Broadband Strategic Roadmap

Calhoun County

Prepared for the Calhoun County Broadband Taskforce

by CTC Technology & Energy

January 2023

Columbia Telecommunications Corporation

10613 Concord Street • Kensington, MD 20895 • Tel: 301-933-1488 • Fax: 301-933-3340 • www.ctcnet.us

Contents

Figures

Tables

1 Executive summary

Calhoun County engaged CTC Technology & Energy (CTC) to develop a countywide broadband plan roadmap and guidebook that addresses challenges identified by the Calhoun County Broadband Taskforce[1] (the Taskforce) around broadband access and pricing. The Taskforce's concerns include the impact of both affordability and generally poor broadband service on remote learning, remote work, telehealth access, and economic development for residents and businesses. The Taskforce has identified three objectives for this project:

1. Improve broadband access, speeds, reliability, and subscription costs for County residents and businesses
2. Explore ways to introduce competition, ideally leading to improved service in the broadband market
3. Explore grant funding approaches for deploying broadband networks

The following executive summary gives an overview of the project team's findings and its recommendations based on the work completed to date.

1.1 Key findings

To develop data on the County's broadband environment and needs, the project team assessed the availability of broadband infrastructure and services in the County, evaluated federal data on broadband availability (i.e., Federal Communications Commission (FCC) Form 477 data), engaged with public and private stakeholders, and conducted a residential phone survey that augments a recent Merit broadband survey. Key findings are presented in the following sections.

Note that this guidebook uses speed thresholds defined in current federal broadband funding guidelines:

- Areas with less than 25 Mbps download and 3 Mbps upload (25/3 Mbps) are considered unserved
- Areas with 25/3 service but less than 100 Mbps download and 20 Mbps upload (100/20 Mbps) are considered underserved

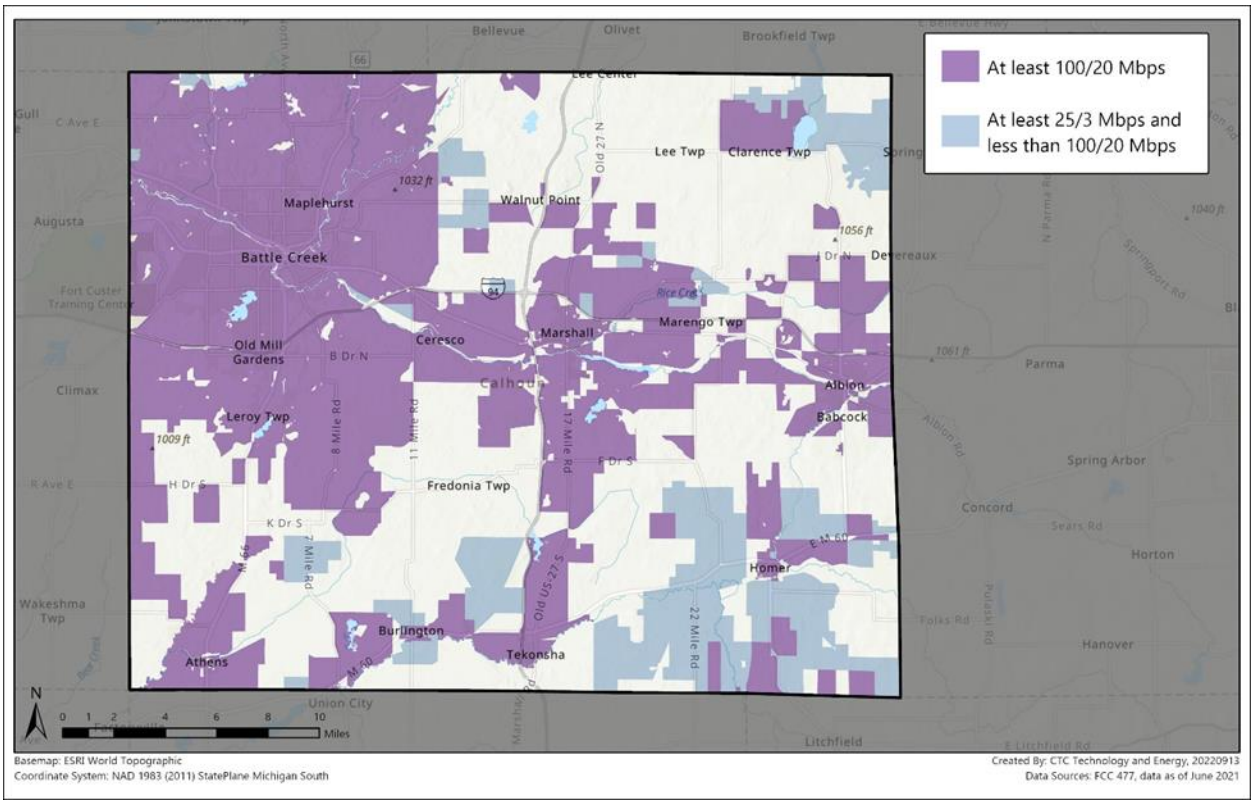
[1] The Broadband Taskforce includes County staff as well as community institutions and organizations; "Calhoun County Broadband Task Force," Calhoun County, https://www.calhouncountymi.gov/departments/administration/broadband_task_force.php

1.1.1 There are approximately 8,200 unserved and 2,300 underserved locations in the County

The majority of Calhoun's residents have access to 100/20 Mbps service from a wireline provider; most residents live in densely populated urban or suburban areas that have cable or fiber infrastructure. However, stakeholders described experiencing unreliable service even in areas reported as being served.

There are approximately 8,239 unserved and 2,316 underserved addresses in the County, located in the unshaded areas shown in Figure 1. As the map below indicates, underserved and unserved areas are spread across the County.

Figure 1: Wireline broadband availability at 100/20 and 25/3 Mbps[2]



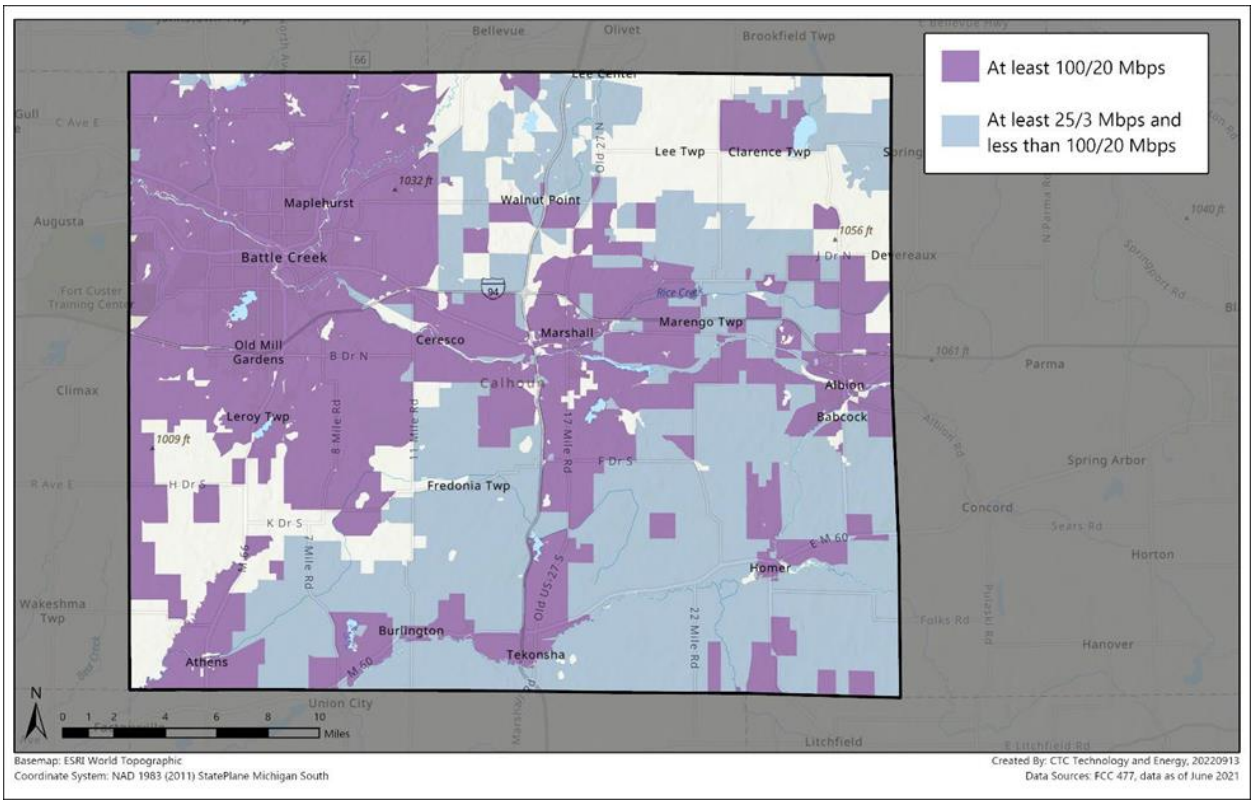
As illustrated in Figure 1, significant gaps in wireline 100/20 Mbps service—and also service at the minimum broadband threshold of 25/3 Mbps—are evident in the more rural areas of the County.

When both wireless and wireline services are considered (Figure 2), there are still significant swaths of the County that are underserved and unserved. A comparison of Figure 1 and Figure 2

[2] Broadband availability maps are subject to change pending the outcome of challenges to the FCC's broadband map (see Appendix A)

also shows that many of these underserved and unserved areas are only covered by fixed wireless, while some areas remain wholly unserved by wireline or wireless service.

