Broadband Feasibility Report

Benton County, Minnesota

December 6, 2021

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CCG Consulting

EXECUTIVE SUMMARY

Finley Engineering and CCG Consulting submit this Broadband Feasibility Report along with our recommendations for bringing fiber broadband to the county. This study and report expands upon an earlier study done by our two firms that identified the parts of the county that don't have good broadband today and that are not slated to get better broadband. The primary purpose of this report was to quantify the cost of the network that must be constructed to bring fiber broadband, plus calculate the amount of grants that are needed to fund the broadband solution. These are the two primary things that an ISP is going to want to know to bring fiber to the unserved areas.

We considered two study areas in the study. The smaller study area is for every home and business that doesn't have and is not slated to get better broadband. We also looked at a larger study area that includes bringing better broadband to the areas where LTD Broadband has tentatively won funding in the FCC's RDOF reverse auction to bring fiber broadband. That award is controversial and there is a decent chance that LTD will not end up being awarded the funding.

The first phase of the study was to look at the broadband products and prices charged around the county today. This is useful information for any new ISP to consider serving in the county. We also conducted extensive public outreach. The primary research tool was an online residential survey. The public responded to the survey, and we got 1,192 responses. We also conducted an online business survey and a speed test for both residents and businesses. We also interviewed key stakeholders in the county to get a deeper understanding of broadband issues.

We also examined the other broadband gaps in the county. The discussion mentioned above looks at the availability gap – where broadband is not available. We discuss the affordability gap since some respondents to the survey said they could not afford a broadband connection. The report also discusses the homework gap and the computer gap where students without home broadband don't perform as well in school.

The next phase of the study looked more deeply at the current state of broadband. The county is served by a wide range of ISPs today – there are four incumbent telephone companies, three cable companies, and a number of companies offering fixed wireless broadband. Rural households are also using satellite broadband and cellphones for home broadband. We looked to see what each ISP in the county tells the FCC about broadband speed and coverage. As we know from our earlier study, a lot of what is told to the FCC is overstated in terms of broadband speeds and coverage areas. We provided our take on what we think is the real state of broadband, because this is something that might be needed to win some broadband grants.

Finley Engineering designed a fiber network that would provide fiber to every home and business in the two study areas. Finley considered the options available for fiber and finally studied a 100% buried fiber network using passive optical electronics as the best solution for the unserved parts of the county. We quantified the cost of building fiber everywhere and of providing a connection to a range of customer penetration rates.

CCG Consulting next created financial forecasts that examine the potential profitability for an ISP operating a broadband business in each of the study areas. These forecasts include assumptions that we

think are representative for estimating the revenues and the costs from operating a broadband business. The biggest unknown in creating financial projections is the customer penetration rate. We started our analysis with an estimated customer penetration rate of 65% - something that we have found to be typical in similar rural areas that have no decent existing broadband options.

As we expected when we started, the forecasts showed the need for significant grant funding to convince an ISP to bring a fiber solution to the rural study areas. Depending upon a range of assumptions, we estimate that a grant between $5.9 million and $7.9 million is required to bring broadband to the larger study area. The smaller study area requires grants between $5.5 million and $6.5 million.

We conclude the report by providing a list of strategic and tactical next steps the County should consider. A lot of the discussion examines the possibility of attracting broadband grants. The country is currently awash with the largest amounts of state and federal broadband grants we've ever seen, including a $42.5 billion grant that was just funded by the Infrastructure Investment Jobs Act. Further, the County has grant money that can be used for broadband that was made available through the American Recovery Plan Act earlier this year.

The report makes specific recommendations such as opening a dialogue with ISP partners. We talk about the possible benefits of forming a partnership with the ISP you prefer the most. We think that if the County is willing to provide some local grant funding that you can have some influence on which ISP will bring better broadband to the unserved parts of the county.

The report also makes other tactical recommendations. For example, there is a federal program that starts January 1, 2022, that can provide a $30 monthly discount for homes with an income under 200% of the federal poverty level. This discount could help to get broadband into more homes in the county.

The County still has work to do after reading and digesting this report. There are grant opportunities coming available that might solve the broadband problems – and we recommend not waiting for the upcoming giant federal grant if an earlier funding opportunity looks sufficient.

