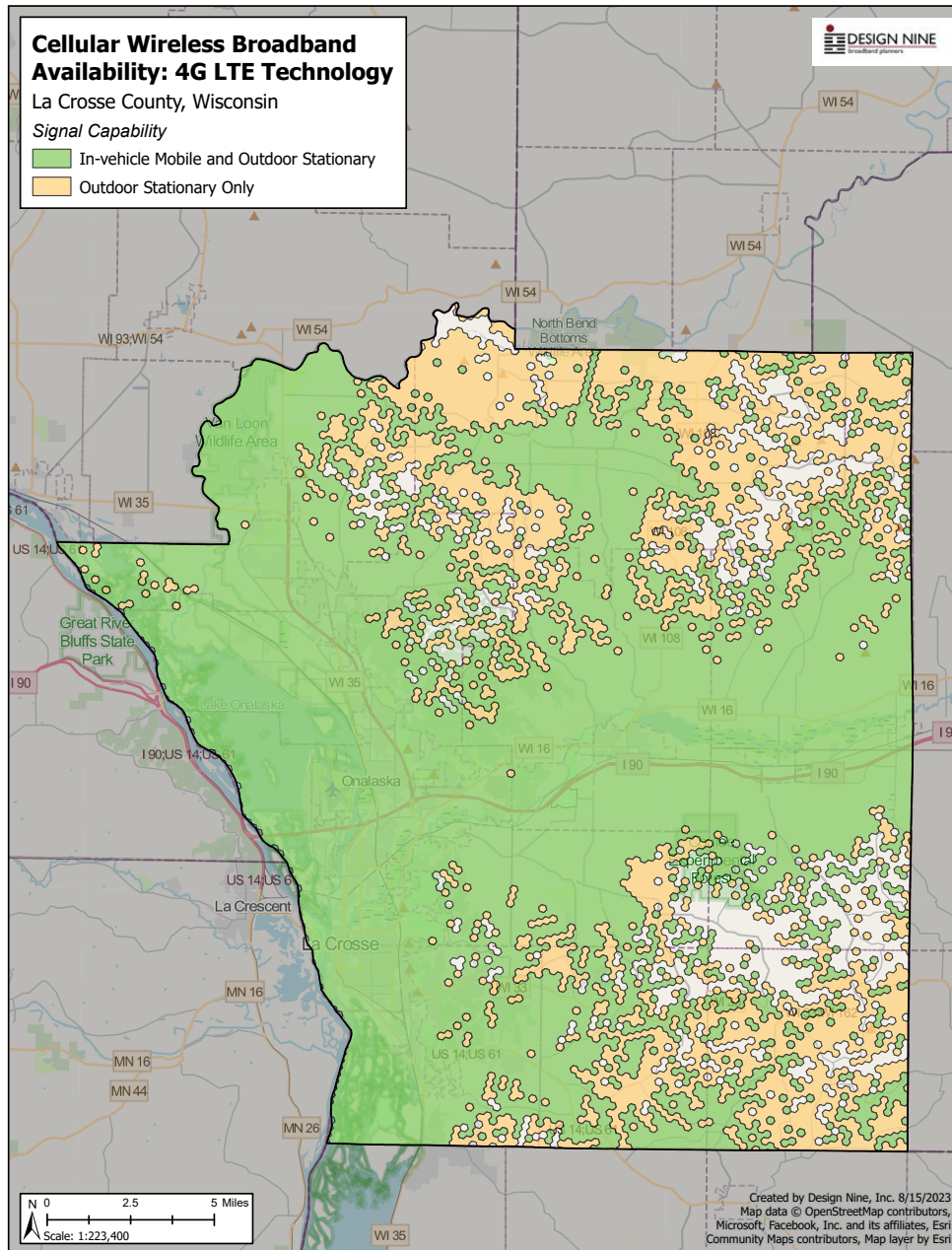
5G cellular wireless technology offers higher upload and download speeds than 4G wireless. A variety of radio frequencies are used by the cellular providers and are advertised as "5G." There is no uniform consistency in speeds offered as 5G.

**Cellular Wireless Broadband Availability: 5G Technology**

La Crosse County, Wisconsin

*Signal Capability*

- In-vehicle Mobile and Outdoor Stationary
- Outdoor Stationary Only

Created by Design Nine, Inc. 8/15/2023
Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map layer by Esri

N 0    2.5    5 Miles

Scale: 1:223,400

## 2.6  BUSINESS BANDWIDTH NEEDS

The table below shows bandwidth consumption for several types of businesses and a projection of the bandwidth needed 5 and 10 years out.  The Covid pandemic has had the effect of dramatically increasing the number of home-based works and has also affected business travel decisions. More and more businesses will invest in high definition (HD) quality business videoconference systems to reduce the need for travel and to maintain high quality communications with a dispersed workforce.   These HD systems require substantial bandwidth; a two-way HD video conference requires 20-25 Mbps during the conference, and a three-way conference requires 30-35 Mbps during the conference.

*Business Bandwidth Needs*

| | LARGE BUSINESS | | SMALL BUSINESS | | HOME BASED WORKER | |
|---|---|---|---|---|---|---|
| **DESCRIPTION** | A larger business with about 50 workstations. | | A small business with 10 to 15 employees, and 7-10 workstations. | | One or two people working from home. | |
| | Concurrent Use | Mbps | Concurrent Use | Mbps | Concurrent Use | Mbps |
| **Telephone** | 20 | 5 | 5 | 1.5 | 2 | 0.5 |
| **Credit Card Validation** | 4 | 4 | 1 | 1 | | 0 |
| **Security System** | 1 | 5 | 1 | 2 | 2 | 2 |
| internet | 50 | 500 | 7 | 10.5 | 2 | 20 |
| **VPN Connection** | 20 | 100 | 5 | 50 | 2 | 5 |
| **Data Backup** | 5 | 7.5 | 1 | 10 | 2 | 10 |
| **Web Hosting** | 1 | 2 | | 0 | | 0 |
| **Workforce Training (online classes)** | 5 | 20 | 1 | 10 | 2 | 10 |
| **HD Video-conferencing** | 20 | 125 | 2 | 20 | 2 | 10 |
| Totals | | **768.5** | | **105.0** | | **57.5** |
| **5 YEARS FROM NOW** | 3-10 Gbps | | 250-500 Mbps | | 100-200 Mbps | |
| **10 YEARS FROM NOW** | 10 + Gbps | | 2-4 Gbps | | 500-750 Mbps | |

As more workers are moved to home-based offices, the business location must provide network access (Virtual Private Network (VPN)) to employees working from home.   These home-based workers will make extensive use of videoconferencing to attend routine office meetings remotely and to enhance communications with co-workers, including videoconferences with other home-based workers in the company.  A VPN network providing remote access to just two or three home-based employees could require 50 Mbps of bandwidth during normal work hours.

