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## Bug Tussel explodes in growth providing high-speed internet to rural Wisconsin. Here's how government helped, and where fiber optic is going next.



**Jeff Bollier**

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GREEN BAY - A funny thing happened on Steve Schneider's way to retirement: He says he found "the secret sauce" for rural broadband expansion.

In the early 2000s, at Schneider's home in the Kellnersville area of Manitowoc County, an internet service provider ran fiber optic cable close to the family farm. Schneider asked about acquiring service for their address but says he was told he couldn't get it — a refrain many rural Wisconsinites have heard.

He opted to take matters into his own hands, a decision made easier thanks to a decade in the telecommunications industry. Schneider knew whom to contact, the necessary paperwork to fill out to establish a service and more. He started in the town of Franklin and Manitowoc County, where he got the go-ahead to install a fixed wireless receiver to an existing tower to which the local governments had access. He then secured approvals to build a tower in Menchalville, just west of Kellnersville, to strengthen and add redundancy to the service's connection to regional internet hubs, in this case, in Brillion.

He said there was a mix of reactions from local residents, from enthusiastic support to naysayers who said it'd be a waste of money. Schneider took it all in

stride, seeing the doubters and skeptics as a sign he was on to something. He also made it part of his mission to explain the projects to as many boards and in as many towns as necessary, to help people understand the process, the fine print details, what residents stood to gain and the role governments could play.

"If there's good understanding, and the community wants it, things will proceed," Schneider said.

Now, Bug Tussel Wireless is about to complete its 322nd tower.

"My retirement project got out of hand," Schneider told members of the Brown County Board during a Sept. 21 presentation.



While construction employee Nathan Braaksma, left, watches, Tony Galdan threads special conduit that will eventually house a fiber optic cable which will bring internet to rural Fond du Lac county, Tuesday, Oct. 18, 2022, in Fond du Lac Wis. Gary C. Klein/USA TODAY NETWORK-Wisconsin

Formally founded in 2003, the privately held company aims to provide high-speed internet service to overlooked, underserved — and often rural — areas of Wisconsin.

"There's nothing you can do in downtown Chicago that you can't do in downtown Kellnersville or downtown Greenleaf or downtown Morrison," Schneider said. "Those places are on a level playing field once you have broadband."

The company found and shifted to a new gear almost a decade later, in 2012, when Schneider answered Fond du Lac County's call asking for help finding a way around the costly, time-consuming, low-return-on-investment challenges that often hamper rural broadband development. Bug Tussel's growth would accelerate once more beginning in 2021 after Fond du Lac County sought to upgrade the upload and download speed of service and the COVID-19 pandemic spurred a deluge of state and federal broadband expansion grant dollars.

During an August New North Broadband summit panel, Schneider said that while some counties have robust fiber networks, "not every county is blessed."

"While it's getting there, there are a lot (of counties) that are at the bottom of the pile," Schneider said.

The strategy is proving effective at pushing rural Wisconsin communities up to the top of that priority pile. Fifteen counties have partnered with Bug Tussel, helping fuel the company's rapid growth. It ended 2020 with 75 employees and \$75 million in assets and by the end of this year is expected to reach 250 employees and \$350 million in assets.

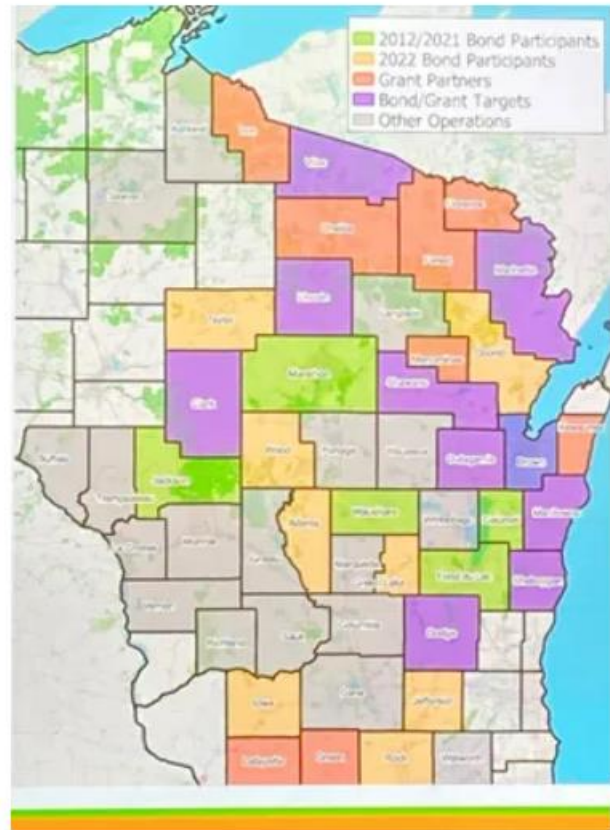
Schneider's work with Wisconsin counties aligns in several ways with the results of the New North Inc.'s Regional Broadband Access Study, released in February to bring focus and coordination to broadband expansion in the 18-county region. The survey and study, conducted in late 2021, proposed a regional build-out of fiber optic cable to accelerate broadband expansion into un- and underserved areas. It also proposed local governments and counties should focus on developing public-private partnerships to extend fiber and fixed wireless tower networks further out into rural areas.

