

The Partnership



PROJECT

Bug Tussel is a proud partner of Kewaunee County through a 2020 grant, a 2021 grant (**Phase I**), and a 2022 grant (**Phase II**). The project, **R.O.A.D. to Digital Equality**, will equip Kewaunee County with wireless internet access, a fiberoptic backbone network, and additional last-mile connections and creating additional capacity to support future projects.



PRODUCT

Bug Tussel will use fixed wireless sites to facilitate rapid expansion, followed by multiple phases of fiberoptic cable. These fiber projects will cover more than 120 miles throughout Kewaunee County and will provide a catalyst for future last-mile expansion. Standard packages for fiber will range from 300 Mbps to 1 Gbps download and upload speed. Standard packages for wireless will be 25 Mbps download and 5 Mbps upload speed.



TIMELINE

Bug Tussel has 9 fixed wireless sites throughout Kewaunee County, with 1 additional site in progress. **Phase I** of fiberoptic backbone/middle mile network construction is underway and will be online later this year, with construction on **Phase II** beginning in 2023.

BUG TUSSEL UNIVERSITY

Kewaunee Resident Created Facebook Account With Bug Tussel University!

Bug Tussel University taught a **Facebook for Beginners** class on September 6 at the Algoma Public Library. The teacher helped one attendee sign up for a Facebook account, helped another attendee sign up for a Snapchat account, and helped another attendee update her privacy settings.

One attendee left a glowing review of the class:

"You offer an 'easy to be in' class with your free spirit and willingness to help beginners! I look forward to learning more from you!"

Request a class in your area by calling us at [920-940-0114](tel:920-940-0114) or emailing us at bugtusseluniversity@btussel.com



Your sales representatives



Scott Nasgovitz
Business Development Manager
Phone:
(920) 530-1311
Email:
Scott.Nasgovitz@btussel.com



Kristin Lambrecht
Regional Business Development Manager
Phone:
(920) 501-8515
Email:
Kristin.Lambrecht@btussel.com

SALES & MARKETING

Ads

- Bug Tussel ran Facebook ads targeting the county during the month of September.
- Bug Tussel ran ads in Insight on Business Magazine (both print and online editions) during the month of September.

Subscriptions

- Over 400 fixed wireless subscriptions
- Over 150 interested in fiber.

GET IN TOUCH

Customer Service
Phone: (877) 227-0924
Email: customerservice@bugtusselwireless.com
Website: bugtusselwireless.com

TOWER STATUS



On Air: 9

- 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: 0

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



Site Acquisition: 1

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

TOWER PROGRESS

Tisch Mills Remains in Site Acquisition

Bug Tussel's Tisch Mills site remains in acquisition. A suitable candidate for site location is still being determined. A projected date for acquiring a site is difficult to determine.

Interested in hosting a tower near Tisch Mills?

Get in touch at <https://btussel.com/plans/host-a-tower/>.



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

Site Acquisition Timeline



6-12 MONTHS

BOND EFFORT

Meet with county and municipalities, plan funding, provide due diligence, plan county network (towers and fiber). Several votes with different county committees. Final county board vote (often requires supermajority).



1-3 MONTHS

SEARCH

Connect with property owners within a search ring (about 1 month). Evaluate properties, choose preferred location (about 1 month).



1-3 MONTHS

LEASING

Work with landowner to agree to tower layout, lease terms, address title issues, etc. Often requires attorney review.



6-12 MONTHS

GOVERNMENT APPROVALS

Obtain local permits (driveway permit, address, zoning/conditional use permit, etc). Often requires public notice and hearings.

Obtain federal regulatory approval, including from FAA, FCC, EPA, and other entities. Requires on-site soil, archeological, geologic, historical, etc. studies.

FIBER STATUS

Connected

- Internet connections are complete.
- Internet is live and operational.
- Customers are connected.

Fiber: 2 miles 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 with an optical laser.

Conduit: 55 miles installed

- 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.