Figure 2: Broadband availability at 100/20 Mbps and 25/3 Mbps including fixed wireless

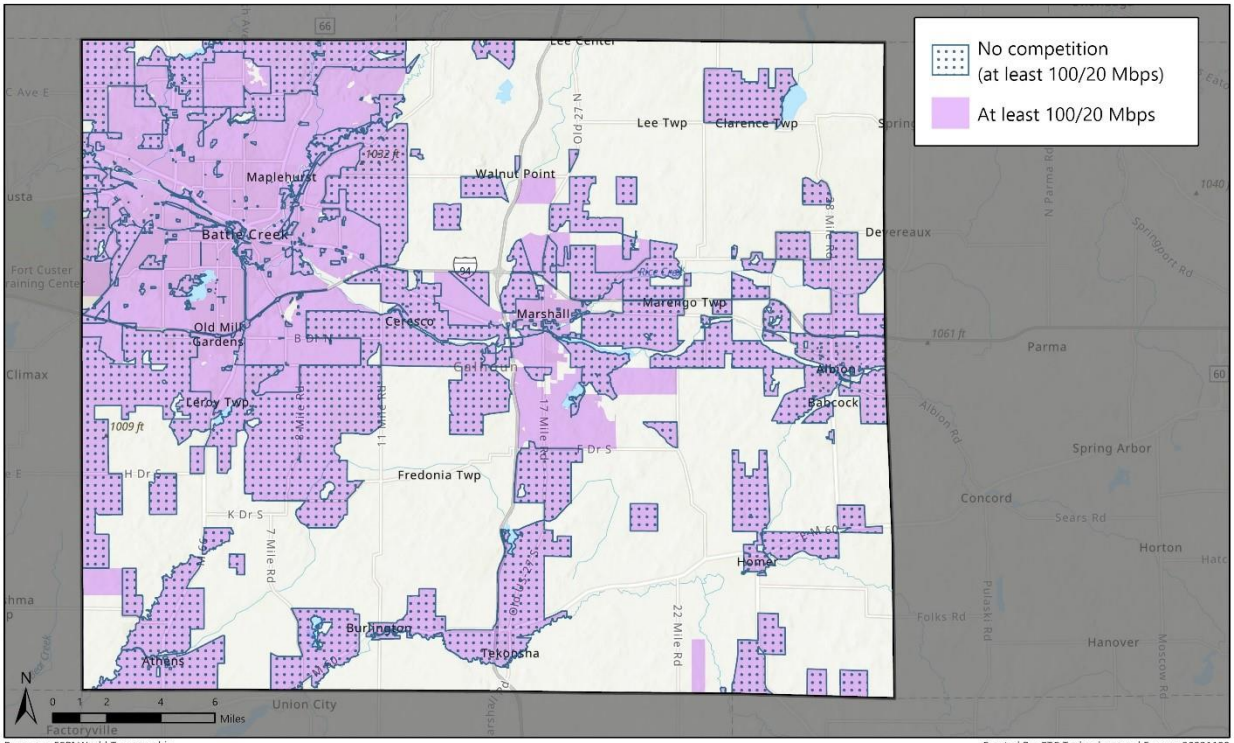


Fixed wireless coverage data tends to overstate actual availability, as service depends on several factors including line of sight between the providers' antenna and the customer's premises, weather, and the equipment and technology used.

1.1.2 Many areas in the County lack broadband competition

As Figure 3 illustrates, many areas of the County that are served by 100/20 Mbps lack competition—including some areas of Battle Creek.

Figure 3: Areas with only one provider offering 100/20 Mbps service[3]



1.1.3 Three models provide estimated costs to construct fiber-to-the-premises or middle-mile infrastructure in the County

Due to the geographic dispersion of the underserved and unserved areas across the County, the Taskforce directed CTC to model the cost of a fiber-to-the-premises (FTTP) network to address connectivity and competition on a countywide basis, as well as a middle-mile network to connect County facilities, which could potentially act as a steppingstone for partners to build last-mile service in underserved areas. CTC explored three scenarios:

1. **Construct a countywide network that would extend to all locations in the County.** This model would maximize costs to the County, but also allow the County to exert maximum control over subscription pricing and bring down the cost of service. Because much of the network would be constructed in areas already served, only a fraction of the overall cost would be supported by federal or state grants, and the County would therefore need to take on much of the financing on its own.

[3] The dotted pink areas in the map above represent areas with only one provider offering speeds of at least 100/20 Mbps, while the solid pink areas represent areas with at least two providers offering speeds of 100/20 Mbps or greater.

A variety of business models could support this scenario, which lends itself to an open-access approach to providing high-speed, reliable, and future-proof broadband. At one end of a control scale, the County would take on building, operating, and financing the network and could set affordable pricing tiers for low-income and middle-income households. At another end of the control scale, the County could partner with a private operator and share some of the capital build cost against future revenue potential for the operator, and hope that the competitive pressures of allowing internet service providers (ISP) to use this infrastructure could depress subscription costs.

2. **Construct only to unserved and underserved areas of the County.** This scenario would reduce costs to the County compared to constructing a countywide network, as unserved locations are eligible for grant funding. While underserved areas are also expected to be eligible for future state funding, it is not clear that there will be enough funds available to cover the County's underserved areas in addition to its unserved areas. Although this scenario lowers the costs to the County, however, it is unlikely to significantly increase competition as deployment is focused on unserved areas only. Future, and likely slower, expansion from unserved into underserved and served areas would be necessary to create competition.
3. **Construct a middle-mile network connecting key County government sites as anchors.** Such an infrastructure could serve the County's own internal needs as an alternative to its current arrangement of leasing service from several providers. At the same time, the County could offer the infrastructure to potential ISPs to reach unserved, underserved, and served areas. While potentially beneficial to the County government, the impact on reaching unserved areas would likely be minimal unless access to ISPs was granted at below-market fees.

1.1.3.1 Constructing a countywide network would cost approximately $360 million

The total estimated cost to construct an FTTP network connecting approximately 66,000 business and residential addresses in the County is approximately $362.8 million.

- The backbone and distribution plant would cost approximately $307.3 million.
- Assuming a 60 percent take-rate, network electronics, subscriber drops, and customer premises equipment (CPE) would cost an estimated $55.5 million. The total implementation cost per subscriber would be $9,150.

Aside from the high cost of a countywide FTTP network, there are a number of additional considerations for the County, including:

- The County would assume the significant financial and political risk, as well as maintenance responsibility, of undertaking such a large build.

- The County does not have experience in operating such a large network. The County would likely need to identify and rely on a private company with experience in managing and operating a network. Even with a private partner for operations, there would be staffing costs and expansion of skill sets required to oversee such a partner.
- Obtaining grants to fund construction would be very difficult as grants will not cover areas that are considered served, and seeking grants for underserved areas will be challenging.
- Building such a network could incentivize incumbents to upgrade their networks to preempt loss of market share. While this would be a welcome development in terms of ensuring high-speed, reliable service to County residents, it could significantly drive down take-rates for ISPs using the County infrastructure since residents would have less incentive to switch from an incumbent to a new provider, adding additional risks to the County as well as a partner operator.

1.1.3.2 Constructing to unserved and underserved locations only would cost approximately $129 million

Alternatively, the County could build infrastructure to only unserved and underserved locations and make that infrastructure available to ISPs or operate the network on its own. The total estimated cost to construct an FTTP network connecting approximately 10,555 unserved and underserved locations in the County would be approximately $128.6 million.

- The backbone and distribution plant would cost approximately $119.7 million.
- Assuming a 60 percent take-rate, distribution network electronics, subscriber drops, and CPE would cost an estimated $8.9 million. The total cost per subscriber would be approximately $20,300.

The per passing costs of extending infrastructure to the most sparsely populated areas would be relatively high, and the County would have very limited leverage to ensure affordable service to low-income residents across the County.

1.1.3.3 Constructing a middle-mile network connecting County facilities would cost $3.3 million

CTC also evaluated the cost of building a middle-mile network to connect 10 County facilities. Such a network would support County operations and security, while potentially enabling the County to lease out fiber infrastructure as a way to encourage private investment in connecting more residents and businesses. The estimated cost to construct the network would be approximately $3.3 million, or around $330,000 per facility.

This cost would be significantly lower than constructing an FTTP network, but unlikely to be fundable by grants. The County would be unlikely to realize a financial return on its investment

for many years: It currently spends roughly $3,800 monthly (about $45,000 annually) on connectivity for these facilities across three different providers (AT&T, MetroNet, and WOW!)

Constructing such a middle-mile network also carries financial risks, in part because the County facilities lie in the same path as existing carrier dark fiber infrastructure—reducing the incentive for ISPs to lease fiber from the County.

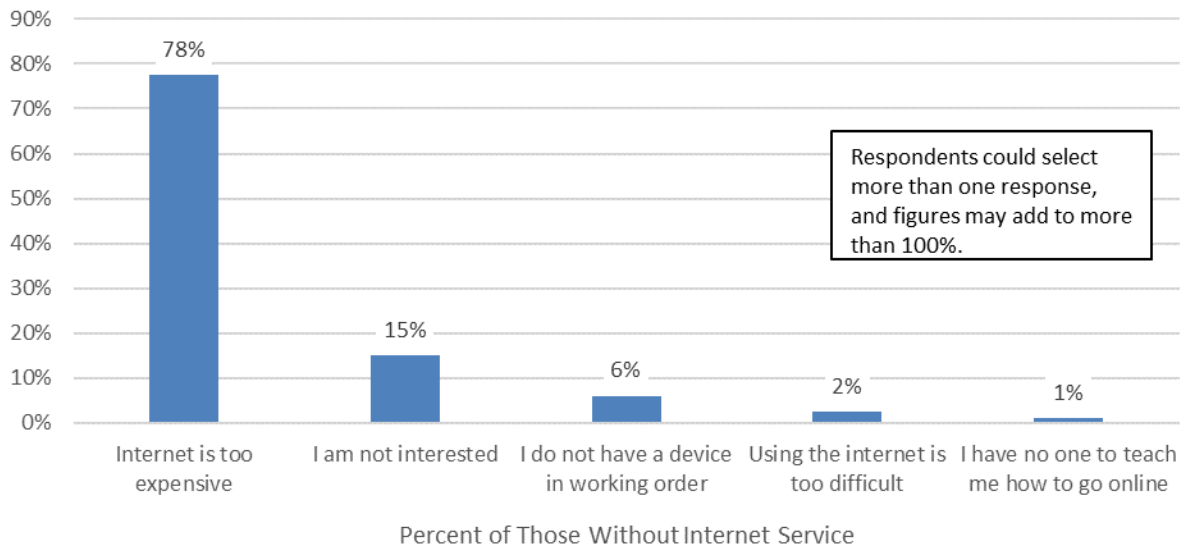
If the County chooses to move forward with a County-owned middle-mile option—potentially in combination with either of the previous FTTP models—it would need to develop a detailed business plan including revenue, costs, and bandwidth needs in conjunction with any long-term cost avoidance analysis.