## 2.7 RESIDENTIAL BANDWIDTH NEEDS

The table below depicts the bandwidth needed for typical residential services which are available now or will be available in the near future. The Covid pandemic has illustrated the shortcomings of cable internet services, in which the upload and download speeds are highly asymmetric.

For home-based workers, upload speeds need to be equal to or nearly equal to download speeds. Current cable internet systems are not able to deliver symmetric or near symmetric service. Today's shared networks (cable and wireless in particular) rely on the "bursty" nature of traffic to provide services to end users. If all end users were consuming their advertised maximum bandwidth, today's cable and DSL networks would grind to a halt.

*Residential Bandwidth Needs*

| | RESIDENTIAL DAYTIME | | EARLY EVENING | | EVENING & LATE NIGHT | |
|---|---|---|---|---|---|---|
| **DESCRIPTION** | Work from home, K12 distance learning and home schooling, telemedicine, streaming video | | Increased internet use as children arrive home from school and employees from work. | | Peak television and internet use. Multiple TV's are on, phone and computer being used. | |
| | Concurrent Use | Mbps | Concurrent Use | Mbps | Concurrent Use | Mbps |
| **Telephone** | 1 | 0.25 | 1 | 0.25 | 1 | 0.25 |
| **Work From Home** | 1 | 10 | 1 | 10 | 1 | 10 |
| **Streaming TV** | 1 | 4 | 2 | 8 | 2 | 8 |
| **Security System** | 1 | 2 | 1 | 2 | 1 | 2 |
| **internet** | 1 | 1.5 | 1 | 1.5 | 2 | 3 |
| **Online Gaming** | 0 | 0.25 | 1 | 5 | 2 | 10 |
| **VPN Connection** | 0 | 0 | 1 | 2 | 1 | 2 |
| **Data Backup** | | 0 | 1 | 5 | 1 | 5 |
| **Telehealth** | 1 | 4 | 1 | 4 | 1 | 4 |
| **Distance Learning/ home schooling** | 1-2 | 10 | 1-2 | 10 | 1 | 10 |
| **Videoconferencing** | 1-2 | 10 | 1 | 10 | 0 | 0 |
| **Average needed bandwidth** | | **20-30** | | **25-35** | | **20-35** |
| **Five years from now** | 50-75 Mbps | | 60-90 Mbps | | 50-100 Mbps | |
| **Ten years from now** | 150-300 Mbps | | 200-350 Mbps | | 175-250 Mbps | |

Existing cable modem network users are overwhelming the digital cable networks that were upgraded as little as three or four years ago, and the firms have had to artificially reduce the bandwidth available for certain kinds of high bandwidth services (e.g. peer to peer file sharing). Some cable providers have even run into capacity issues with the TV portion of their networks, and some consumers have observed that some HD TV channels have been so highly compressed that picture quality has been noticeably degraded.

## 2.8 SERVICE PROVIDER ANALYSIS

This information provides pricing data and services available from providers in La Crosse county. Prices, availability and promotional offers change frequently, sometimes weekly and sometimes vary depending on street address. This is a snapshot of prices from the middle of October 2023. The abbreviation, "FWA," as used stands for fixed wireless access. Unless previously discovered in a nearby by study, pricing for services offered to less than 5% residents in a zip code is not shown. Exceptions are noted.

### Summary of Service Provider Data - La Crosse County, Wisconsin

| | Least Expensive internet Only Service | Least Expensive internet Only Service Meeting 25/3 | Least Expensive Triple Pay Package Meeting 25/3 |
|---|---|---|---|
| **Brightspeed DSL** | $50 | N/A | N/A |
| **MediaCom Cable*** | $49.99 | $49.99 | $149.47 |
| **Spectrum*** | $84.99 | $84.99 | $139.97 |
| **Coon Valley Farmers Tel Coop Fiber** | $65 | $65 | $145.95 |
| **TDS (Bend Broadband) Fiber** | $49.99 | $49.99 | $183.90 |
| **Brightspeed Fiber** | $60 | $60 | N/A |
| **Lynxx Networks Fiber** | $59.95 | $59.95 | $188.65 |
| **Bug Tussel FWA** | $49.99 | $69.99 | ` |
| **HBC FWA** | $60 | | |
| **NextLink FWA** | $64.95 | $64.95 | N/A |
| **EarthLink 5G** | $50 | $50 | N/A |
| **T-Mobile 5G internet** | $64.99 | $64.99 | N/A |
| **HughesNet** | $69.99 | $99.99 | N/A |
| **Viasat** | $120 | $120 | N/A |
| **Starlink** | $120 | $120 | N/A |

*Mediacom has special prices If your children qualify for school lunch program or if your family is eligible for the Affordable Connectivity Program. See pricing section for detailed information.

* The lower priced Spectrum 300/10 tier is not available in all Spectrum markets in La Crosse County.

# 3 BROADBAND SURVEY RESULTS

During the fall of 2023, a broadband survey was conducted in La Crosse County, Wisconsin as part of a county-wide study in broadband needs. The online (Web) version of the survey was publicized on social media and the County web site. A Postal Service mailing to all households in the county was also conducted. Residents were encouraged to complete the survey online or fill out and return the paper version by surface mail. Businesses were encouraged to complete a separate business-focused survey, and the results of that are included later in this report.

A total of 3,541 responses were collected in the residential survey which represents approximately 7.1% of the households in the county. Note that because of rounding, not all percentages sum exactly to 100%.

Some of the key findings from the results are listed below.

