

Bug Tussel & Fond du Lac County Partnership

BUG TUSSEL WAS AWARDED A BROADBAND EXPANSION GRANT FOR A PROJECT IN THE TOWN OF CALUMET!

As of July 2022, Bug Tussel was awarded a grant to expand its fiber optic network in Fond du Lac County, providing fiber to the home for a portion of the Town of Calumet. More details coming in future reports.

THE PARTNERSHIP

Bug Tussel Wireless is proud to be partnered with Fond du Lac County through a bond that was issued in December 2021. The project will primarily take place during the fiscal year 2022, with Bug Tussel's goal to have towers completed and online by January of 2023 and fiber connections to follow.

THE PROJECT

The project, **ROAD to Digital Equality: Fond du Lac County** is designed to equip Fond du Lac County with a fiberoptic backbone network and wireless internet access through rural areas in Fond du Lac County. Bug Tussel will install 26 towers and 165.87 miles of fiber within 1-3 years, with options for expansion available as agreed upon by Bug Tussel and the county.

BUG TUSSEL UNIVERSITY

Get free one-on-one Tech Help with Bug Tussel University on Tuesday, August 23!

Drop in any time between 9:00 a.m. and 12:00 p.m. at the Fond Du Lac Senior Center, located at 151 East 1st Street, Fond Du Lac, WI 54935. Registration is recommended. Sign up by calling 920-940-0158 or scanning the QR code with your smartphone:

<https://www.eventbrite.com/e/tech-help-fond-du-lac-senior-center-tickets-383109610157>.



Check out our comic book!



The Boys & Girls Club of Greater Green Bay and Bug Tussel Wireless partnered to create a unique comic book that tells the story of Buford, a local hero to communities and Bug Tussel mascot, as he explains the importance of the internet and connecting rural Wisconsin. Read the comic book online by scanning the QR code or visiting this web address:

https://www.documentcloud.org/documents/22076279-bugtussel-comic1_output?responsive=1&title=1



SALES & MARKETING

Sponsorships

- Bug Tussel participated in the Fond du Lac County Fair located at the Fond du Lac County Fairgrounds from July 20-24.

Ads

- Bug Tussel ran Facebook ads targeting the county during the month of July.
- Bug Tussel ran ads in Insight on Business Magazine (both print and online editions) during the month of July.
- Bug Tussel ran radio ads on Duke FM country radio during the months of May and July.

Subscriptions

- The number of current total subscriptions is 1756.

Your sales representatives



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GET IN TOUCH

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TOWER STATUS



On Air: 15

- Tower construction and installation complete.
- Internet is live and operational.



Under Construction: 0

- Establish tower foundation.
- Construct tower by stacking from bottom to top.
- Install antenna, lines, and integrate network.



Zoning: 6

- Submit permits and receive approval from local and federal agencies.



Site Acquisition: 5

- Search for and determine tower site.
- Obtain lease from landowner.

Did you know?

Leasing, the process of getting a lease from a landowner, takes at least 30 days to complete. Zoning, the process of getting permits signed and approved, takes at least 90 days to complete.