1.1.4 The County has significant broadband affordability challenges

The County's residents have substantial affordability challenges around broadband adoption. Through a survey of County residents, CTC identified that low-income households are significantly less likely to subscribe to internet service:

- 35 percent of households earning less than $25,000 annually do not have internet service, compared to the 10 percent of household earning $100,000 or more annually who do not have internet service
- Survey respondents cited cost as the leading reason for non-subscription (see Figure 4)

Figure 4: Reasons for not having home internet access



The cost of service is likely due in part to the lack of competition in the County, as ISPs will frequently offer promotional pricing in areas with competition, while they have little incentive to provide lower-cost services in areas without competition.

The federal Affordable Connectivity Program (ACP),[4] which provides a $30 per month subsidy toward internet service for eligible households, could help address the affordability of service. As of September 2022, just 27.7 percent of eligible households[5] in Calhoun County were enrolled in the program, so there is still significant potential for getting eligible households signed up for this benefit. Funding for the ACP is projected to run out sometime in 2024, and there is no assurance that Congress will renew funding for this program.

1.2 Recommendations

Based on the above findings, the project team has developed the following recommendations, which include a variety of potential approaches to the development of broadband infrastructure and access in line with the County's goals. As a first step, the County should identify funding as a match for public-private partnerships or for grants the County may wish to seek.

1.2.1 Issue an RFP to identify one or more partners

The fastest path to supporting the goal of expanding broadband access to underserved and unserved areas would be to issue a request for proposal (RFP). Collaborating with local ISPs through an RFP process to build infrastructure in these areas could deliver more competitive pricing to residents and businesses while increasing broadband adoption. Incentivizing ISPs to build and/or expand FTTP networks would also likely be a lower-cost solution for the County than for the County to build in unserved and underserved areas or build a countywide infrastructure.

An RFP should be structured to address the following goals:

- Lead to a partnership with an ISP to pursue the state Realizing Opportunity with Broadband Infrastructure Networks (ROBIN) grant (see section 1.2.3). These funds can be utilized for pilot projects, saving the County the process and cost of additional RFPs.
- Provide the County with detailed cost estimates that can be used to shape future negotiations and incentives.
- Allow smaller/local ISPs to prove their capabilities.
- Maximize cost efficiency and generate comprehensive solutions through a multi-partner and multi-award framework.
- Encourage partners who are willing to serve all the unserved areas of the County.

Any such RFP should require future-proof technology, prioritize affordability for low- and middle-income households, and address low-cost or discount programs after the expiration of ACP funds.

[4] "Home – ACP," Universal Service Administrative Company, https://www.affordableconnectivity.gov/

[5] "Do I Qualify – ACP," Universal Service Administrative Company, https://www.affordableconnectivity.gov/do-i-qualify/ The program also offers a one-time discount of up to $100 per subscriber for a computer or tablet.

1.2.2 Target one or more smaller pilot projects

An RFP could be structured to enable proposals for smaller projects that would invite ISPs to expand to specific underserved and unserved areas, and also enable proposals for solving the unserved and underserved gap in the whole County. The more funds the County brings to the table, the more it could incentivize ISPs to address its priorities.

- An RFP structured around small as well as comprehensive projects could encourage competition in adjoining areas that are considered served but lack competition, helping to drive down costs for consumers in these areas.
- Such an RFP could also encourage partners who are willing to serve all the unserved areas of the County in addition to the pilot area.
- The County could stipulate affordability measures to ensure all residents can benefit.
- The County could offer to coordinate right-of-way access on behalf of townships as part of the award process.

1.2.3 Seek a comprehensive approach to federal and state funding opportunities

Federal funding from the American Rescue Plan Act (ARPA)—including the Coronavirus Capital Projects Fund (CPF)[6] and SLFRF—may still be available to the County to help fund projects and/or provide additional incentives to address affordability gaps. The Michigan High-Speed Internet Office (MIHI) will soon be distributing $250 million in CPF funding through the ROBIN[7] program, a competitive grant program aimed at providing funding to expand broadband infrastructure to "…homes, businesses, and institutions without internet service available at a speed of at least 100/20 Mbps from at least one internet service provider." Many areas in Calhoun County could potentially be eligible to receive funding under this opportunity, as illustrated in Figure 1 above.

The Infrastructure Investment and Jobs Act (IIJA)[8] also provides an unparalleled funding opportunity for broadband deployment. Funding from the Broadband Equity, Access, and Deployment (BEAD) program will be administered by MIHI; BEAD requires local governments to be engaged by the state. (See Section 6 for further discussion of federal funding opportunities.)

The inflow of significant amounts of funding for broadband opportunities means that the County can holistically address connectivity issues for underserved and unserved addresses. Enough funding is likely available to serve most unserved locations, and potentially a small number of

[6] "Capital Projects Fund," U.S. Department of the Treasury, https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/capital-projects-fund

[7] Realizing Opportunities with Broadband Infrastructure Networks (ROBIN) Program Fact Sheet," https://content.govdelivery.com/attachments/MILEO/2022/10/07/file_attachments/2292505/ROBIN%20Fact%20Sheet.pdf

[8] "Grants," NTIA, https://www.ntia.doc.gov/category/grants

underserved areas. Rather than prioritizing pilot projects in smaller areas drawn opportunistically by ISPs, the County should consider projects that include underserved areas or are adjacent to them, creating an opportunity for an ISP to expand into the area in the future with its own funding.

1.2.4 Promote ACP outreach efforts and adoption

Due to the identified lack of enrollment in the ACP by eligible households, the County should consider efforts to increase participation. The County could do so through multiple paths:

- Encourage and partner with key stakeholder organizations to drive enrollment. These organizations should include advocacy organizations, municipalities, townships, non-profits, and housing agencies, among others. Partnerships will increase the likelihood of securing grant funding to support enrollment efforts.
- Apply for upcoming funding targeting digital equity to support partner organizations.
- Develop joint strategies with ISPs to encourage enrollment in the ACP and enrollment in ISP's affordability programs when ACP funding expires.

The County could also consider creative solutions to ensure affordability after ACP funding expires.

1.2.5 Maintain communication with the Michigan High-Speed Internet Office

As of the writing of this report, MIHI is building a framework for the state's broadband plan. This framework will establish grant funding guidelines for forthcoming BEAD funding and is required by law to involve intensive stakeholder outreach. In addition to relaying the County's broadband planning efforts, keeping MIHI informed about proposed projects could help ensure that the state considers a wide range of projects and models for developing public-private partnerships. To help ensure project applications are structured favorably, the County should remain actively engaged with MIHI's progress on its development of BEAD funding rules and the state's broadband plan. As part of its engagement with MIHI, the County should seek to broaden eligibility under state law[9] for the County to own and operate a potential network and serve as an applicant for potential state grant programs.

[9] Including 2020 PA 224 and 2022 PA 53 Sec 359

2 A local needs assessment identified strong interest in partnerships to increase broadband adoption

To gather data and insight, this project included extensive outreach to local stakeholders and ISPs, including:

- Willard Library
- Calhoun Intermediate School District
- Consumers Energy
- Nottawaseppi Huron Band of the Potawatomi
- City of Marshall
- City of Albion
- Battle Creek
- Kellogg Community College
- Midwestern Energy & Communications (MEC)
- Springport Telephone Company (Springcom)
- Comcast
- Mercury Broadband
- WideOpenWest (WOW!)
- AT&T

The project team engaged with community representatives in a series of interactive workshops. The discussions generally focused on the obstacles stakeholders have been facing in their efforts to encourage broadband development in Calhoun County as well as how they can better support their existing broadband initiatives. The discussions are summarized and attached as Appendix B.

2.1 Community stakeholders identify challenges with the availability and affordability of service

According to interviews with stakeholders in the Calhoun area, the greatest barriers to broadband adoption faced by Calhoun residents are the affordability and availability of high-speed service, compounded by the lack of competition between providers.

Various community leaders highlighted the cost of services as a key concern, and educational institutions raised concerns about connectivity for students in a time of increased remote

learning. Local higher education institution Kellogg College cited broadband availability as a major issue for distance learning. Students, faculty, and community members initially struggled during Covid-19 as their regular access to library resources and devices was cut off. With an increased demand for online courses and limited bandwidth, the college is anticipating the need for new connectivity solutions should their student population increase by more than 10 percent.

Discussions with the City of Albion also highlight information inaccessibility as a barrier to increasing adoption. City leadership recognized that information is more easily spread via the internet, but if residents cannot access the internet, they cannot learn about available programs and assistance for broadband adoption.

2.2 Some internet service providers express interest in partnerships with the County to support expansion of services

In addition to working with community stakeholders to identify perceived broadband issues in Calhoun, CTC engaged with ISPs to determine obstacles they face in expanding or improving service.