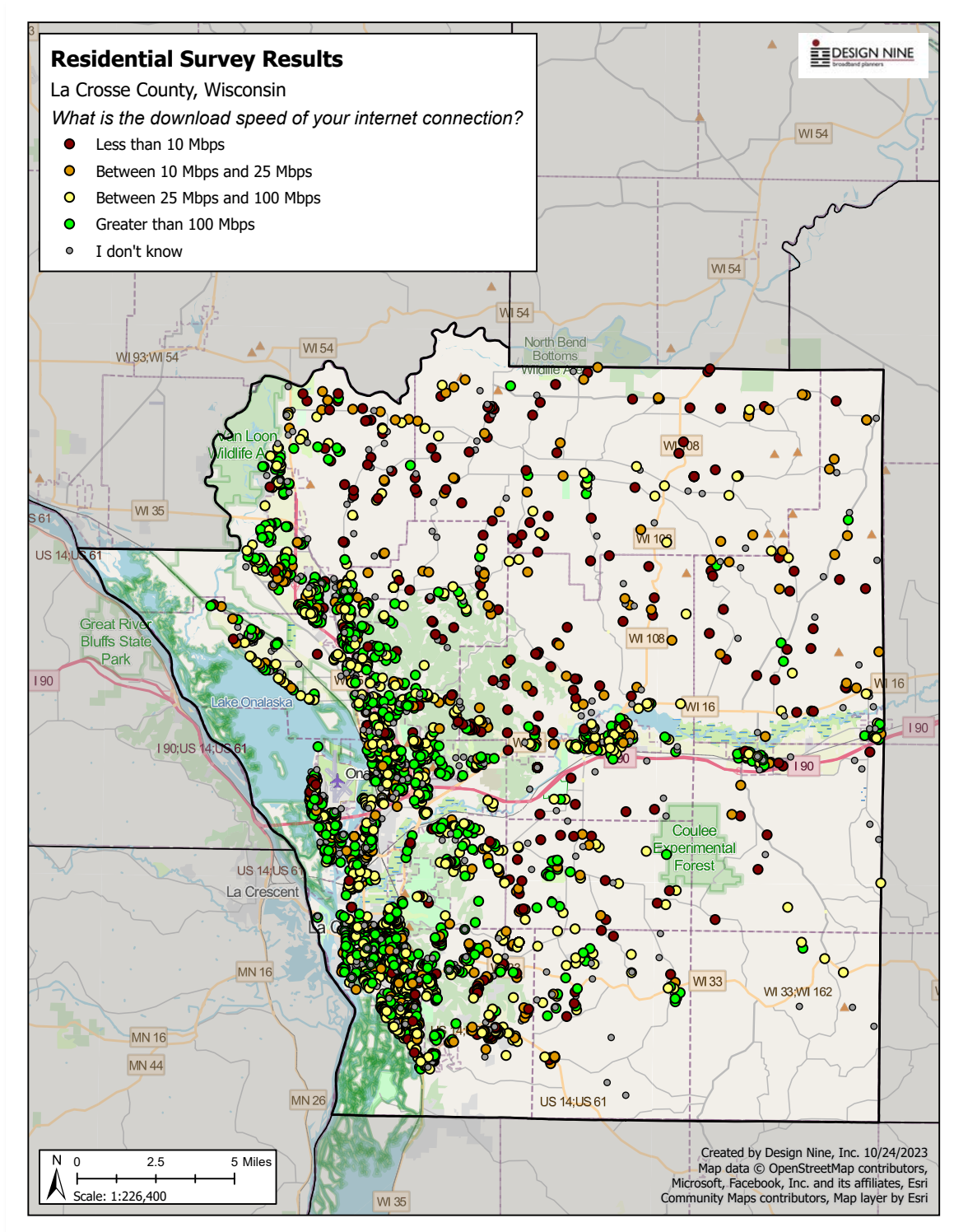| | |
|---|---|
| 61% of respondents are interested in faster and more reliable internet service | 28% of residents are "dissatisfied" or "very dissatisfied" with current internet speeds |
| 88% of respondents said that they believe the County government should help facilitate better broadband | 51% of residents have 7 or more internet-connected devices in their home |
| 38% of respondents have no other options for their internet service | 34% indicate that availability of broadband internet is affecting where they choose to live |

# 3.1 RESIDENTIAL SURVEY RESULTS

The map below shows the geographic distribution of responses to the residential survey, coded according to the *download speed* of their internet connection (Question 9). Only 55% of residents report having a download speed that meets the FCC of "adequate" service.



**Residential Survey Results**

La Crosse County, Wisconsin

*What is the download speed of your internet connection?*
- Less than 10 Mbps
- Between 10 Mbps and 25 Mbps
- Between 25 Mbps and 100 Mbps
- Greater than 100 Mbps
- I don't know

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The map below shows the geographic distribution of responses to the residential survey, coded according to the *upload speed* of their internet connection (Question 10). 58% of residents have Internet service that meets the FCC definition of adequate broadband service (>3 Meg up).



**Residential Survey Results**
La Crosse County, Wisconsin
*What is the upload speed of your internet connection?*
- ● Less than 1 Mbps
- ● Between 1 Mbps and 3 Mbps
- ● Between 3 Mbps and 20 Mbps
- ● Between 20 Mbps and 100 Mbps
- ● Greater than 100 Mbps
- ● I don't know

Created by Design Nine, Inc. 10/24/2023
Map data © OpenStreetMap contributors,
Microsoft, Facebook, Inc. and its affiliates, Esri
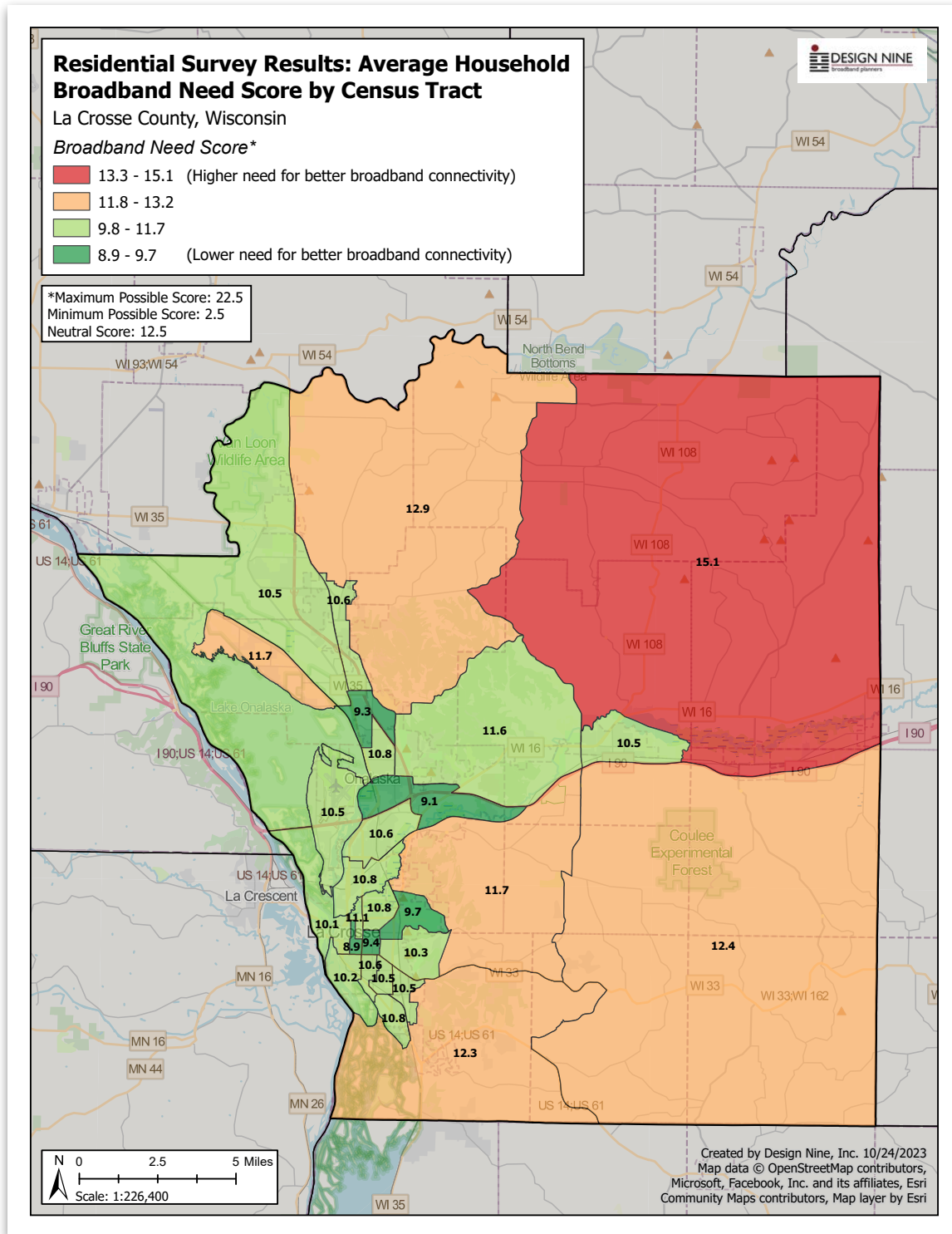Community Maps contributors, Map layer by Esri