FINDINGS

Following are our primary finding:

Existing Providers. The incumbent telephone companies are CenturyLink, Frontier, Windstream, and the Benton County Cooperative Telephone Company. Benton County Cooperative has largely upgraded to fiber. The cable TV providers in the county are Charter (Spectrum), Midcontinent Communications, and Benton Cablevision. The county also has several fixed wireless ISPs including Advantenon, Fallsnet, Genesis Technology Communications, Tekstar (Arvig Communication), and Xtratyme Technologies. Residents can also buy broadband from satellite companies. Some rural customers are using broadband provided by cellular companies.

Quality of Broadband. Benton County is home to broadband haves and have-nots. Households and businesses in the northern county can buy fiber broadband from Benton Cooperative. Sauk Rapids and nearby towns are served by Charter. Foley is served by Midcontinent. Arvig offers some small pockets of fiber, mostly to businesses, in the south county. But other rural residents have some of the worst broadband we've seen anywhere. This study is examining those rural residents and businesses.

The Study Areas. The study area includes every customer that doesn't have the option to buy a landline broadband connection of at least 25/3 Mbps. The process of determining this area included several steps. We know the serving area for the companies with fast broadband such as Benton Cooperative and the cable companies. We identified areas that will be getting fiber broadband that is not yet constructed. We also identified areas that have tentatively won broadband grants to build fiber.

Using this information, we created two study areas. The first is every home and business that can't get or won't be getting the option to buy a 25/3 Mbps landline broadband connection. To this area we looked at a second larger footprint that adds in the areas where LTD Broadband has tentatively won broadband funding to build fiber since that award is controversial and might not happen.

Fiber Network Design. Finley Engineering considered several technologies before designing a reasonably efficient network for each of the scenarios studied. The chosen network design uses the latest Passive Optic Network (PON) technology on fiber that could deliver speeds of as much as 10 gigabits per second (Gbps) to each home and business in the county.

Finley Engineering reached a conclusion that was already understood locally – the utility poles in parts of the county are in terrible condition. Finley concluded that it would be less expensive and faster to build a fiber network that is 100% buried. The fiber network is designed to provide fiber for every home and business in the study area and the capacity for future expansion and growth.

The telecom industry uses the term passing to mean any home or business that is near enough to a network to be considered as a potential customer. Finley Engineering primarily used the county's GIS database to count passings. In the study we settled on the following as the count of potential passings for the study.

Township	Study Area	Excluding RDOF
Gilmanton	154	97
Glendorado	295	45

Langola	113	23
Mayhew Lake	111	89
Maywood	258	92
Minden	233	151
Saint George	339	121
Sauk Rapids	43	43
Watab	58	56
Grand Totals	1,604	717

Miles of Fiber Construction. The study designs a fiber network to reach every home and business inside the two study areas. The full study area requires 264.6 miles of fiber construction. Removing LTD broadband RDOF areas reduces the miles needed to 202.8.

Asset Costs. Below is a summary of the cost of the needed assets to the two study options. It's worth noting that these costs represent connecting 65% of the homes and businesses in each study area. The investments will vary with the number of customers to reflect the cost of bring a fiber drop and electronics only to customers added to the network.

	Whole Study Area	Without RDOF Area
Fiber	$ 8,612,804	$ 5,768,675
Drops	$ 1,615,565	$ 768,324
Electronics	$ 865,738	$ 459,755
Huts/Land	$ 396,000	$ 396,000
Operational Assets	$ 282,510	$ 253,596
Total	$11,772,668	$ 7,646,350
Cost per Passing	$ 7,561	$10,446

Market Demand Study

Residential Survey. We conducted an online residential survey that attracted 1,192 responses, or 14% of all households in the county. This is the highest percentage response we can remember ever getting for an online survey and reflects both the poor state of broadband in the county but also the high interest in the county for finding a better broadband solution. Following are the key results of the survey:

- 86% of survey respondents have some sort of home broadband.
- 35% of respondents are using DSL from a telephone company. 31% of respondents are using broadband from a cable company. 23% of respondents use fiber technology from Benton Cooperative. 6% are using other technologies like fixed wireless, satellite, and cellular hotspots.
- There is a lot of dissatisfaction with existing broadband. 44% of all broadband customers (which equals 58% customers served by something other than fiber) are unhappy with download speeds. 34% are unhappy with ISP customer service. 53% of respondents are unhappy with the value received for the price paid for broadband.
- 81% of all households said that somebody is working from home at least part time. This includes 26% of households that have somebody working from home full-time. 53% of respondents said they would work from home more with better broadband.