Some providers were interested in expanding into areas they understand to be poorly served, but they lack the finances to fund such deployments. All providers communicated that they are carefully observing updates in eligibility for federal and state funds for broadband expansion. Select providers also expressed interest in engaging in public-private partnerships with the County to pursue potential funding opportunities.

MEC, a regional electric cooperative, may be a promising future partner for Calhoun County, as the Cooperative was awarded funding under the Rural Digital Opportunity Fund (RDOF) Phase 1 auction[10] to expand its fiber service territory from the northeastern to the southwestern portions of Calhoun County.

Springcom, a small independent telephone company in the Spring Port area of the County, also expressed potential interest in deploying fiber. The company currently provides telephone, cable TV, digital subscriber line (DSL), and cable broadband services; it discussed a plan to deploy fiber in the Duck Lake area as it believes FTTP would be a desirable future-proof technology for its service territory. Springcom also confirmed its interest in partnerships to increase broadband subscriptions among unconnected households.

[10] Midwest Energy & Communications, "MEC expands fiber internet service to 30,000 across southern Michigan," Lansing State Journal, October 6, 2022, MEC expands fiber internet service to 30,000 across southern Michigan (lansingstatejournal.com).

3 An assessment of broadband infrastructure and service availability found that pockets of Calhoun County suffer from poor connectivity and many areas lack competition

An assessment of broadband infrastructure and services in Calhoun County found that most residents have access to cable broadband or fixed wireless service, with smaller portions served by fiber or DSL services. Cable and fiber infrastructure capable of delivering service at speeds of 100/20 Mbps or greater is concentrated in urban and suburban areas, as are most of the County's residents. Significant gaps in broadband service are evident in the more rural, less populated areas of the County.

Many areas of Calhoun County lack competition, with only one wireline provider offering service. Competition, which typically occurs in more populated urban areas, can result in an increase in promotional pricing offers and incentivize providers to upgrade their infrastructure. Inversely, lack of competition in rural areas often leads to stagnant pricing and aging infrastructure. Data on providers' service areas suggests this outcome is present in Calhoun County, as areas without competition appear to lack affordable, high-speed internet service offerings.

Furthermore, notable portions of the County are entirely unserved. In many areas, even DSL service is not available. (Note, however, that DSL is not considered a viable broadband option for the future due to the fact that it offers speeds lower than most customers' needs and is not able to provide consistent service across all geographies.)

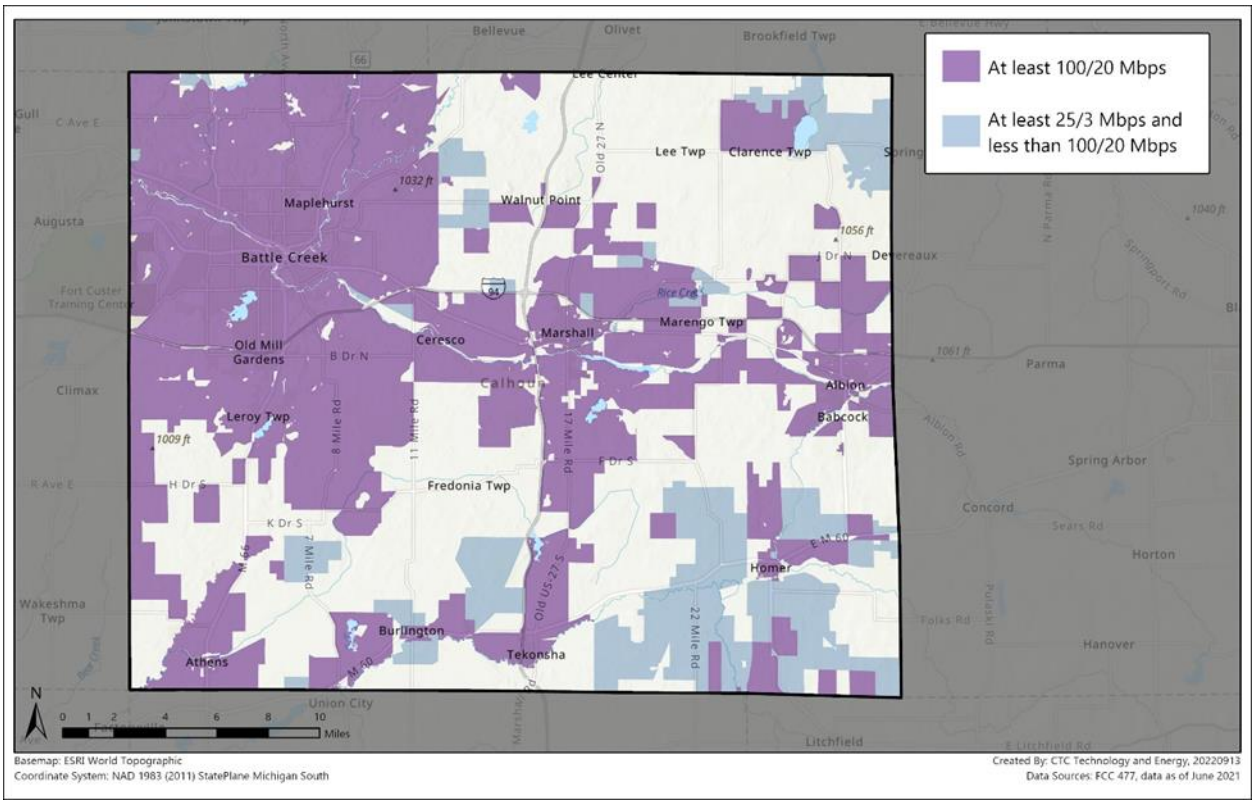
3.1 Analysis of network investment levels and demographic patterns reveals large portions of the County suffer from a lack of competition

Internet service at speeds of 100/20 Mbps is sufficient for most household uses. These speeds can support multiple users streaming video, completing online schoolwork, and videoconferencing simultaneously. This service threshold can also serve as a litmus test for cable providers' investment in their networks, as such speeds are only possible over cable if the network has been upgraded to support modern standards.[11]

According to provider data collected through the FCC's Form 477, large areas of Calhoun County receive wireline service at speeds of 100/20 Mbps. However, as shown in Figure 5 below, these areas are limited to the more densely populated northwest and central portions of the County.

[11] Data Over Cable Service Interface Specifications (DOCSIS) 3.0, released in 2006, is the oldest cable standard capable of offering such speeds to end users.

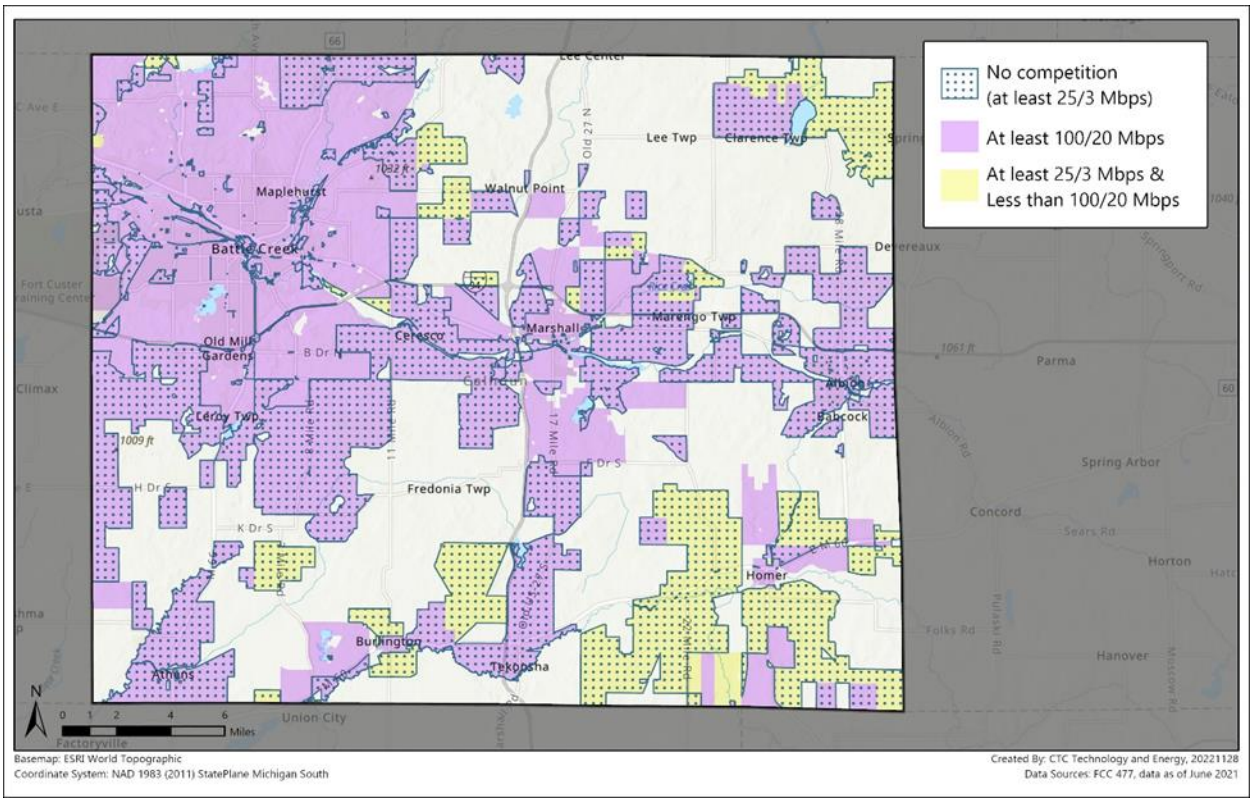
Figure 5: Areas able to receive 100/20 and/or 25/3 wireline service in Calhoun County



It is common for ISPs to update technology in more densely populated areas due to the higher return on investment; this model tends to leave less dense areas with outdated technology. Figure 5 shows the same pattern of investment in Calhoun County, where many of the more rural areas in the southern and northeast pockets of the County are underserved or even unserved.