By identifying a selection of survey questions which have a strong connection with overall access to adequate internet service, we can qualify every individual survey response based on its level of need for better broadband. This is called the "broadband need" score.

Seven questions from the survey are taken and their entire range of possible answers are quantified and multiplied by a weighting factor. These adjusted values are then added together to create a final score. *The broadband need score exists on a relative scale where higher scores equate to a higher level of need relative to other survey responses.* In other-words, a lower score is better and a high scoring household represents one that is relatively more in need of broadband relief. The map below shows the location of every survey response coded to their respective broadband need score. Rural areas of the county clearly show a higher "need better broadband" score.
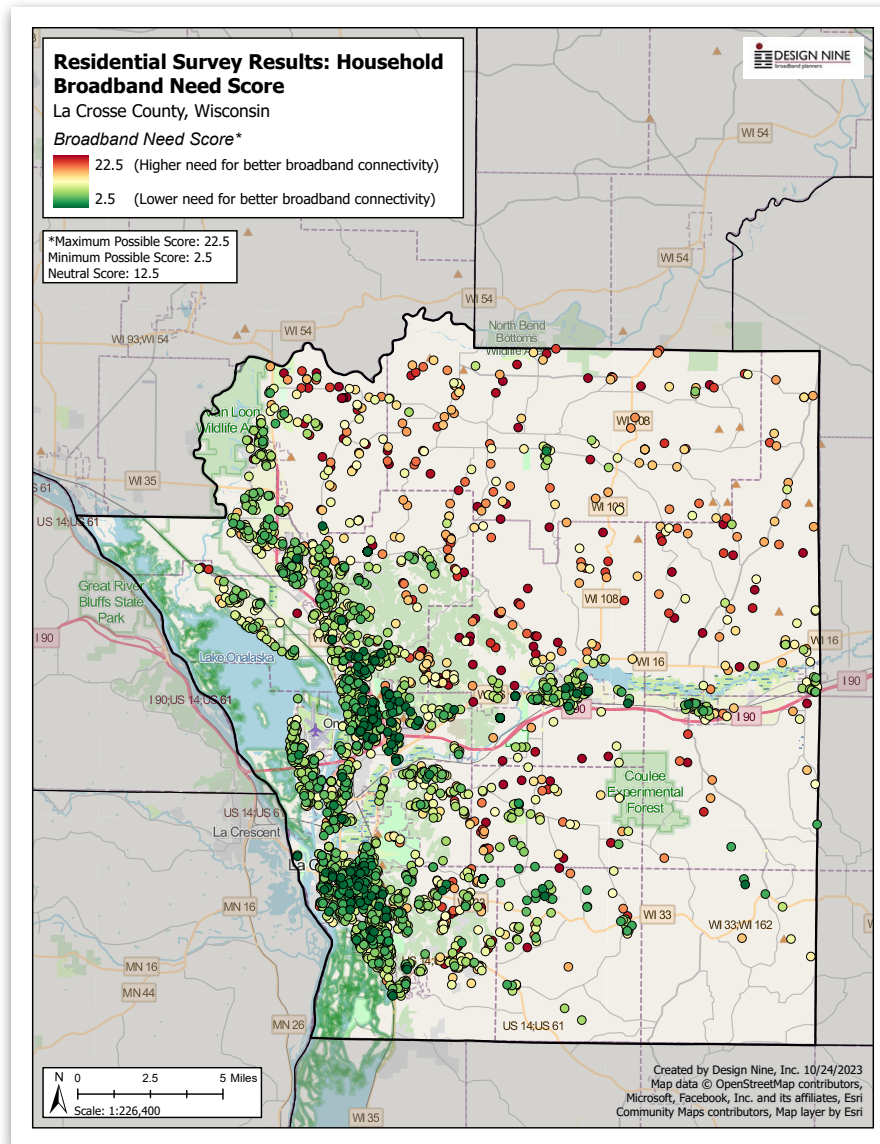
The map below shows the average broadband need score of all survey points within a respective census tract area. The higher scores indicate a higher need for better broadband. This correlates well with the lower upload and download speeds reported in the previous section—rural areas of the county need better service.



**Residential Survey Results: Average Household Broadband Need Score by Census Tract**
La Crosse County, Wisconsin
*Broadband Need Score\**

- 13.3 - 15.1 (Higher need for better broadband connectivity)
- 11.8 - 13.2
- 9.8 - 11.7
- 8.9 - 9.7 (Lower need for better broadband connectivity)

*Maximum Possible Score: 22.5
Minimum Possible Score: 2.5
Neutral Score: 12.5

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## 3.2 BUSINESS SURVEY RESULTS

During the fall of 2023, a broadband business survey was conducted in La Crosse County, Wisconsin as part of a county wide study in broadband needs. The online (Web) version of the survey was publicized on social media. Businesses were encouraged to complete the survey online or fill out and return the paper version by surface mail. A total of 40 responses were were collected from businesses in La Crosse County. Not all responders answered every question. Some key findings from the results are listed below.