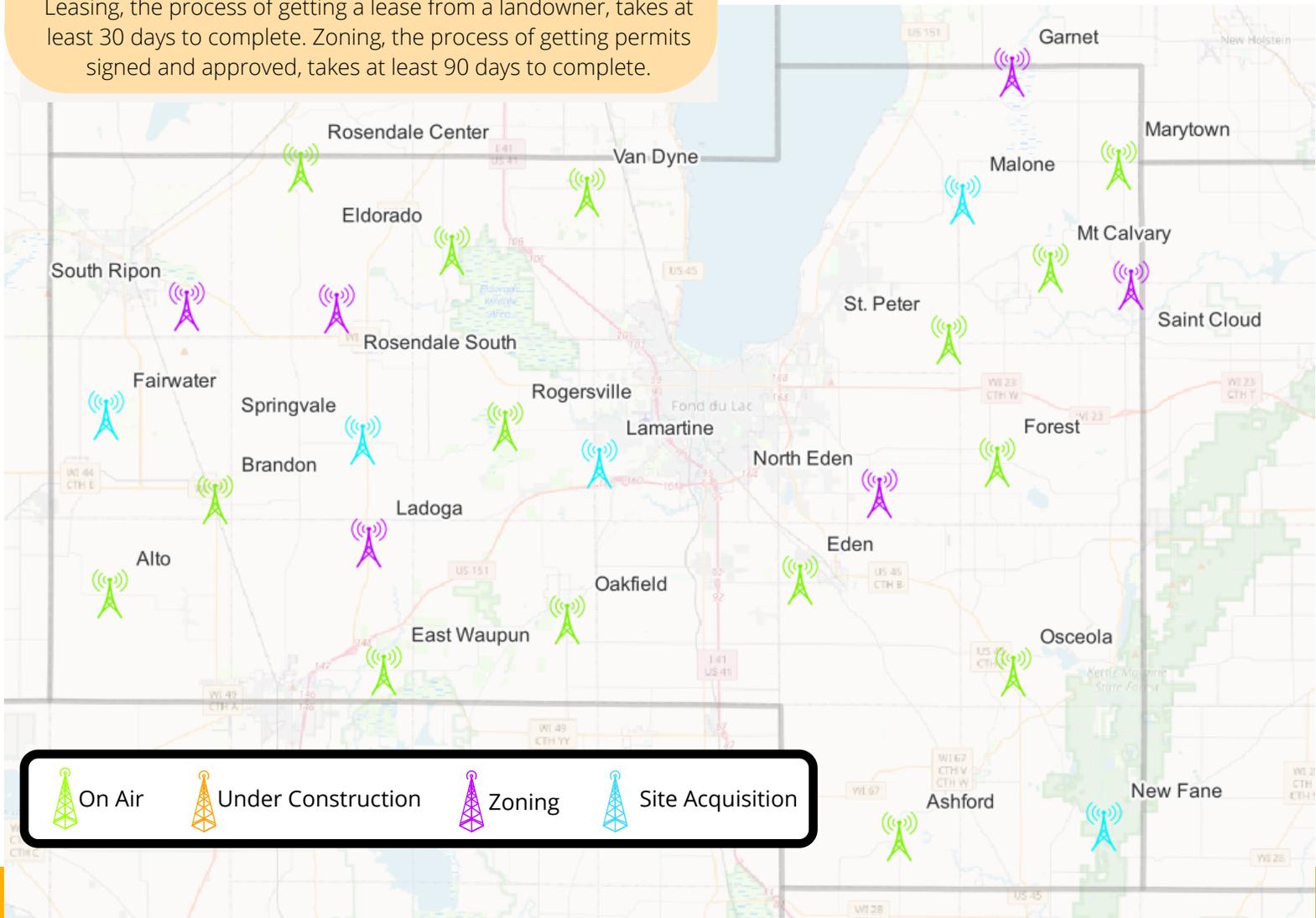
TOWER PROGRESS

The following tower sites remain in zoning status while final regulatory steps are completed. Zoning status is the process of submitting permits and awaiting approval from various local and federal government agencies. The projected date when approval will be received to move forward with construction at each site is also listed below:

- Garnet - Late August
- North Eden - Early September
- South Ripon - Early September
- Rosendale South - Late December

The Ladoga site has just completed final regulatory steps. Construction is projected to begin in early August.

Remaining sites still in the process of site acquisition include Fairwater, Springvale, Lamartime, Malone, and New Fane. In this stage, the site is selected and agreements are made with the landowner. Lease agreements are still in process.



*This map includes a rough estimate of site locations and may not accurately reflect actual tower placement.

FIBER NETWORK

Route is Under Construction

Construction on the southwest end of the route began in Waupun this July.

Conduit Installation in Progress

The contractor, White Construction, has installed approximately 15 miles of conduit, which is an insulating cable that gets installed before fiber is added. Conduit serves as a protective barrier that houses the fiber and keeps it safe from damage.