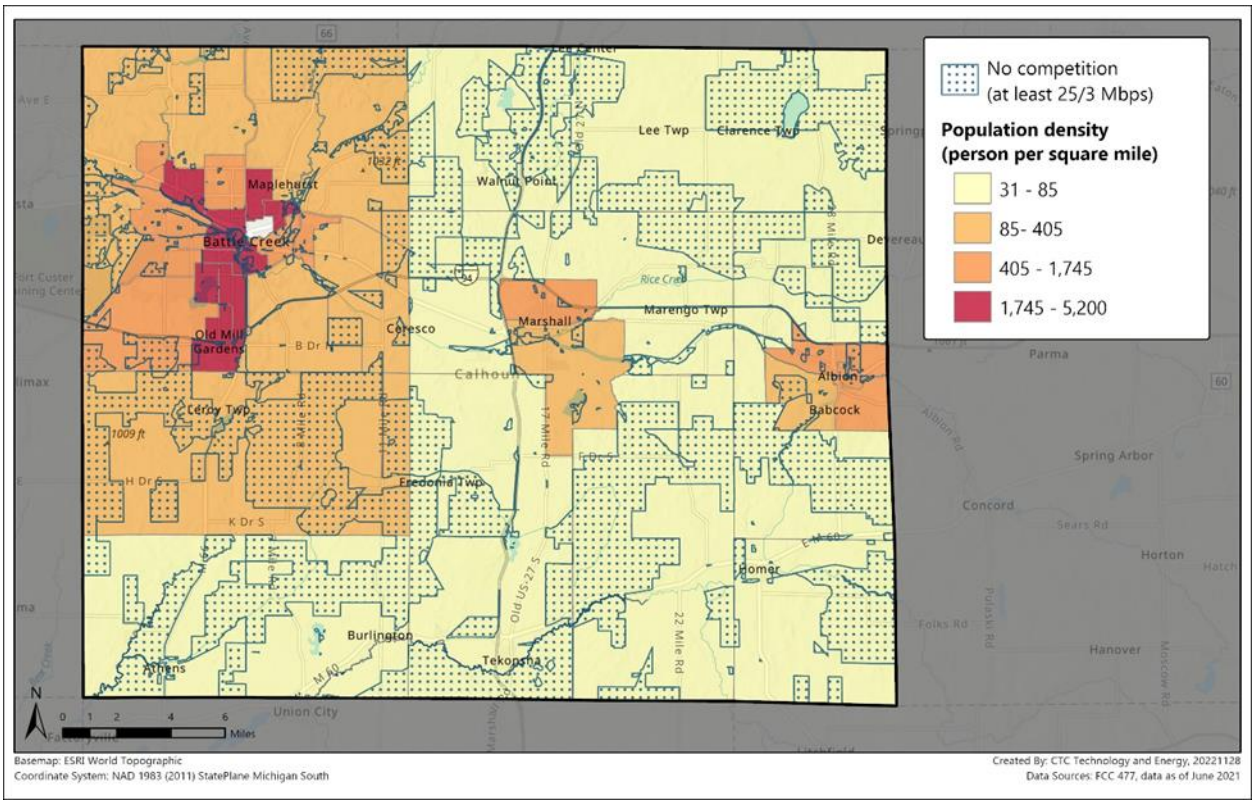
Furthermore, FCC Form 477 data indicate that many areas are served by a single provider, as seen below in Figure 6.

Figure 6: Areas of the County with 25/3 and/or 100/20 service from only one provider



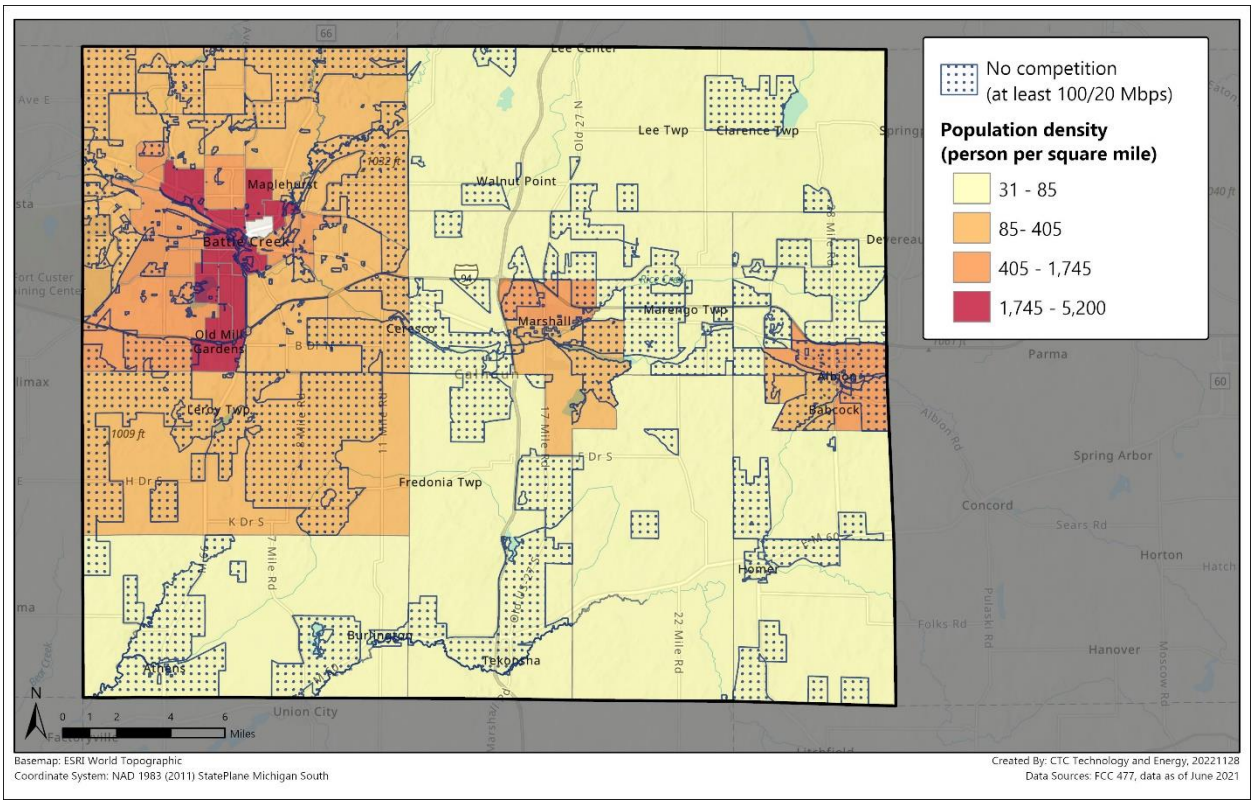
Comparing these areas of the County with only one choice for 25/3 wireline service to population density (Figure 7) shows that many of the more rural areas of the County suffer from a lack of competition.

Figure 7: Areas with no competition at 25/3 Mbps overlaid with population density



However, examining areas with no competition at 100/20 speeds—illustrated in Figure 8—reveals Calhoun County displays large sections in more densely populated areas that also suffer from a lack of competition at these speeds. This may suggest a general lack of investment in infrastructure capable of delivering high-speed broadband.

Figure 8: Areas with no competition at 100/20 Mbps overlaid with population density



3.2 Residential broadband availability

The assessment identified seven primary residential ISPs serving Calhoun County:[12]

- AT&T provides fiber broadband and DSL services.
- Comcast provides cable broadband services.
- WideOpenWest (WOW!) provides cable broadband services.
- Springport Telephone Company (Springcom) provides cable broadband and DSL services.[13]
- Charter provides cable broadband services.
- CenturyLink/Brightspeed[14] provides DSL services.
- City of Marshall FiberNet provides fiber broadband services.

[12] Research was conducted in summer 2022, with updates in October 2022 as CenturyLink rebranded to Brightspeed.

[13] Springport Telephone Company is the same company as Springcom. Springcom is the cable and fiber provider, while Springport Telephone Company is the local exchange carrier and DSL provider.