63% of business respondents want better internet access

89% of respondents said that they believe the County government should help facilitate better broadband

96% indicated that the internet is important to the success of their business over the next five years

Only 38% of businesses are "satisfied" or "very satisfied" with the speed of their current internet service

46% of the businesses that responded are home-based

83% of businesses that responded need employees to be able to work from home

Home-based workers and businesses need affordable internet access

# 4 GRANT OPPORTUNITIES

## 4.1 WISCONSIN FUNDING OPPORTUNITIES

The Wisconsin legislature has been evaluating legislation to improve broadband access in the state.  The bills are designed to make it easier and less expensive to build broadband infrastructure in underserved parts of the state.  Wisconsin has created a state level Broadband Office (part of the state Public Service Commission) that is coordinating and managing both state and Federal funding programs. Since 2019,  the the PSC and the Broadband Office have awarded more than $198 million in broadband funds to Wisconsin towns, counties, and ISPs.  In 2023, twenty-four projects received almost $17 million in awards.  The largest grant was for $2.5 million, and many of the grants averaged about half a million or less.

Most awards required some match; awards to ISPs typically required much higher match amounts than awards to local governments. Only one award has been made in La Crosse county; about $89,000 was provided to CenturyLink (Lumen) in 2020 for a very small project in Boma Coulee.

The most significant opportunity for La Crosse County is the **BEAD (Broadband Equity, Access, and Deployment)** program. Just over $1 billion has been allocated to Wisconsin, and those funds will be administered by the Wisconsin Broadband Office (WBO).  The WBO has set several priorities for making awards:

- Highest priority: unserved households and businesses lacking 25/3 Mbps.
- Eligible: underserved households and businesses lacking 100/20 Mbps.
- Also eligible: community anchor institutions lacking 1 Gbps, and other digital equity and adoption activities.

The WBO has established a Five Year Action plan to the Federal government:

- Through December of 2024, the BEAD competitive sub-grant review will be underway after approval of initial proposals.
- Through December of 2025, competitive sub-grants will be awarded to successful applicants. Final proposals are due 365 days after the initial proposal has been approved.
- Beginning in 2026, ongoing implementation of approved awards will take place, and all projects must be completed within four years of award notification.

La Crosse County should plan to submit an Initial Proposal no later than December of 2024.

Using **Federal Capital Projects Broadband Infrastructure Funds**, the PSC expects to award up to $42 million in broadband funds.  The deadline for applications was in November, 2023.  There is likely to be a similar opportunity in 2024 to apply for funds.

The **Wisconsin Digital Equity** program has nearly $1 million allocated for planning digital equity projects, and the WBO expects to award $24 to $30 million over a five year period.  Meetings with healthcare officials and library officials identified significant digital literacy and equity issues for rural residents of the county and the elderly.  La Crosse should be able to qualify for a grant for digital literacy programs. The program will be accepting applications through the end of 2024.

La Crosse County should maintain regular communications with the Wisconsin Broadband Office to pursue every possible funding opportunity. The PSC Broadband Web site has an extensive array of materials, webinars, and information on how to apply for the various grants ([https://psc.wi.gov/Pages/ServiceType/Broadband.aspx](https://psc.wi.gov/Pages/ServiceType/Broadband.aspx)).

## 4.3 USDA RECONNECT PROGRAM

The ReConnect program is a funding program managed by the USDA Rural Development Office. This program is sometimes called the USDA e-Connectivity pilot program. Grant applications can be a combination of 100% grant, 50% grant/50% loan, or 100% loan. The amount and types of funds available for assistance can be found in the Notice of Funding Opportunity published on February 21, 2024, and proposals are due on April 22nd, 2024. A wide variety of entities can apply, including non-profits, coops, and state and local governments.

As much as $200 million will be available for loans, with another $100 million allocated for loan/grant combinations. As much as $150 million has been allocated for 100% grants. A total of $150 million in grants without a match has been allocated for projects in tribal and socially vulnerable communities. More information is available here: (reconnect.usda.gov). A mapping tool is available on the Web site to show areas that are eligible. To qualify as an eligible area, households must have less than a minimum of 10 Megabit down/1 Megabit up broadband service.

ReConnect grants can be excellent opportunities for deploying improved broadband service in rural areas, but the grant application typically requires more work to prepare than some other grant opportunities. If La Crosse County is interested in applying for a 2025 ReConnect grant, work on the application should begin no later than mid-fall of 2024.

# 5 TECHNOLOGY OPTIONS AND FIBER STUDIES

## 5.1 OVERVIEW OF THE TECHNOLOGY

In La Crosse County, both fiber and wireless technologies and systems are going to be important to meet the goal of improving access to broadband. In some areas of the county, fixed point wireless will be an important strategy for improved internet access for businesses and residents.

The table below summarizes how fiber and wireless can work together in a variety of ways.

| Distribution Type | Access Type | Capacity |
|---|---|---|
| Fiber | Fiber | Any amount of bandwidth needed, with standard connection typically a Gigabit (1,000 Megabits). |
| Wireless | Wireless | Typical customer connection starting at 5 to 10 Megabits, can be higher, with 50 Meg connections common. More dependent on the capacity of the wireless Distribution link. |
| Wireless | Fiber | Users can have fiber Gigabit connections locally, but total throughput dependent upon the capacity of the wireless link, which can be up to a Gigabit, depending on distance and budget. |
| Fiber | Wireless | Typical customer connection starting at 5 to 10 Megabits, can be higher, with 50 Meg connections common. |
| Fiber | Coax, DSL | Providers can use a fiber middle mile backbone and distribute improved broadband internet services using copper-based coax (cable internet) or DSL (copper phone lines). |

# 5.2 OVERVIEW OF THE FIBER STUDIES

This section describes a middle mile study and three fiber to the home studies in rural areas of the county, where service is very poor, based on the broadband survey responses.

These studies are not intended as specific recommendations. Instead, these provide examples of where middle mile and last mile fiber could be useful in the county.  There are many other possible middle mile routes, and many other rural neighborhoods and communities that would benefit from fiber internet service.   These fiber studies are intended to help demonstrate the costs of fiber projects, and the tables associated with each of the projects breaks out costs by labor, materials, engineering, and other items and activities that affect the cost of deployment of fiber to the home.