- 59% of respondents have school-age children at home. 51% of these households said that home Internet was not good enough to support the students during the pandemic.
- 96% of respondents have a cellphone. 19% of respondents say that they don't have good cellular coverage at home.
- The average price being paid for broadband is $70 per month.
- 74% of respondents support the idea of funding a better broadband solution. Another 25% might support better broadband but need more information. Only 1% of respondents do not support the idea.
- 60% of respondents said they would buy broadband and pay the same price as today from a new network if it was faster. Another 26% said they would probably buy from a new network.

Postcard Survey

The County sent a postcard survey to residents and got over 1,200 responses. As might be expected, the responses about satisfaction with broadband varied widely. Postcard surveys don't have room for many questions, so we don't know if customers are unhappy with speeds, prices, or some other aspect of the broadband.

- 64% of CenturyLink customers are unhappy with their broadband.
- 24% of Charter customers are unhappy with their broadband.
- 18% of Benton Communications customers are unhappy with their broadband.
- 39% of the customers of the remaining ISPs are unhappy with their broadband.

Business Survey and Interviews. Businesses that receive broadband from fiber are happy. Most businesses buying broadband from a cable company are satisfied, but there were some stories of periodic outages and trouble at times using the upload data links.

But businesses served by DSL and satellite tell a different story. Broadband download speeds are typically at 10 Mbps or much slower. Upload speeds tend to be at only 1 or 2 Mbps. Outages are frequent and include day-long outages. Many business owners complained that they also couldn't take work home due to poor home broadband. Every rural business has a list of fairly basic functions they would like to use such as cloud software and Voice over IP, both of which are spotty on slow broadband.

Speed Tests. Homes and businesses took speed tests as part of the project. The goal with the speed tests was to see the speeds that were really being delivered by ISPs. Any individual speed test is not always adequate for this purpose because there can be issues such as a poorly functioning WiFi router affecting the speed test. However, speed tests taken in mass tend to tell the true story of broadband speeds in a community.

The table below is a summary of the speed tests we received. For each ISP these are average speeds. The second column is average latency. This is the amount of delay in the broadband signal, measured in milliseconds.

	Number	Latency	Down (Mbps)	Up (Mbps)
Arvig (Wireless)	19	32	19	4
Benton Coop - Fiber	58	20	59	55

Benton Cablevision	64	28	45	12
CenturyLink	101	54	16	2
Charter	136	24	81	9
Frontier	3	47	19	2
Viasat	14	37	7	1
Midcontinent	18	35	136	17
Starlink	1	39	90	10
AT&T Cellular	7	9	19	7
T-Mobile	4	40	31	7
Verizon Cellular	4	33	12	1

Overall, the speed tests probably paint the best story about the broadband in the county. Speeds on fiber are adequate for both upload and download. Cable download speeds are good, but upload speeds are slower. DSL, high-orbit satellite and fixed wireless are not delivering speeds that meet the FCC definition of broadband.

Our Approach to the Financial Analysis. We created financial forecasts for two reasons. One was to calculate the amount of grants needed to bring broadband to the study area. Second was to demonstrate to ISPs that it could be long-term profitable to bring fiber to the study area. We used the following approach to create the financial forecasts:

- The forecasts assume that a commercial ISP would bring the broadband solution.
- We arbitrarily chose a market penetration rate of 65%. We don't know how many customers a new fiber business might attract and chose this penetration rate as typical of what we might expect in a rural area with poor broadband.
- All financial models cover a 20-year period. All projections include projected financing costs for borrowing the money needed to build and launch the network.
- We believe the Finley Engineering network cost estimates are conservatively high.
- Products were priced at a modest discount from the existing prices of broadband sold in the market today. Basic broadband prices started at $65 per month.
- The estimates of operating expenses represent our best estimate of the actual cost of operating the fiber business and are not conservative. Most operating expenses are adjusted for inflation at 2.5% per year.