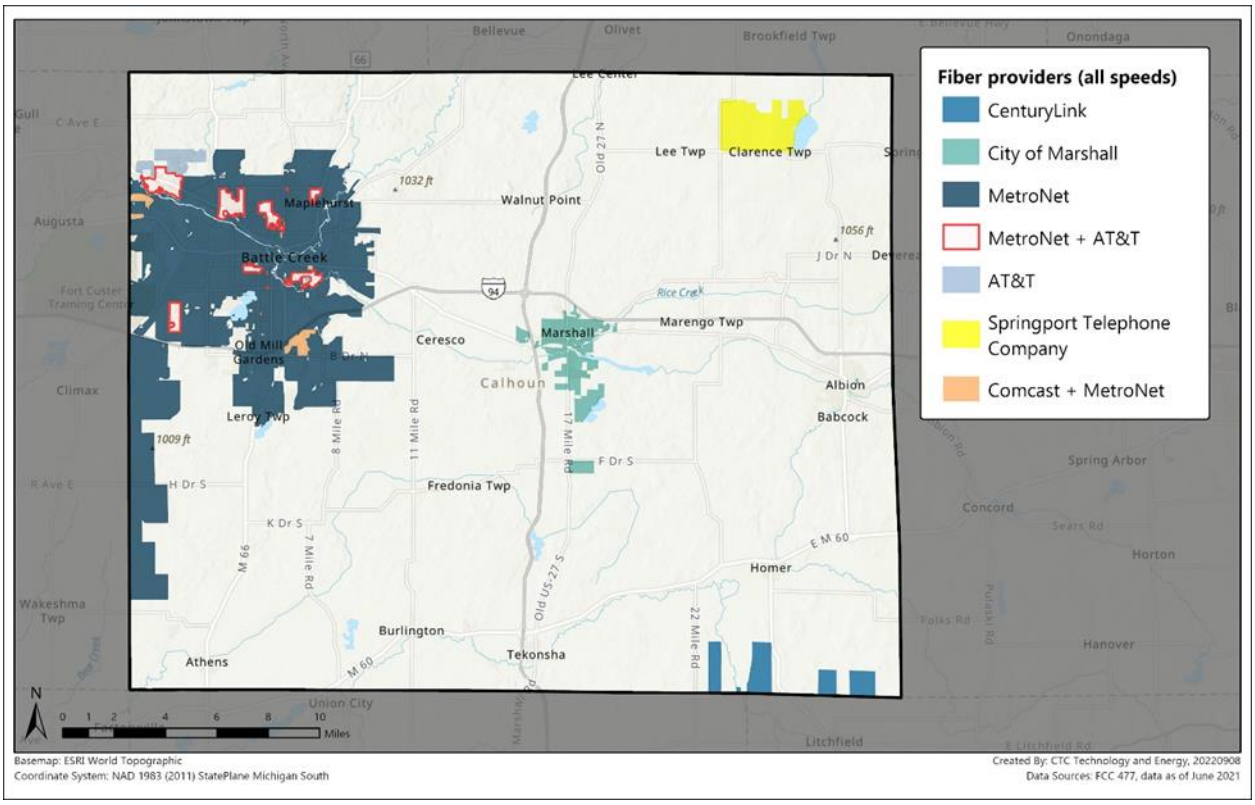
[14] Brightspeed is the rebranded name for CenturyLink customers in certain parts of the country. All CenturyLink customers in Michigan have been transferred to Brightspeed as of October 3, 2022.

Additionally, several other ISPs reported small service areas in the County, as described in the following sections.

3.2.1 Fiber broadband availability

FCC Form 477 data suggest significantly more fiber investment throughout the northwestern portion of the County, with smaller pockets of fiber connectivity in northeast and central areas. Figure 9 illustrates fiber providers' reported service in Calhoun County.

Figure 9: Residential fiber providers in Calhoun County



Despite CTS/MetroNet's extensive reported coverage, the project team was unable to identify residential addresses served by CTS/MetroNet.[15]

FiberNet, the fiber provider in the City of Marshall, only operates within the City's boundaries.[16]

AT&T claims fiber coverage in small areas throughout the City of Battle Creek and along the western border of the County.

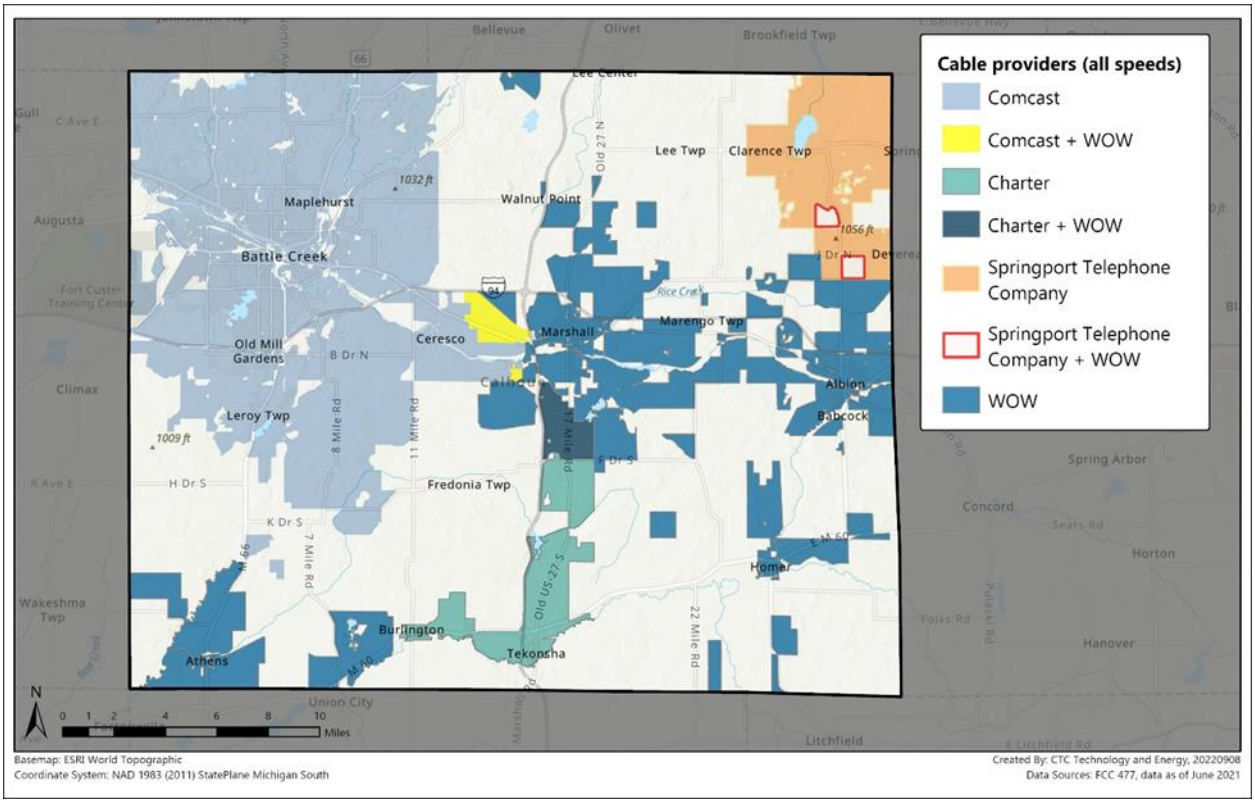
[15] MetroNet purchased the CTS Telecom network in December 2021. A telephone conversation with a sales representative on October 26, 2022, confirmed that MetroNet is not currently taking on new customers in CTS Telecom's service territory, as it is upgrading the network.
[16] The potential exists under state law to expand this network.

CenturyLink claims fiber coverage in small pockets along the southeastern border of Calhoun County in the Homer township.

3.2.2 Cable broadband availability

Figure 10 illustrates the reported residential cable broadband coverage of the providers in Calhoun County.

Figure 10: Residential cable broadband providers in Calhoun County



Comcast reports cable broadband service throughout the northwest corner of the County.

WOW! reports pockets of cable service throughout the eastern portion of the County along with limited coverage in the southwestern corner.

Springcom reports cable broadband service in the northeastern corner of the County.

Charter reports limited cable broadband service in central southern portions of the County.

3.2.3 DSL broadband availability

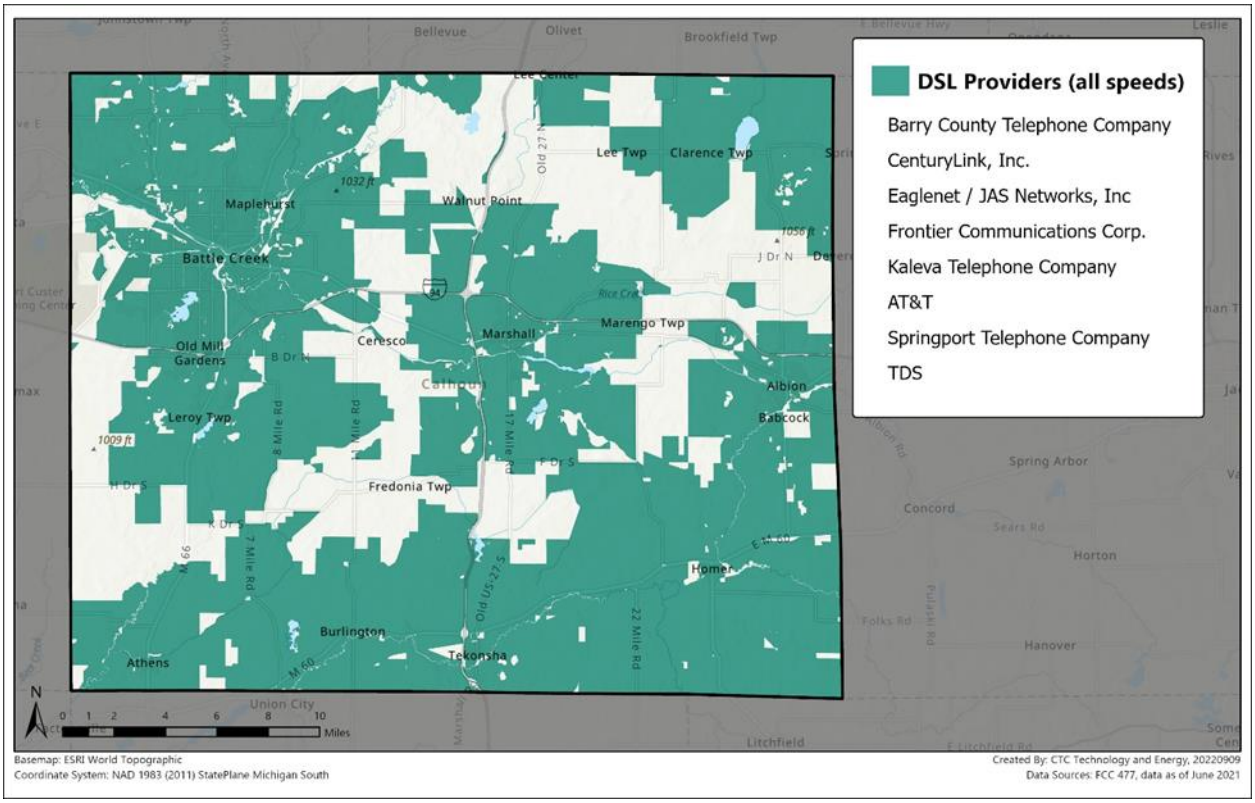
The following providers report DSL broadband service throughout the majority of Calhoun County:

- Barry County Telephone Company

- CenturyLink/Brightspeed
- Eaglenet/JAS Networks
- Frontier Communications
- Kaleva Telephone Company
- AT&T
- Springport Telephone Company
- TDS

Figure 11 illustrates the DSL service territories reported by these providers in Calhoun County.