Schneider is currently in discussions with another 14 counties, stretching from Vilas County up north to Rock County on the Illinois state line. The counties are as big as Brown County and as small as Iron and Forest, each of which has fewer than 10,000 residents. Bug Tussel has secured more than \$30 million in state broadband expansion grants to further build out its network to reach more properties.

## A problem in Fond du Lac County reflected life in many parts of rural Wisconsin

Beyond having a technical knowledge of internet service, Schneider traces Bug Tussel's current wave of success to a call 10 years ago from Allen Buechel, the former Fond du Lac County executive who died in March.

Buechel called Schneider multiple times with a problem: It couldn't get existing service providers to extend high-speed internet — at that time download speeds around 3 Megabits per second (Mbps) — to rural areas. Schneider initially resisted, saying Fond du Lac County was "pretty urban."



A Wisconsin map shows in green, yellow and red counties where Bug Tussel Wireless currently offers service or is extending service. The counties in purple have been targeted or are in discussions with Bug Tussel. *Jeff Bollier/USA TODAY NETWORK-Wisconsin*

Buechel explained that while residents who live in Fond du Lac and Ripon have access to high-speed service, the problem was Rosendale, Eden and other small communities where residents couldn't get service, couldn't get sufficient speeds or faced high costs for service. He also told Schneider the county would help him pay the infrastructure costs. The county went on to authorize issuing \$5.3 million in revenue bonds that the company would use to build a network of fixed wireless towers to offer 3 Mbps service. Bug Tussel agreed to repay the bonds over 12 years and also pays the county an annual fee based on the amount borrowed.

When Bug Tussel returned to the county in 2021 to upgrade its existing towers and build new ones, it increased wireless internet service speeds to 25 Mbps. Bug Tussel's current work reflects the increase in speed, capabilities and bandwidth families require to work, learn and entertain at home. The project also included a plan to ring the county with fiber optic cable capable of

providing customers on the fiber route 300 Mbps or 1 Gigabit-per-second service.

Fond du Lac and other counties gain another benefit from the partnership. The installed fiber cable serves as a "middle mile" of infrastructure Bug Tussel and other internet service providers can tap into via a lease agreement with Bug Tussel. Along with state and federal grants, the middle mile makes extending service to smaller communities more attractive.