Key Financial Study Results. The assumptions used in creating the various business plans are included in Section III.B of the report. The results of the financial analysis are included in Section III.C of the report. A summary of the financial results is included in Exhibit II. Following are the key financial findings of our analysis.

- To bring fiber broadband to every home and business in Benton County will require substantial grant funding. The amount of grants needed varies by the expected customer penetration rate, as follows:

Penetration Rate	Assets Needed	Grant Needed	Grant Percent of Assets
55%	$11.4 M	$7.9 M	69%
60%	$11.6 M	$7.4 M	64%

65%	$11.8 M	$7.0 M	59%
70%	$11.9 M	$6.4 M	54%
75%	$12.1 M	$5.9 M	49%

- The cash generated by a fiber broadband business in the area is also affected by other key variables. We calculated the impact of changing prices, interest rates on debt, loan terms, and the cost of building the network.

Funding Options. As described above, it will require significant grant funding to bring a broadband solution. There is a lot of grant money that will be coming available over the next few years, and there should be sufficient grant funding to bring the needed broadband. It's critical to understand the nuances of the various grant programs because each works differently. For example, some grants require using prevailing wages, which would increase the cost of building the network higher than what we've shown above. Here are the more important upcoming ways to use grant funding to build the fiber broadband.

- ARPA Funding. The county has ARPA funding that can be used to fund broadband expansion. This money is under the County's control and discretion, but there are some rules that still apply to using the funding. For example, this funding could not be used to overbuild the RDOF areas if LTD Broadband is awarded funding.

- State Border-to-Border Grants. These state grants are administered by the Department of Employment and Economic Development (DEED). These grants are likely to be larger than normal for the next two years due to the infusion of federal grant funding that is being added to the normal state funding.

- ReConnect Grants. This is a nationwide $1.15 billion grant fund with applications due by February 2022. These grants require extra costs like the use of prevailing wage. The grants also likely come with the requirement that a winning ISP accept a loan from the Rural Utility Service (RUS) – something that many ISPs cannot do. The grants also award extra grant points to tribal areas, to ISPs willing to provide open access, and to grant areas that are extremely rural. These are not going to be an easy grant for many ISPs to win or to accept. It now looks like there will be a second round of ReConnect grants for $2 billion due some time this summer.

- BEAD Grants. The official name of these grants is the Broadband Equity, Access, and Deployment program. This program comes out of the recently approved federal Infrastructure Investment and Jobs Act. This is a $42.5 billion grant pool that is aimed at bringing broadband to places like Benton County. It's likely going to be a year or more until these grants are made available. The final grant rules will be developed by the NTIA at the federal level and will then be administered and awarded by the states. We think it's likely this will be done through the same group at DEED that administers Border-to-Border grants.

STRATEGIC RECOMMENDATIONS

Our primary recommendation is that the County develop a strategy for solving the broadband shortfalls in the county. To that end, we think you need to consider and discuss the following:

Choosing an ISP Partner

If the County is willing to make a sizable matching grant to help an ISP win other grant funding, then the County is in the enviable position of being able to influence the winner of grant funding. Federal grants always prefer grant requests where there is local involvement, and they like to make grants that have guaranteed funding.

Since the County is willing to provide some funding to bring a fiber solution, you have more options than other localities. The first big decision to make is who you want to partner with – and obviously, your choice of partner has to be willing to partner with the County and to aggressively pursue grant funding.

We think it's vital to identify the ISP partner as soon as possible for the following reasons:

- The huge amount of federal grant funding means that every ISP in the state has options to expand. Their only limit will be how much expansion they are willing and able to tackle. Part of this is due to the fact that all rural grants are going to require some matching funds from the ISP, but also due to the challenge of expanding and building a lot of network in a relatively short period of time. Any ISP you are interested in also has opportunities in neighboring counties – so you need to lock down an ISP partner as soon as possible.
- We believe all the big ISPs are also going to be pursuing the huge federal grant dollars. We assume that given a choice you'd rather have a local ISP serve the rural parts of the county than one of the big ISPs like Charter, Windstream, Frontier, or CenturyLink. One or more of these companies, and possibly others, might seek federal grant funding to serve Benton County.

