



## HED: Bonding together a coalition for a common cause

[Connecting rural America through TVWS](#)

Declaration Networks Group, Rural Maryland and Virginia



In a three-room schoolhouse in Garrett County, Maryland, children come to learn not only math and spelling, but also how to operate in the world today. Until recently, these children were restricted in just how much they could learn and practice 21st century skills because they, like much of their county, didn't have access to reliable and affordable broadband internet.

Cut to today: Thanks to an innovative combination of fixed wireless [WiFi networks and TV White Space (TVWS)] technology through Declaration Networks Group (DNG), these children are much more prepared to succeed in school—and beyond. "To have the world at their fingertips now allows them to explore possibilities they may not have dreamed existed," says Connie Uphold, principal at Swan Meadow School.

By building a coalition of private companies and government bodies, leveraging existing resources in rural communities, and pulling together a variety of funding sources, DNG is changing the way families, small businesses, farmers, and others thrive in rural America.

# 25x

The increase in download speed after switching from DSL to TVWS broadband through DNG

# 4

The number of channels DNG bonds together in some regions to strengthen bandwidth and increase upload and download speeds

# 5,000

The number of people today who are covered by TVWS in DNG's region

# 50,000

The number of people DNG projects will be covered by its TVWS initiative, by 2021

## Coming together to cross the digital divide

More than 19 million (more than 30% of) Americans living in rural communities do not have access to broadband internet—a digital divide that risks leaving entire swaths of the country behind. In rural Virginia and Maryland, the lack of opportunities, education, and jobs from this lack of connectivity contributes to a decline in rural towns, explains Bob Nichols, Founder and CEO of Declaration Networks Group.

The internet service provider utilizes wireless technology solutions including TVWS, which are unassigned or unused television channels, to establish last-mile broadband internet access connections. TVWS spectrum is ideal for rural areas because the radio signals travel over long distances at low power and can penetrate obstacles like tree foliage. DNG hasn't approached the job alone, though. "There are a lot of moving parts that are required to come together to solve the digital divide," Nichols acknowledges. "There's not a magic bullet, so a cooperative approach is at heart of the solution."

## Collaborating on the ground

Take, for example, Garrett County, home to Swan Meadow School, where elementary aged kids can now look up information online and play educational apps on connected tablets. DNG began by working with the county government to secure seed funding to extend broadband beyond its limited reach. By using existing resources—such as a fiber network and state-owned towers—DNG installed a series of TVWS radios on towers and at homes to extend an internet signal farther than would be commercially viable with more traditional technology solutions.

Since that initial buildout, DNG is continuing to use TVWS and other solutions to reach a goal of covering at least 50,000 residents within the next 5 years.





## Leveraging Microsoft Airband resources

DNG's partnership with the [Microsoft Airband Initiative](#) allows the company's coverage to expand farther, faster, Nichols explains. Here's how:

- **Lend credibility.** By backing DNG, Microsoft has given a stamp of approval to this small company, which helps make DNG more competitive as it applies for grants, financing and contracts.
- **Advocate for the little guy.** Microsoft has been involved in securing access to unused TV signals for broadband internet access for over a decade, and it continues to advocate for even more policies that allow small internet service providers like DNG to expand their reach through TVWS. DNG joins Microsoft in lobbying for policies that will speed innovation through TVWS
- **Offer digital skills training.** Broadband access alone can't solve the opportunities gap; people newly connected to the internet need to learn how to take advantage of the resource, too. To bring communities up to speed, DNG is using Microsoft-developed education materials and resources to teach individuals and businesses how to use the internet to plant crops more efficiently, communicate with doctors, or simply to check email.
- **Provide technology and cloud services.** Customers look to DNG for help setting up the resources—e.g. hardware, software and cloud services—needed to take advantage of their newfound connectivity. With the Airband partnership, DNG sells Microsoft computers, programs and services at a discount.



## Impacts of TVWS in rural Virginia and Maryland

"We could talk about technology all day, but the real story is with people who are using the internet for the first time, and how their lives are changed," Nichols says. Newly connected customers call DNG's office nearly every day to share what they can do now that they're "hooked up." Here are just a few of their stories.

Jonathan Yoder, fifth generation farmer, Oakland, MD. "I started out with internet that was very slow, very unreliable. It was difficult to be competitive. Two years ago I got access to broadband. Now it evens the playing field. TV white spaces has given us an opportunity to connect with the world from our rural communities."

Heidi Yoder, bakery owner, Oakland, MD. "Since we have Wi-Fi here at the cafe, it has increased our customer base. It has helped our business."

Daphne Gooding, longtime resident and senior, Mountain Lake Park, MD. "Now that we have broadband, seniors who live in rural areas can stay connected with healthcare providers. All of that simply isn't possible otherwise."



“There are so many advances in technology and in initiatives like Airband. Now’s the time to get into this game because benefits come to ISPs who come on board early.”

Bob Nichols  
Founder and CEO,  
Declaration Networks Group

### Best practices for adopting TVWS

- **Create a sustainable model.** Bringing internet access to unserved communities inspires the work of leaders like DNG, but companies still have to be profitable. Nichols recommends using existing assets (such as a granary tower or a fiber network) to save on buildouts—and ultimately decrease the cost to consumers.
- **Educate to drive demand.** When you first introduce high-speed broadband in an underserved area, pent-up demand takes care of sales. After that, Nichols says, you need to offer digital skills training or educational outreach so new customers understand why they need internet and what to do with it.
- **Secure a range of funding.** DNG has received grants and financing from the United States Department of Agriculture (USDA), the Federal Communications Commission (FCC), Microsoft, county governments, and other sources. “Lining up private and public funding avenues is a critical component of success,” Nichols says.

You can expand internet coverage via TVWS, too. Learn how your ISP can connect your community at [microsoft.com/airband](https://microsoft.com/airband).

<sup>1</sup>FCC 2018

<sup>2</sup>Microsoft, 2017

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