Fiber will later be inserted into the conduit through a process called "fiber blowing", a technique that sends fiber through conduit with a machine on wheels that travels through the conduit by bursts of air.

Rocky Conditions Cause Delays

Crews have run into areas with rocky conditions and have skipped over them to await approval from Bug Tussel to do rock work. Approval was given at the end of the July.

Special Boring Required

Several areas in Fond du Lac County will require deep boring, a specialized drilling technique that installs conduit with a drill, causing minimal disturbance on the ground's surface. Conduit will need to be bored several feet underneath areas of the route that pass railroad tracks and expressways.

FIBER STATUS



On Air: 0 miles

- Fiber is installed.
- Connections to towers are complete.
- Internet is live and operational.



Under Construction: 15 miles

- Conduit, the protection cable that will house the fiber, is installed via Boring (with a drill) or Plowing.
- Handholes, Flowerpots, and Cabinets, access hatches that house utilities and connections, are installed.
- Fiber is sent through the conduit via Fiber Blowing, a technique using a machine on wheels that blows air to push the fiber through the cable.
- Sections of fiber are connected to each other via Splicing, the fusion of fiber pieces with an optical laser.



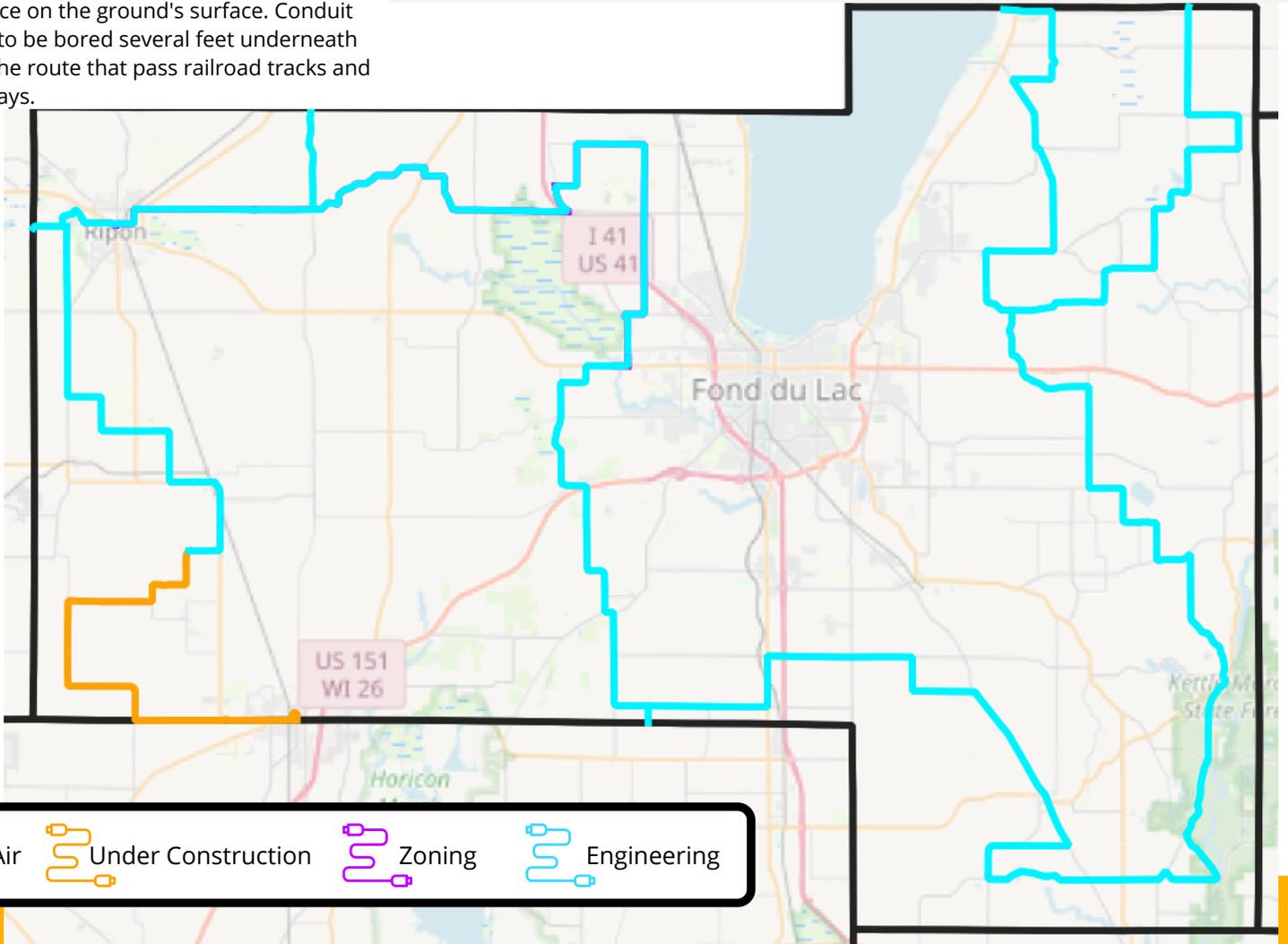
Zoning: 197 miles

- Permits for work in areas along the route are submitted.
- Permits are approved by appropriate parties.



Engineering: 0 miles

- Fiber route is mapped.
- Route is traveled to determine equipment and landscape needs.
- Sections are Re-designed as needed.



*This map includes a rough estimate of the fiber network and may not accurately reflect final route.

How is a Fiber Network Created?

Did you know? A fiber network is like a highway system.

The **First Mile** is like an *expressway* connecting main points across very large areas together. This is the *core* network that hooks up internet connections from state to state and, on a larger scale, country to country.

 The **Middle Mile** is like a *highway* connecting cities together. This is the *backbone* that connects cities, counties, and states and creates a national network.