After addressing the other issues listed below, we think you should approach any ISPs that you will consider as possible partners. This could be the Benton Cooperative. It might mean Arvig, which already provides some fiber near the areas that need a broadband solution. It may mean ISPs from neighboring counties.

Be Prepared to Support Grant Filings

Many state or federal grant programs require a showing of local community support. Benton County should be prepared to help an ISP by gathering government and resident support for the grant applications. This means soliciting as many letters of support as possible to support a fiber grant.

But in your case, this requires a strategy decision. For example, you could decide to support only one ISP in making grant filings. Just as you have the ability to strengthen a grant filing by showing strong public support, you can also weaken other grant filings by visibly not supporting them.

This is not an easy decision to make, because there is no guarantee that the ISP you want to support will win the grant funding. For example, some big ISP might make a federal grant filing that covers a dozen counties that the grant awarders will find attractive.

Timing – Which Grants to Pursue?

The whole country is going to be gearing up to ask for grant funding out of the giant $42.5 billion BEAD grant. We find it likely that this grant is going to attract a lot of ISPs and there might be multiple ISPs, both large and small, and local or from elsewhere that might pursue a grant in Benton County. This is going to present a huge puzzle for the grant award agency if it's faced with multiple grants that each cover different geographic footprints.

But there might be an alternative that would avoid the craziness that will come with the giant BEAD grant. For example, the County might be able to work with an ISP now to get funded from the ReConnect grant program or the Minnesota DEED grant program. There are several reasons to consider this alternative to the big BEAD grant. One is that the County will be able to choose the ISP to partner with in these other grant forums, and that partnership increases the chances of winning these grants. Another big reason to get funded before the big BEAD grants is that the grant project would get a head start on BEAD grant construction. It's expected that the $42.5 billion of BEAD grant funding is going to overwhelm the supply chain, so getting an earlier grant probably means an easier chance of getting the project built on time. Perhaps the biggest reason would be that a grant that is awarded earlier than the BEAD grants will bring a broadband solution sooner. It seems likely that BEAD grants won't be awarded until late in 2023 and will not be required to be completed before 2026.

Depending upon your ISP partner, the ReConnect grant will not be easy to win – and many ISPs are not able to accept any RUS loan that might be tied to a ReConnect grant.

But as long as the combination of Border-to-Border grants and county grants are sufficient, an ISP ought to be willing to move forward now and not wait for the big federal program.

OTHER RECOMMENDATIONS / NEXT STEPS

Consider a Statistically Valid Survey

An ISP partner might want you to conduct a statistically valid survey or a canvass in the grant area to better define the potential customer penetration rate on a fiber network. The amount of needed grant to fund broadband is going to vary depending upon the expected number of customers that an ISP might get to buy service from a new fiber network. This study included an extensive online survey that showed a strong of demand for better broadband. However, an online survey cannot be used to predict the percentage of households in the county that would buy broadband from a new fiber ISP. The only way to quantify the likely residential penetration rate is through a statistically valid survey. Such a survey will not only quantify the households that might buy broadband but will quantify those homes that won't buy broadband or can't afford to buy broadband.

Another alternative would be a canvass – which would involve asking every home and business in the grant area if they might buy broadband from a newly built fiber network. This is sometimes referred to as a pledge card drive. A canvass is most effective if you can identify the ISP partner and discuss specific broadband products and prices. A canvass requires a lot of effort and might require volunteers to help with the effort.

Involving / Informing the Public

We heard a strong desire from the public to understand the path that is going to be taken to find a broadband solution. We work all across the country, and we've rarely seen residents who are more fired-up than the ones in this county.

We think you need to harness that enthusiasm, and that means finding ways to keep the public involved in the process forward, but more importantly, to keep them informed of the steps that are being taken. There are a lot of ways that other counties have harnessed great public energy and kept the public involved. This might mean sharing this report and having a series of public meeting to discuss the finding of this report. It might mean somehow soliciting public feedback on the big decisions moving forward. This might mean creating a website or newsletter than regularly informs the public of the progress being made to find a broadband solution.