Figure 11: Residential DSL providers in Calhoun County (all speeds)



3.2.4 Fixed wireless broadband availability

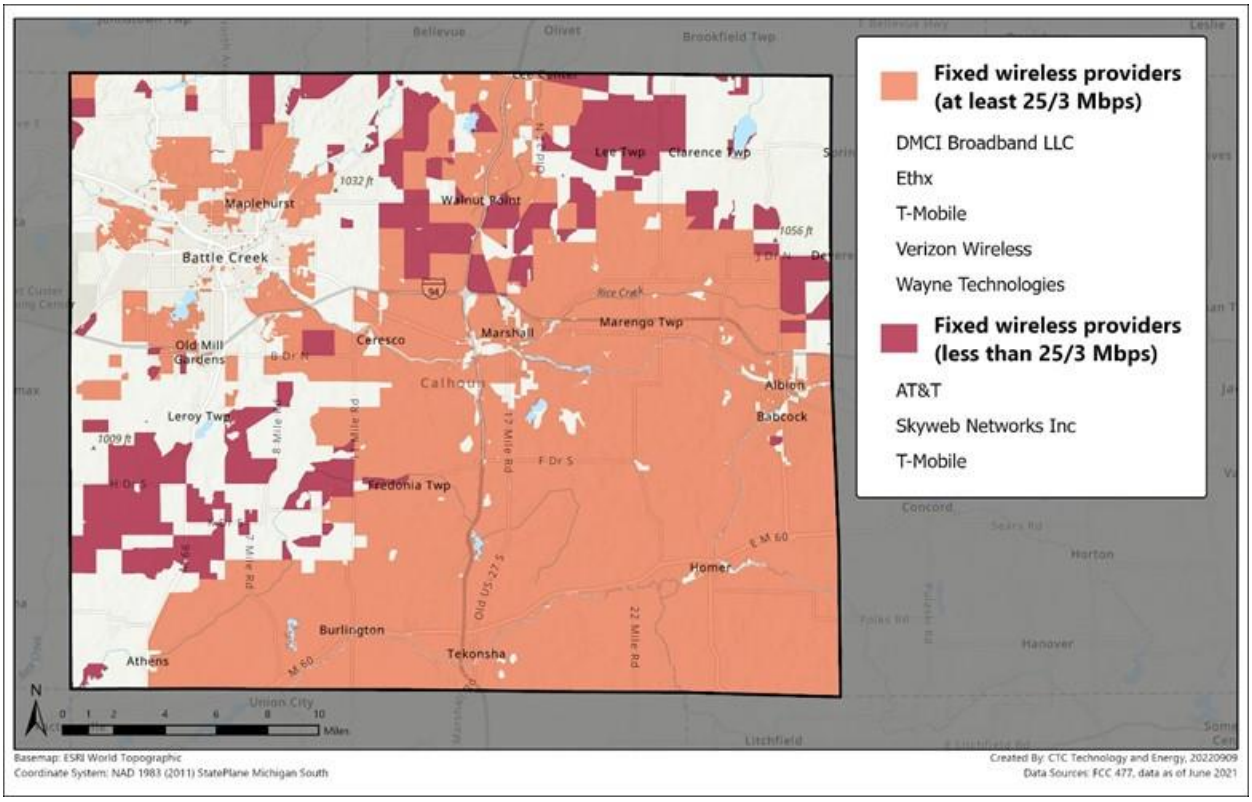
The following providers report fixed wireless coverage in Calhoun County at varying speeds:

- DMCI Broadband LLC
- Ethx
- T-Mobile

- Verizon Wireless
- Wayne Technologies
- AT&T
- Skyweb Networks Inc

Figure 12 illustrates the coverage of fixed wireless providers throughout the County. It should be noted that T-Mobile, Verizon, and AT&T are mobile providers that provide residential fixed wireless service across the same platform.

Figure 12: Fixed wireless broadband service providers in Calhoun County



3.2.5 Future plans reported by several ISPs

The project team engaged a number of ISPs in conversations to understand their plans for expansion in Calhoun County. All the ISPs were interested in expanding services—most through state and federal funding opportunities—although some did mention barriers related to the increased funding including staffing and supply chain challenges. The majority of the ISPs were interested in engaging with Calhoun County to support development of broadband infrastructure.

Currently, Midwest Energy and Communications (MEC)[17] is not serving Calhoun County, but was awarded territory through the RDOF[18] auction and plans to begin building in the southwestern corner of the County in early 2023.

Mercury Broadband, a family-owned ISP based in Topeka, Kansas, is another successful RDOF bidder.[19] Although primarily a wireless-based company, representatives expressed interest in providing FTTP services to County residents and plans to deploy a combination of fiber and fixed wireless networks.

Springport Telephone Company (aka Springcom), an independent telephone company and ISP, also has plans to deploy fiber in the Duck Lake area in 2023. Springcom indicated that it has had the opportunity to pursue fixed wireless solutions but sees fiber as a more future-proof technology to offer its customers.

3.3 Residential broadband pricing

Pricing research was also conducted for the seven major residential ISPs in Calhoun County.

3.3.1 Fiber broadband services

AT&T, which offers fiber broadband service primarily in the Battle Creek area of Calhoun County, offers four main speed tiers. Table 1 summarizes the services offered.

[17] "Midwest Energy & Communications - Michigan, Northern Indiana and Ohio," Midwest Energy & Communications.

[18] Midwest Energy & Communications, "MEC expands fiber internet service to 30,000 across southern Michigan," Lansing State Journal, October 6, 2022, https://www.lansingstatejournal.com/story/sponsor-story/midwest-energy-and-communications/2022/10/06/mec-expands-fiber-internet-service-to-30000-across-southern-michigan/69539956007/ (accessed Nov 21, 2022).

[19] In late 2022, Northleaf Capital Partners acquired a controlling interest in Mercury Broadband. It plans to invest up to $230 million to support Mercury's broadband expansion plans. Joan Engebretson, "RDOF Winner Mercury Broadband Sells Controlling Interest," Telecompetitor, November 8, 2022, https://www.telecompetitor.com/rdof-winner-mercury-broadband-sells-controlling-interest/ (accessed Nov 17, 2022).

Table 1: AT&T fiber service plans

Service	Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
Internet 300	300/300	$60	Price not inclusive of $50 monthly AutoPay and paperless billing discount. No minimum term contract. Installation fee up to $149 may apply. $10 charge applies for each additional 50 GB, with unlimited data allowance purchase available for $30 monthly.
Internet 500	500/500	$70	
Internet 1000	1000/1000	$85	
Internet 2000	2000/2000	$115	

AT&T also offers a low-cost program for qualifying households, AT&T Access, which is discussed in section 3.3.5.

Springcom is in the process of deploying a fiber-to-the-home network and the prices listed below in Table 2 are the expected prices for service tiers. These prices were established through a telephone inquiry with customer service. The prices will range from $75 to $130 monthly, with symmetrical speed tiers ranging from 25 Mbps to 100 Mbps.

Table 2: Springcom fiber service plans[20]

Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
25/25	$75	All plans subject to a $50 activation fee. Company will provide a modem but customers must provide their own routers.
50/50	$100	
100/100	$130	

FiberNet is the City of Marshall's primary fiber broadband service provider and offers five primary speed tiers for locations throughout the City. The speed tiers range in download and upload speed from 50/50 Mbps to 1000/1000 Mbps, with prices ranging from $44 to $200 a month. FiberNet is allowed to operate within the boundaries of the City of Marshall and can extend

[20] These are the projected plan prices, as reported by a Springcom sales representative. The company is still working to deploy the fiber network in the Duck Lake area.

beyond the City if neighboring communities comply with state law requirements concerning notice, public meetings etc. Table 3 summarizes the services offered.

Table 3: City of Marshall FiberNet service plans

Service	Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
Tier 1	50/50	$44	$50 one-time deposit equipment installation required.
Tier 2	150/150	$66	
Tier 3	250/250	$99	
Tier 3.5	500/500	$150	
Tier 4	1000/1000	$200	

3.3.2 Cable broadband services

There are a number of cable broadband providers throughout Calhoun County, including Springcom, WOW!, Comcast, and Charter. All four offer broadband services at or above 100/20 Mbps at varying pricing. The prices listed below are not promotional pricing, but the standard pricing range each provider offers.

Springcom currently offers cable broadband services but will be phasing out the service in favor of FTTP. New customers are ineligible to subscribe to this service.[21] As it is not available to new customers, prices were not accessible during research. The County should engage with Springcom as their fiber services become available to understand the pricing and affordability of their services.

Below, Table 4 summarizes the wide range of cable broadband services provided by Comcast. Comcast offers seven service tiers with monthly non-promotional pricing ranging from $9.95 to $119.00. Three of the service tiers have the same upload speed of 10 Mbps with varying download speeds, but cost between $59 and $89 per month for customers.

[21] Telephone conversations with a Springcom sales representative confirmed that new customers are not eligible to subscribe to cable broadband services. As the company will phase out the service entirely, it would not release cable broadband service costs.