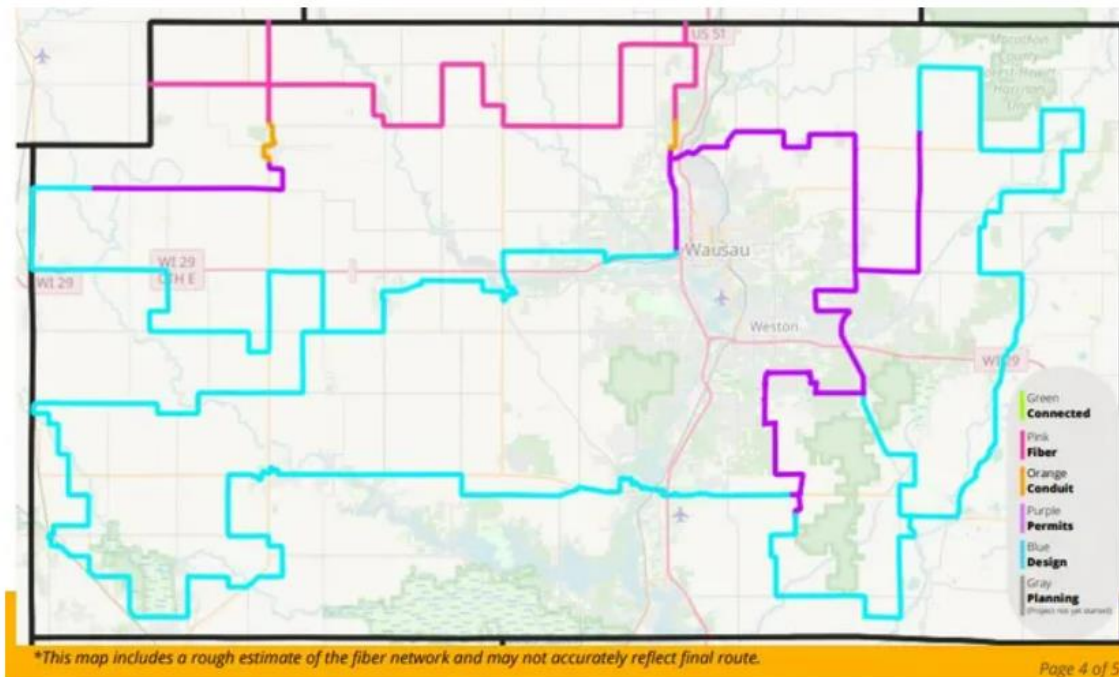
"This is not to lock other providers out. It's to actually try to get other providers to move faster to get services for people who have been waiting," Schneider told Brown County leaders regarding the fiber network Bug Tussel proposed.

Schneider lays out five key goals Bug Tussel focuses on as it extends service into new counties. The company calls it the ROAD (Rural, Open, Access, Design) to Digital Equality:

- Wireless broadband service.
- Faster, fiber-based broadband service.
- New towers to enhance cellular service in rural areas.
- Other ISPs can lease Bug Tussel's fiber to extend service to other areas.
- Bug Tussel University, a series of computer and technology literacy classes hosted in community centers in Bug Tussel's service area.

Bug Tussel University courses cover topics like internet safety, smartphone basics, having fun with photos, Facebook for beginners and other matters of technological literacy. The classes and other programs will sometimes include an appearance from Bug Tussel's orange mascot, Buford J. Tussel, whose fully developed backstory includes an official job (Spokes Bug), favorite food (sloppy Joes), and astrological sign (Libra). Of course, Buford is a Green Bay Packers fan, too.





A screenshot of Bug Tussel's rough estimate of its Marathon County fiber optic cable network. The colors indicate if the section is at the stage where fiber is being laid (pink), where conduit cables are being laid (orange), where permitting is underway (purple) and design work is happening (blue). *Courtesy Of Bug Tussel Wireless*

## How busy is Bug Tussel?

Based on the company's community reports from September, Bug Tussel contractors are building 68 new towers and laying more than 1,000 miles of fiber optic cable in eight counties:

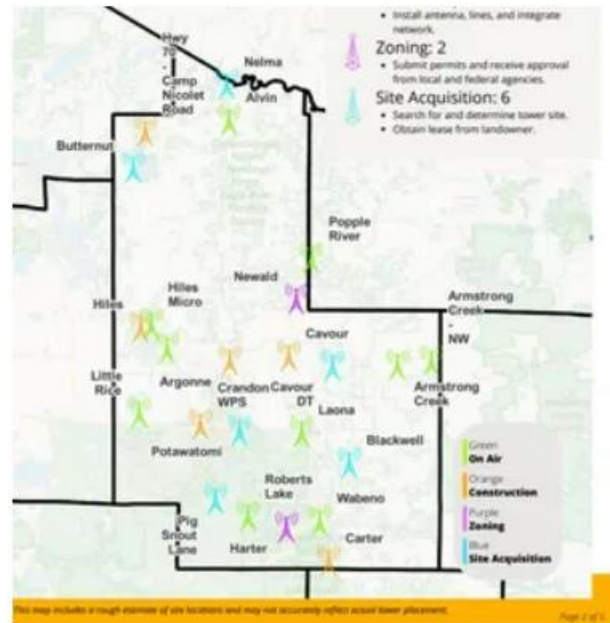
- Calumet: Three new towers, 75 miles of fiber
- Fond du Lac: 11 new towers, 160 miles of fiber
- Forest: 14 new towers, 100 miles of fiber
- Iowa: Two new towers, 130 miles of fiber
- Jackson: Seven new towers, 150 miles of fiber
- Kewaunee: One new tower, 120 miles of fiber
- Marathon: 21 new towers, 200 miles of fiber
- Waushara: Nine new towers, 100 miles of fiber

Each county gets its own, monthly progress report that includes upcoming Bug Tussel University classes, customer service contacts, updates on the number of wireless and fiber subscriptions and additional details about what exactly Bug Tussel is doing in their community. In September, the company indicated it had signed up more than 4,300 customers for fixed wireless internet service and more than 1,500 customers interested in fiber internet service across the eight counties.