The **Last Mile** is like a *road* that travels from the highway to individual neighborhoods. This is the *distribution* that connects the internet network to customer's homes, businesses, and government agencies. This is often the costliest and most challenging part of the network to create.

*Bug Tussel specializes in building Middle Mile and Last Mile networks.

Installing a fiber network requires 4 major steps:

DESIGN THE ROUTE, OBTAIN PERMITS, INSTALL FIBER, AND CONNECT TO CUSTOMERS.

DESIGN THE ROUTE *(Engineering)*

Map the Route

Determine the best route for the network and outline in mapping software.

Travel the Route

Travel the route to determine equipment and route needs based on the landscape. For example, areas with hard rock conditions will require specialized equipment such as a directional drill.

Re-Design

Re-design the route as needed based on landscape requirements, permit needs, etc.



OBTAIN PERMITS *(Zoning)*

Submit Permits

Submit permits to local and federal agencies in order to obtain authorization before beginning installation.

Await Approval

Await approval and re-submit or re-design if approval is denied.

INSTALL FIBER *(Construction)*

Deploy Conduit

Install conduit (a protective cable that will house the fiber) into the ground via plowing or boring (with a directional drill).

Install Access Hatches

Place access hatches in areas (often underground) where intersections will be made, the route changes direction, or fiber will be dispersed. These hatches (which include handholes, flowerpots, and cabinets) will act as utility boxes where fiber connections can be made.

Insert Fiber

Run fiber through the conduit. The most common way to insert fiber is through a process called fiber blowing, which uses a machine to move the fiber through the cable via bursts of air. This reduces friction and the risk of damage to the fiber.

Connect Fiber

Connect sections of fiber to one another by splicing, the process of fusing pieces of fiber together with an optical laser.

Connect to the Internet

Connect the fiber route to the internet, often by hooking up to the larger worldwide network via connection to a switch, a mobile tower, or another connecting point.



CONNECT TO CUSTOMERS *(On Air)*

Connect to Customer

Install fiber from the closest access point (a handhole) to the customer's home or business.

Set Up Internet

Customer connects router and modem to internet cables to establish home network.