Permits: 100 miles approved

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

Design: 100 miles complete

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

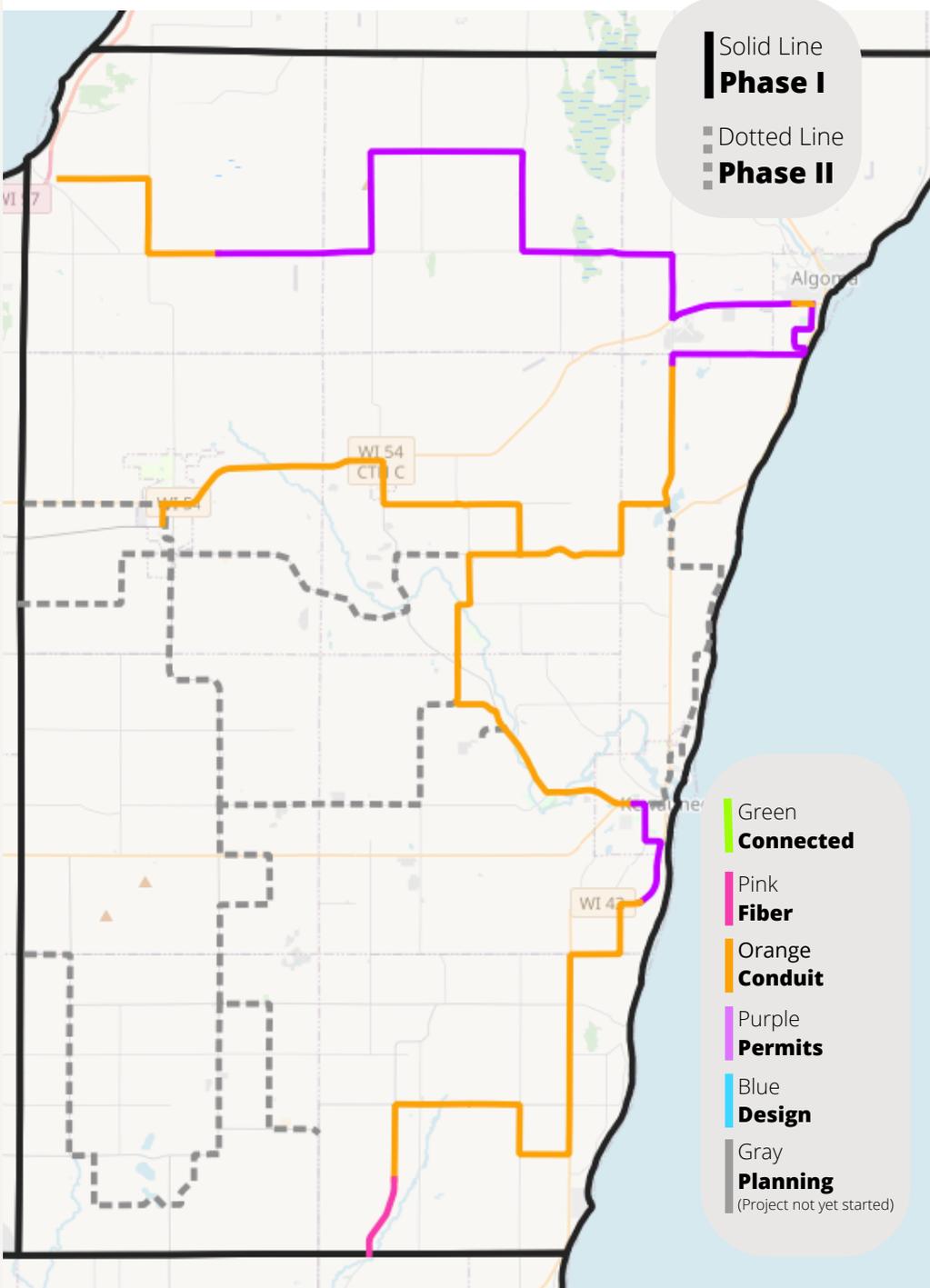
FIBER UPDATES

Conduit Installation Making Progress

Contractor, H&H Utility, has made significant progress installing conduit through the county. H&H Utility has also hired subcontractor Badgerland Construction for construction assistance.

Conduit and handholes are installed in some sections of the route, including near Dyckesville, Luxemburg, Slovan, Alaska, Norman, and Tisch Mills. Two miles of fiber are installed north of Tisch Mills.

Completion of the Phase I Middle Mile (backbone) and Last Mile (distribution) in the county is anticipated by January 31, 2023.



*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. 

Long Haul Fiber 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, including FTTH (fiber-to-the-home), FTTP (fiber-to-the-premises), etc. 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 advanced 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.

Update Design

Route design is then updated 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 customer's ONT (optical network terminal, which converts light signals to electrical signals) in their home or business.

Set Up Internet

Customer sets up home network system through router and ONT connections.