Bug Tussel looks for state and federal grants to help offset some of the costs. Once the fiber backbone is in place, the company will also work with residents and communities to pursue grants to extend fiber service to specific areas. In 2022, Bug Tussel projects secured 11 grants for internet service expansion; bringing its total to 34 grants since 2015.

## Counties find Bug Tussel 'willing to work with us'

The COVID-19 pandemic's onset in 2020 brought a heightened awareness to the sheer volume of rural Wisconsin residents and businesses that either cannot get broadband internet service or face high costs for the service. Federal and state governments responded with billions of dollars in grants for broadband expansion. Wisconsin counties revived or produced rural broadband studies to highlight areas of need and sought ISPs like Charter Communications, TDS, Nsight and Bug Tussel interested in extending service.



A screenshot of a Forest County map shows the progress Bug Tussel Wireless has made in constructing 14 new towers to complement 10 existing towers. The towers in green are online, in orange are under construction, in purple are going through zoning reviews and in blue are in development. *Courtesy Of Bug Tussel Wireless*

Many Wisconsin counties for years have tried to encourage ISPs to serve rural areas. Often, their requests for data on existing fiber lines and expansion plans would be declined or go unanswered. Still, counties continued to seek partners



A utility truck along state Highway 23, as seen, Tuesday, October 18, 2022, in Fond du Lac, Wis. Crews are in the process of placing fiber optic cable underground so that rural areas will gain access to fast internet. *Gary C. Klein/USA TODAY NETWORK-Wisconsin*

to help reach the farms, small towns and other unserved areas across the state.

By the time the pandemic hit, county officials had grown used very little cooperation and even less willingness to collaborate. It's part of what makes people initially distrustful of Bug Tussel's proposals: There's a "too good to be true" element, Waushara County Executive Melissa Pingel said.

"The scary part is there is no negative," Pingel said.

Pingel became Waushara County administrator last fall, just after the county finalized a \$12 million broadband buildout plan with Bug Tussel. Pingel asked Schneider to meet to help her understand the plan better. She came away with a better understanding of the plan, how Bug Tussel benefits (customers, leasing infrastructure to other ISPs), and how it works closely with its new communities and customers.



In early October, "they were at town meetings because a couple of things came up. They physically came to the town meetings. They really care about their reputation. They're small-town: They care about their neighbors and how this will affect them," Pingel said.

Schneider did the same thing when he worked with the central Wisconsin county on a 2021 bond issue. The county has long been willing to work with any company to extend service into rural areas and is working with several ISPs right now. Marathon County Board Member John Robinson said Schneider stands out for his willingness listen to input and adjust plans.

"We work with everyone," Robinson said. "But Steve Schneider comes in, he's personable, he's willing to work with us. He came to towns' association's meetings. He worked to try to get fiber to towers placed to serve the needs of those towns and schools."

Brown County one year ago called attention to broadband service speeds in the county by asking residents to conduct an internet service speed test. The results spurred the county to issue a request for proposals for broadband infrastructure plans that would offer service at roughly 40 county buildings, parks and key sites in the region surrounding Green Bay. Bug Tussel was the only respondent, but its map projected service at every site requested.

Robinson said Bug Tussel and Antigo-based Cirrinity (formerly Wittenberg Telephone Co.) are willing to share that information so towns, villages and counties can better understand what areas remain unserved. He said residents' use of speed tests to map service levels and government efforts to map more fiber networks also will help communities verify, and challenge when necessary, download and upload speeds to get better, more reliable service.

"There will be a lot more information for communities to make decisions going forward," Robinson said.



A directional drill bores into the earth by White Construction's Logan Miller, left, and Lanell Brown, Tuesday, October 18, 2022, in Fond du Lac, Wis. The drilling is part of the process of placing fiber optic cable underground so that rural areas will gain access to fast internet. Gary C. Klein/USA TODAY NETWORK-Wisconsin

Contact Jeff Bollier at (920) 431-8387 or [jbollier@gannett.com](mailto:jbollier@gannett.com). Follow him on Twitter at [@JeffBollier](https://twitter.com/JeffBollier).

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