Get Creative in Finding Other Grants

There are other federal grants that might be incorporated into finding a broadband solution.

- There is a federal middle-mile grant program for $1 billion to build a backbone fiber to reach last-mile projects.
- There are grants available to schools, libraries, and rural health-care providers that might be able to contribute towards building fiber.
- There might be grant funding available for an electric smart grid that could be tied into building fiber to rural electric substations.
- In addition to funding for building fiber, there is suddenly a lot of funding available for digital equity and inclusion. This is also part of the Infrastructure Investment and Jobs Act (IIJA). The grant programs take two different approaches to try to close the digital divide. These grants can be

used for programs like buying computers and hotspots and for training people how to use broadband and the Internet.

The State Digital Equity Capacity Grant Program will give $1.5 billion to states to then distribute through grants – allocated at $300 million for the next five years. The stated goal of this grant program is to promote the achievement of digital equity, support digital inclusion activities, and build capacity for efforts by states relating to the adoption of broadband. I haven't heard an acronym for this grant program – it's likely that each state will come up with a name for the state program.

The second new grant program is called the Digital Equity Competitive Grant Program. These are grants that will be administered by the NTIA and awarded directly to grant recipients. The budget for this grant program is $1.25 billion, with $250 million per year to be awarded in 2022 through 2026.

Tackle the Other Broadband Gaps

Most of the above suggestions concern solving the broadband availability gap – meaning getting faster broadband in the county. However, even when a broadband solution is found the county is still going to suffer from issues of broadband affordability, the lack of computers in homes, and the lack of digital literacy for a lot of citizens. The county needs to put effort into solving these gaps along with solving the availability gap.

Tackle the Affordability Gap

There are homes in the county that have a problem affording broadband. There are ways to help these households.

Affordable Connectivity Program. The County needs to make sure that residents get the full benefit of the Affordable Connectivity Program. This program was funding for $14.2 billion from the Infrastructure Investment and Jobs Act. This will start in January 2022 and will provide a discount of $30 per month on broadband bills for any household with an income less than 200% of the federal definition of poverty. As an example, that would currently be $44,000 per year for a household of three.

The County should push all ISPs to participate in this plan. You should also make a push to inform the public that this discount is available.

Support Local Affordability Efforts

There are nonprofit organizations around the country that are tackling the affordability issue. One of the more ambitious such efforts is being done by Mobile Beacon.[1] This is a nonprofit that works nationwide to bring low-cost mobile broadband to nonprofits organization around the country, and through those local nonprofits bring low-cost broadband to low-income people.

[1] https://www.mobilebeacon.org/

There are numerous solutions being used by the nonprofits working with Mobile Beacon. One common effort was discussed above which is to provide portable WiFi hotspots that are distributed from libraries. Mobile Beacon has also negotiated a deal with Sprint (now T-Mobile) to provide low-cost cellular broadband to students and others that is priced as low as $10 per month for an uncapped cellular broadband connection.

An interesting study[2] was done looking at the impact of bringing broadband to low-income homes for the first time in the Twin Cities in Minnesota through the Mobile Beacon effort.

- 94% of Mobile Beacon subscribers use the internet daily and 82% say they use the internet several hours a day.
- The average home with Mobile Beacon used 41 GB of data per month. Students used an additional 25 GB per month. People looking for jobs used 14 GB more per month.
- The Mobile Beacon broadband had an immediate impact on students. Parents report that students spend an average of more than 4 hours per week doing homework on the Internet.
- The new Internet connection allows adults in low-income homes to get training. 32% of adults in the Mobile Beacon program were taking online courses.

Bridging the Broadband Skills Gap

Even if better broadband becomes available there are many residents of the county that don't possess the basic computer skills needed to take part in the modern digital world. The county should consider finding ways to provide more computer training. This can be done in a wide variety of ways:

Allow the Schools to be Used After-Hours for Training Adults. A number of communities use computer training centers that already exist in schools to hold after-hours training for adults.

Develop Training Course in the Libraries. A number of communities have developed computer training programs through their libraries.