These locations were selected based on data from the residential broadband survey.  Responses to the survey from these areas indicated that these areas are underserved and could qualify for Federal funding to develop fiber to the home and fiber to the business in these three areas.
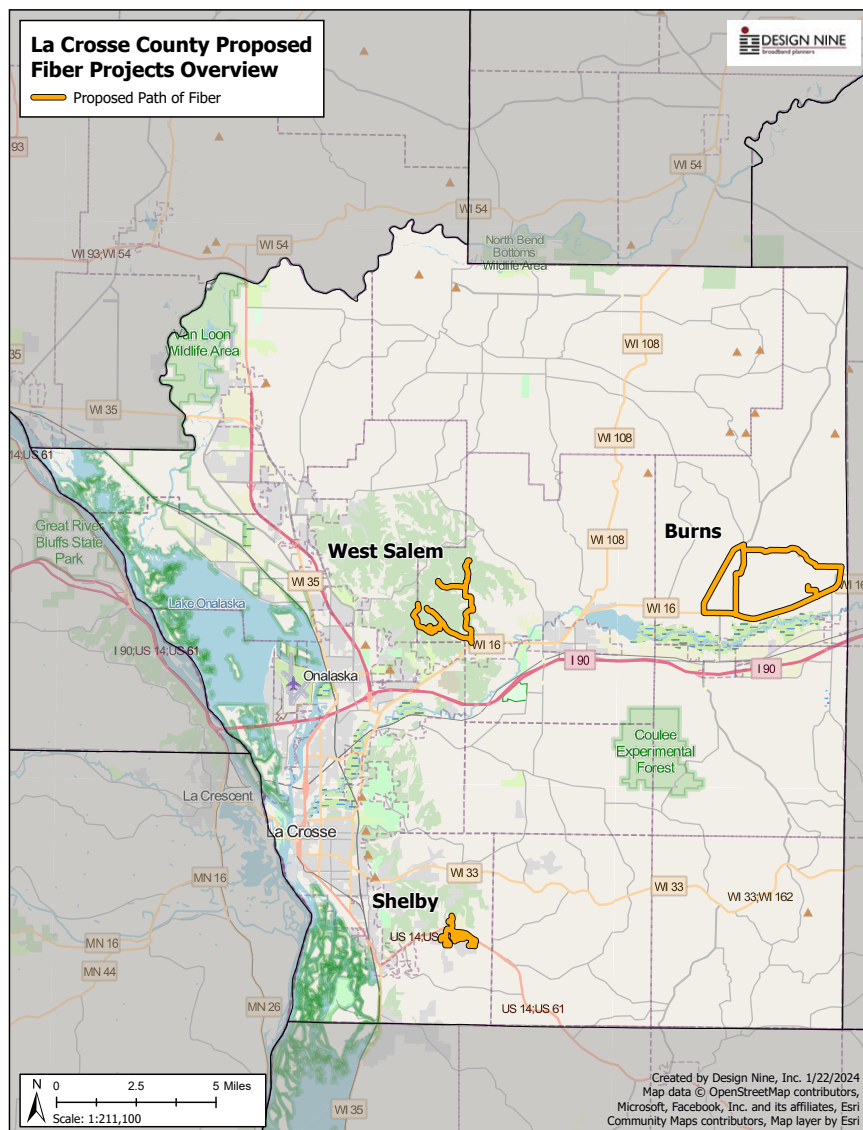
# 5.3 BURNS FIBER STUDY