Find Solutions for the Homework Gap and Computer Gap

It's clear that Benton County has a huge homework gap – homes with students without good broadband or homes without computers. The COVID-19 crisis showed that the county needs to work on this problem now and not wait for a fiber broadband solution. Possible solutions might include:

Take-Home Computers for all School Kids. The most common solution are schools that send computers home with students. In some school systems these computers can only be used to connect to the school system network, making them homework-only computers. But other school systems have recognized that these might be the only computer in a home and let students and their family use the computer for other purposes. The biggest problem with school-provided computers are students that don't have a broadband connection at home.

[2] Bridging the Gap. https://www.mobilebeacon.org/wp-content/uploads/2017/05/MB_ResearchPaper_FINAL_WEB.pdf

Lending Mobile Hot Spots. There are many communities that are lending mobile hot spots to citizens through the libraries much the same way they lend books. A person can check out a hot spot for some period like a week or 10 days, which will provide broadband that can be used with computers or tablets.

This program requires two things. First, Benton County would need to buy mobile hot spots and be prepared to continue to fund them into the future. You'd also need to partner with one of the big cellular companies to provide free or inexpensive bulk cellular data to power the hot spots. Other communities have been successful in creating such partnerships. It's worth noting that these hot spots will only work where there is cellular broadband available – so you should try to put together a map of where cellular works and doesn't work – much like mapping landline broadband as described above.

Get Computers into Homes that Need Them. Communities tackle this in two ways. One is to give or lend laptops or tablets to students. Some school districts provide computers to every student while other provide them selectively to students that need them.

The other alternative is to find a local nonprofit that is willing to tackle the computer issue. Most home and business computers last 3-5 years and nonprofits have found that older computers can be upgraded fairly inexpensively and then placed in homes that need them. Such an effort can be a lot of work, but many communities have found groups willing to tackle the issue.

One such program is the nonprofit E2D[3] (End the Digital Divide) in Charlotte, North Carolina. The organization refurbishes laptops contributed by businesses in the Charlotte area and gives them to students. The organization has taken a several-prong approach to making this happen:

- They solicit used laptops from businesses in the Charlotte area. Most big businesses replace laptops every few years and most of them have been ending up in the landfill. Now a number of businesses send all their used laptops to E2D.
- Used laptops need to be refurbished and E2D started several computer labs in area high schools where they hire students at a decent wage to refurbish the computers and install new software. The purpose of these labs is not only to get the laptops ready to distribute, but they are providing technical training for kids that is helping them move on towards college or a technical career.
- Households that get a new computer also get a live tutorial and technical support to best take advantage of the new laptops.
- Finally, the Charlotte area has a lot of homeless families and there are thousands of homeless kids in the area. E2D has partnered with Sprint to provide mobile hot spots and data plans that are providing broadband access to homeless students and others with no broadband.

Another organization that works nationwide to fund computers is Minneapolis-based nonprofit PCs for People.[4] They provide PCs to households that need them and work with other entities including Mobile Beacon and E2D. Benton County, or some local nonprofit, could connect with

[3] https://www.e-2-d.org/

[4] https://www.pcsforpeople.org/

PCs for People to find ways to get computers into the hands of the neediest households in the county. A local nonprofit could also mirror what's been done elsewhere.

Create More Public Hot Spots. Benton County can fund more public hotspots. Outdoor hot spots are particularly effective since students can sit in cars and use them any time of the day or night. Benton County can start this process by extending the WiFi at county buildings to the outside areas surrounding the buildings. To the extent that county buildings already have decent broadband, the concept is to share it with the public. It's particularly easy to make bandwidth available to the public in the evenings when the government offices are closed and the bandwidth isn't being used, sharing this bandwidth usually adds no cost to what is paid for broadband.

A more aggressive plan would be to create public hotspots in each rural neighborhood that doesn't have good broadband – the places where citizens need it the most. However, it might be a challenge to find the bandwidth needed to support such hot spots. You might be able to partner with the incumbent ISPs or cellular carriers that might have broadband that isn't otherwise available to the public.

Reward Businesses for Providing Public Hotspots. We've seen communities that reward businesses for creating good public hot spots. The reward can be anything from public recognition and awards to some sort of break on local taxes and fees.