This fiber to the home study provides insight into the cost of delivering fiber internet service to rural neighborhoods. Broadband survey data was used to identify that this is an area with poor internet service. The cost of this project is estimated at about $2.2 million.
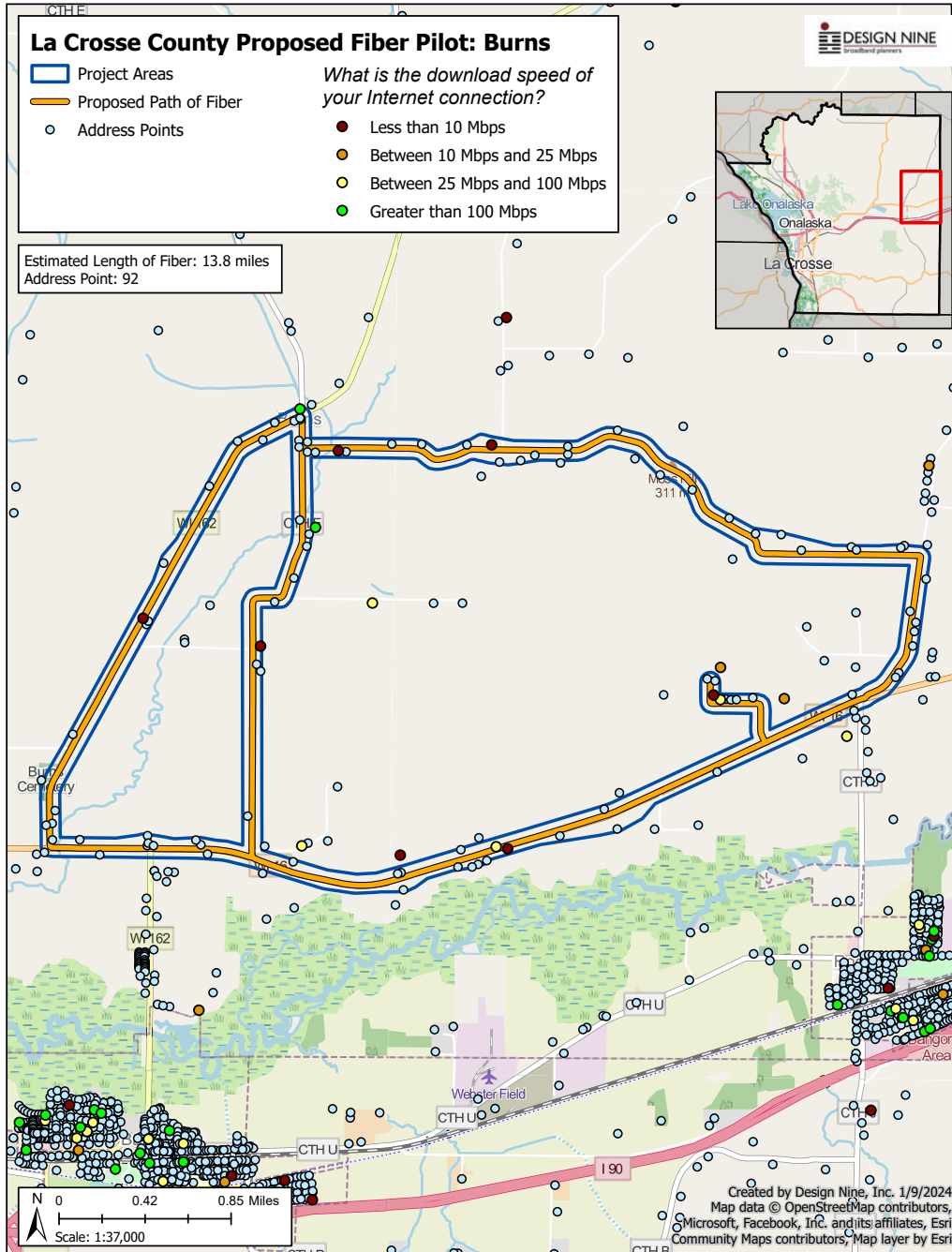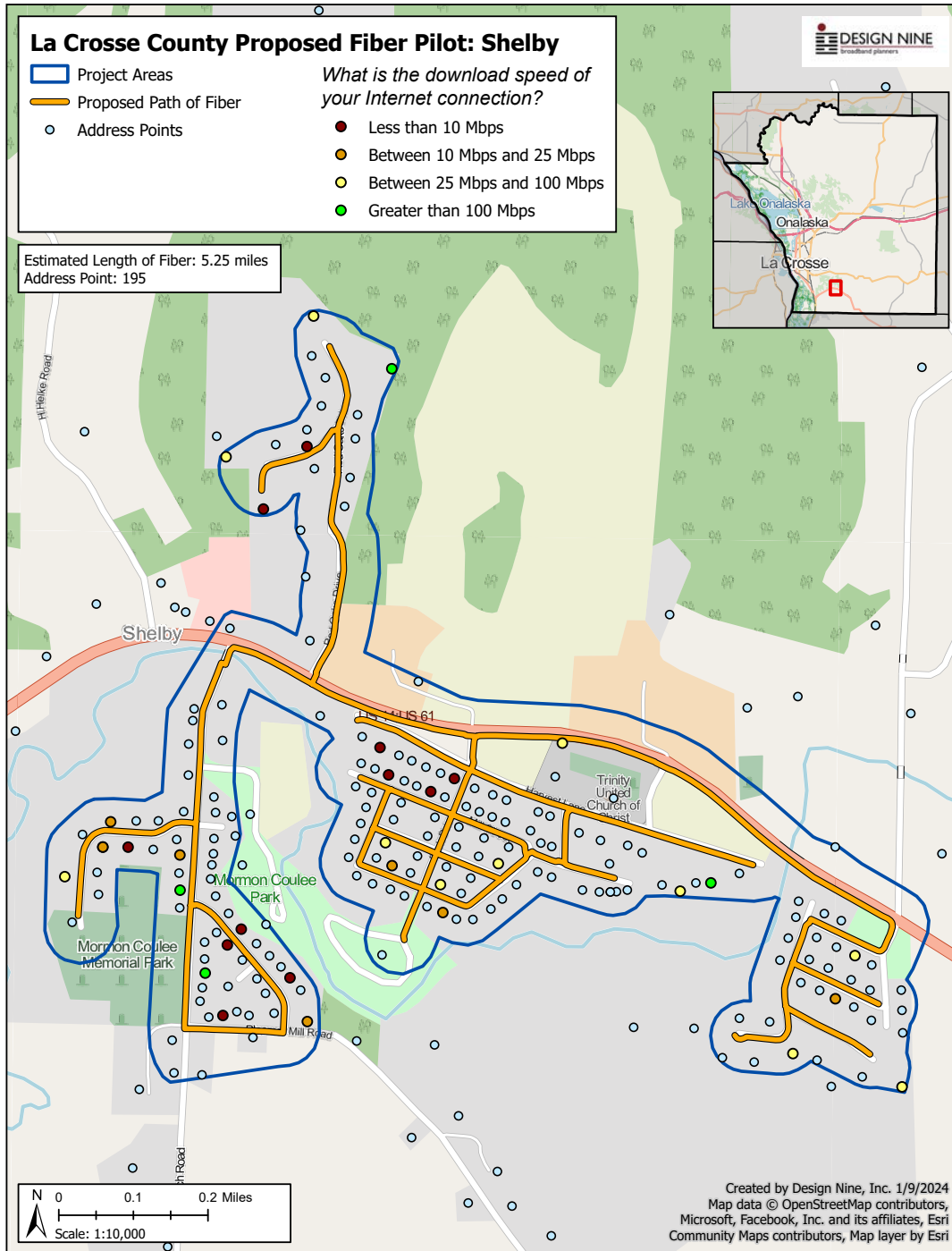
# 5.4  WEST SALEM FIBER STUDY

This fiber to the home study provides insight into the cost of delivering fiber internet service to rural neighborhoods.  Broadband survey data was used to identify that this is an area with poor internet service. The cost of this project is estimated at about $1.4 million.
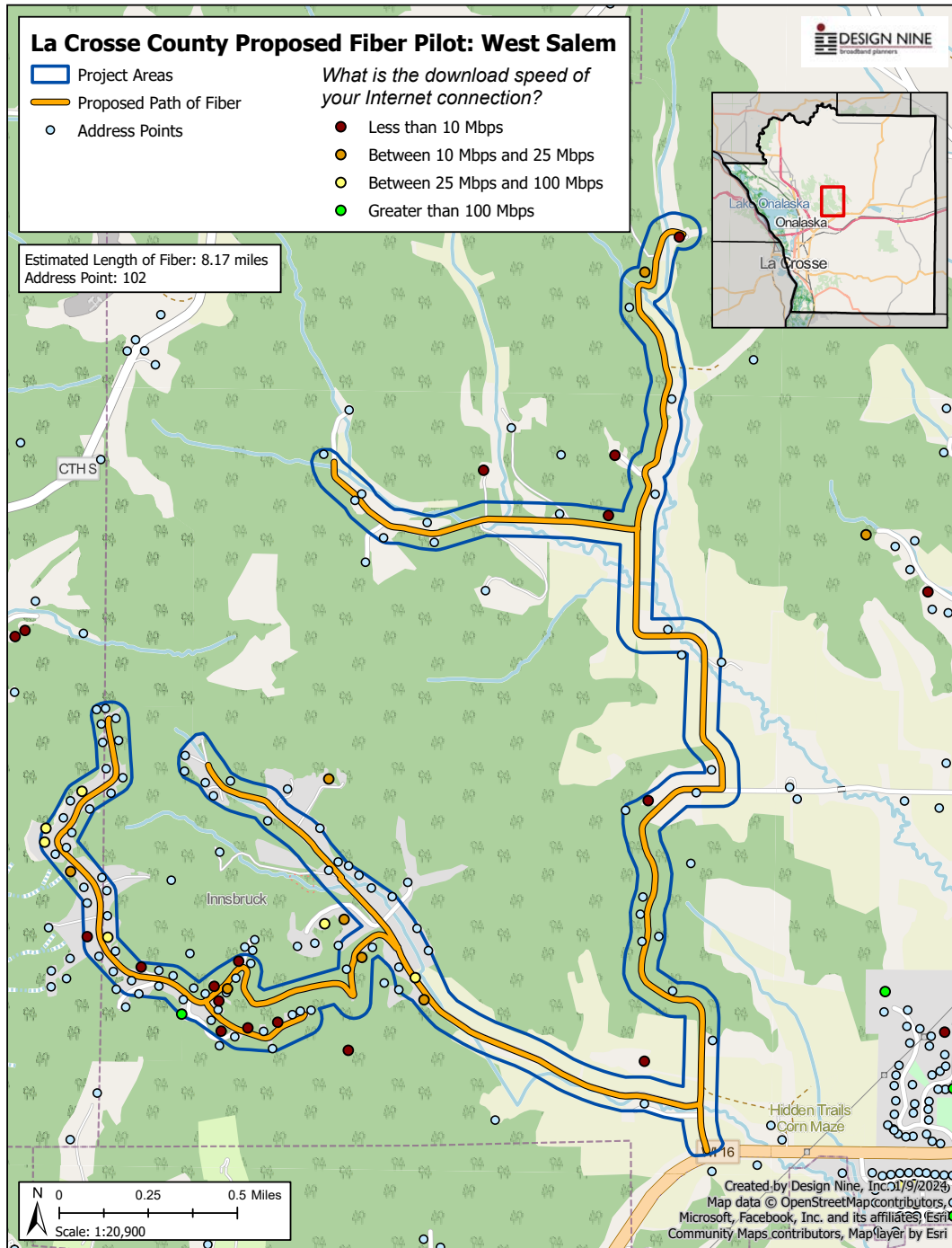
# 5.5 SHELBY FIBER STUDY

Broadband survey data was used to identify that this small community has poor internet service. The cost of this project is estimated at about $1 million.



La Crosse County Proposed Fiber Pilot: Shelby

DESIGN NINE
broadband planners

Project Areas
Proposed Path of Fiber
Address Points

*What is the download speed of your Internet connection?*

● Less than 10 Mbps
● Between 10 Mbps and 25 Mbps
○ Between 25 Mbps and 100 Mbps
● Greater than 100 Mbps

Estimated Length of Fiber: 5.25 miles
Address Point: 195

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Map data © OpenStreetMap contributors,
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N   0         0.1         0.2 Miles
Scale: 1:10,000

# 5.6 MIDDLE MILE STUDY

This study of a possible set of middle mile routes in La Crosse county provides an estimate of costs associated with such a network. This middle mile network could:

- Be used by ISPs to accelerate the availability of fiber to the home in rural areas of the county.
- Accelerate the deployment of more fixed wireless access towers (FWA) in rural areas of the county. These towers, connected by the middle mile fiber, could offer higher speed internet services than towers connected by microwave links.

The map below shows a proposed middle mile network that also connects the three fiber studies described in the earlier sections of this chapter. Note that this middle mile route is just one of several options. ISPs should be asked for comments, as they may have some data and information about where rural customer interest is high. This map shows the middle mile route overlaid on survey data. The routes try to cover areas where some of the poorest service was reported. The total estimated cost of these routes is about $17 million, but the entire network could be constructed in portions over several years.
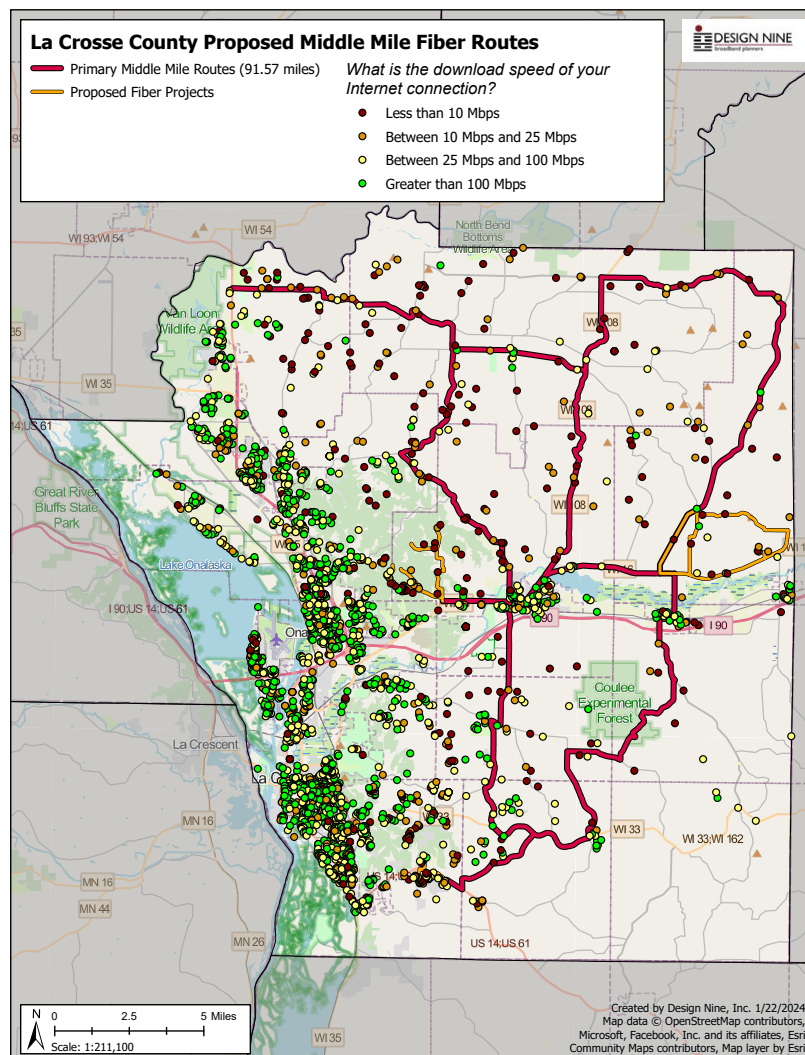
The map below analyzes the number of addresses that could be reached by fiber within a half mile and one mile of the middle mile route.