Table 4: Comcast residential cable broadband service plans

Service	Advertised download/upload speed (Mbps)	Monthly price (non-promotional)	Notes
Internet Essentials	50/10	$9.95	Equipment is included. No term contract. Internet Essentials plans are only available to eligible households; see section 3.3.5.[22]
Internet Essentials Plus	100/10	$29.95	
Connect	50/10	$59.00	Equipment available for $25 per month; customers receive $10 discount off base price if they use their own modem router equipment. $10 discount available for paperless billing and AutoPay.
Connect More	100/10	$79.00	
Fast	300/10	$89.00	
Superfast	600/20	$99.00	
Gigabit	1,200/35	$119.00	

WOW! is a cable broadband service provider that services portions of Calhoun County including Athens, the City of Marshall, the City of Albion, and limited areas in Homer. WOW! is currently upgrading networks in its "Mid-Michigan" region but the completion date is unknown. The three highest speed tiers are currently unavailable to the Calhoun area.[23] WOW!'s services are summarized below in Table 5.

[22] "Internet Essentials," Comcast https://www.xfinity.com/learn/internet-service/internet-essentials#faq (accessed August 29, 2022).

[23] Conversations with a WOW customer support representative confirmed that only two speed service tiers, Internet 50 and Internet 200, are currently available to Calhoun residents. WOW is in the process of upgrading networks to offer faster service, but the completion timeframe is unknown.

Table 5: WOW! residential cable broadband service plans

Service	Advertised download/upload speed (Mbps)	Monthly price (non-promotional)	Notes
Internet 50	50/5	$24.99	Does not include a $5 monthly AutoPay discount. Does not include an optional $14 monthly modem rental. No minimum contract term.
Internet 200	200/10	$44.99	
Internet 500	500/50	$69.99	
1 Gig	1000/50	$89.99	
1.2 Gig	1200/50	$114.99	Does not include a $5 monthly AutoPay discount. Customers may utilize a free modem rental with a continuous subscription, or they can use their own equipment. No minimum contract term.

Charter is a cable broadband service provider that services south central Calhoun County around the Burlington and Tekonsha township area. Charter offers three speed tiers with download speeds ranging from 300 Mbps to 1000 Mbps, as described in Table 6.

Table 6: Charter residential cable broadband service plans

Service	Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
Internet	300/10	$49.99	No equipment rental requirement.
Internet Ultra	500/20	$69.99	
Internet Gig	1000/35	$89.99	

3.3.3 DSL internet service

Springcom reports service throughout the Duck Lake area in northeastern Calhoun. A survey of Springcom internet services found that the company offers three different primary plans in its service territory. Monthly costs range from $72 to $90, with download speeds ranging from 10 to 20 Mbps and upload speeds varying from 2 to 4 Mbps. Table 7 summarizes the services offered.

Table 7: Residential DSL services offered by Springcom

Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
10/2	$72	This service is only available to customers in the company's telephony territory.
15/3	$80	
20/4	$90	

CenturyLink/Brightspeed reports DSL service in small pockets of Calhoun County, and only offers one speed tier in the service area. Customers can receive up to 3 Mbps download speed and 0.5 Mbps upload speed. Table 8 summarizes the service offered by Brightspeed.

Table 8: Residential DSL service offered by Brightspeed

Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
3/0.5	$50	No minimum contract term. Customers may use their own modem equipment.

3.3.4 Fixed wireless broadband services

DMCI Broadband reports service throughout pockets of Calhoun County. As shown in Table 9, the company offers a variety of speed tiers with prices ranging from $45.90 to $134.90 a month. Download speeds range from 1.5 Mbps to 100 Mbps.

Table 9: Fixed wireless services offered by DMCI Broadband

Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
1.5/0.384	$45.90	Does not include one-time installation fee of $79.00. One year minimum contract term. $275 early termination fee.
3/0.512	$59.90	
4 – 6/0.768	$67.90	
10/2	$79.00	
15/3	$89.90	
20/5	$94.90	
40/10	$104.90	
60/20	$114.90	
80/25	$124.90	
100/25	$134.90	

Frontier Communications reports fixed wireless service in areas of Calhoun County, but research conducted by the project team was unable to identify serviceable addresses. The project team searched a number of semi-random addresses throughout the reported service territory of Frontier Communications and was unable to confirm service.

AT&T claims fixed wireless service in parts of Calhoun County as well. Customers have access to one speed tier, priced at $69.99 per month. AT&T claims that service performance may be affected by the customer's proximity to a cell site and the capacity of the cell site. As such, customers will pay the same amount regardless of speeds available at their residence. This caveat regarding closeness to cell tower sites indicates that this service is LTE cellular service repackaged as home internet service. Table 10 summarizes the service offered by AT&T.

Table 10: Fixed wireless services offered by AT&T

Advertised download/upload speeds (Mbps)	Monthly price (non-promotional)	Notes
25/1	$69.99	Up to $149 installation fee applies. Plan includes 350GB data allowance per month. $10 per 50GB of additional data.

3.3.5 Comcast and AT&T offer low-cost options for qualifying households

Comcast offers a low-cost plan for eligible customers called Internet Essentials that could help address broadband affordability concerns for some County residents. Since 2011, Internet Essentials has offered eligible low-income households a wired internet connection for $9.95 per month. Internet Essentials also includes added benefits; customers can purchase a refurbished computer for $149.99,[24] and can access out-of-home Wi-Fi on Comcast's Wi-Fi hotspots across the country.[25]

In response to the Covid-19 pandemic, Comcast increased the program's connection speeds to the federal definition of broadband at 25/3 Mbps. Then, in early 2021, Comcast announced it was further increasing the speed to 50/10 Mbps.[26]

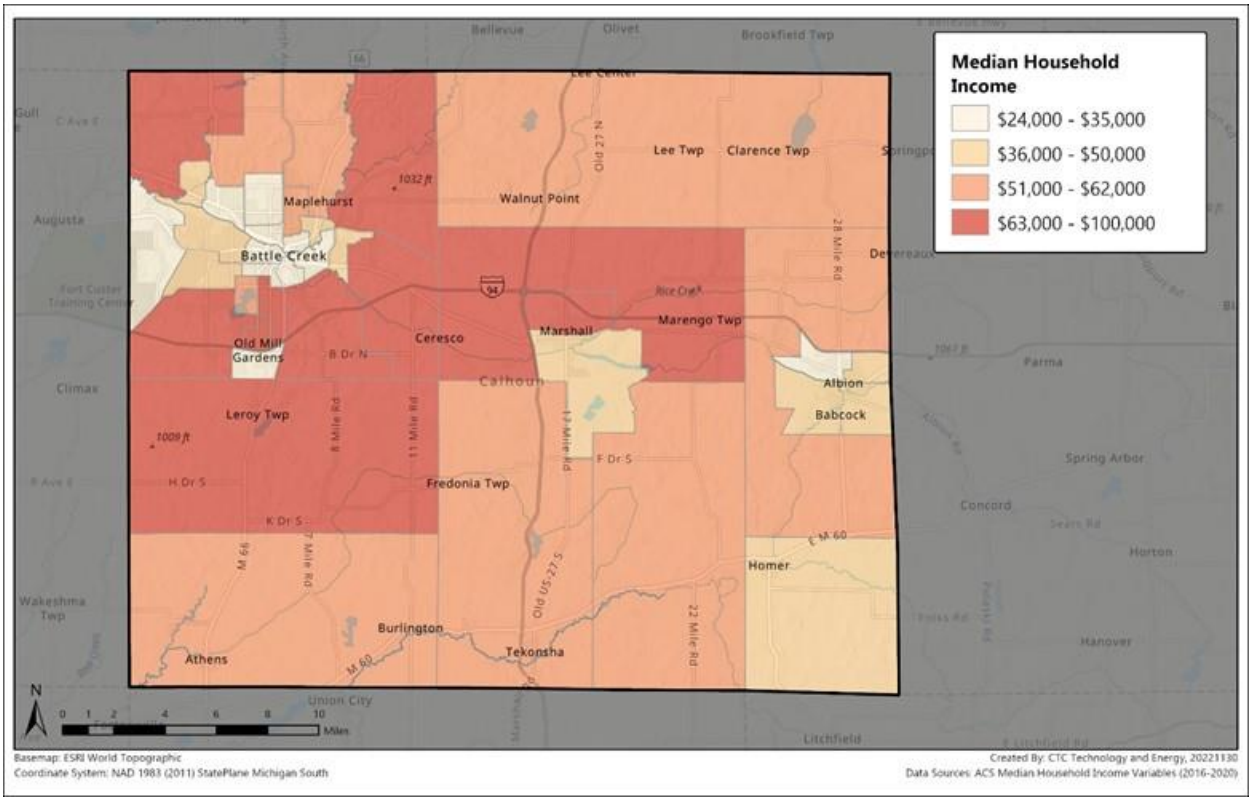
[24] Comcast, "Internet Essentials Programs," https://www.internetessentials.com/ (accessed May 2022).
[25] Comcast, Ibid.
[26] "Internet Essentials: Staying Connected During Coronavirus," Comcast, https://www.internetessentials.com/covid19 (accessed May 2022).

AT&T also offers an eligibility-based low-cost program, AT&T Access. The company recently announced speed increases to the program, which now offers symmetrical 100 Mbps service for $30 per month where available.[27] For households that only have access to DSL services from AT&T (as opposed to fiber), lower speed tiers are available for $5 to $10 per month. Eligibility requirements for these programs are described in Appendix E.

3.4 Broadband adoption indicators and ACP participation vary throughout Calhoun County

Affordability is likely a potential concern for some residents in certain areas of the County, given the higher levels of poverty in some areas—including some of the municipalities—as shown in Figure 13. Analysis of publicly available data, including the FCC's Form 477 data and data from the U.S. Census Bureau's American Community Survey (ACS), found significant overlap between areas with high rates of poverty and areas with large numbers of individuals without internet subscriptions and/or devices. (See Appendix A for more information about these data.)

Figure 13: Median household income in Calhoun County

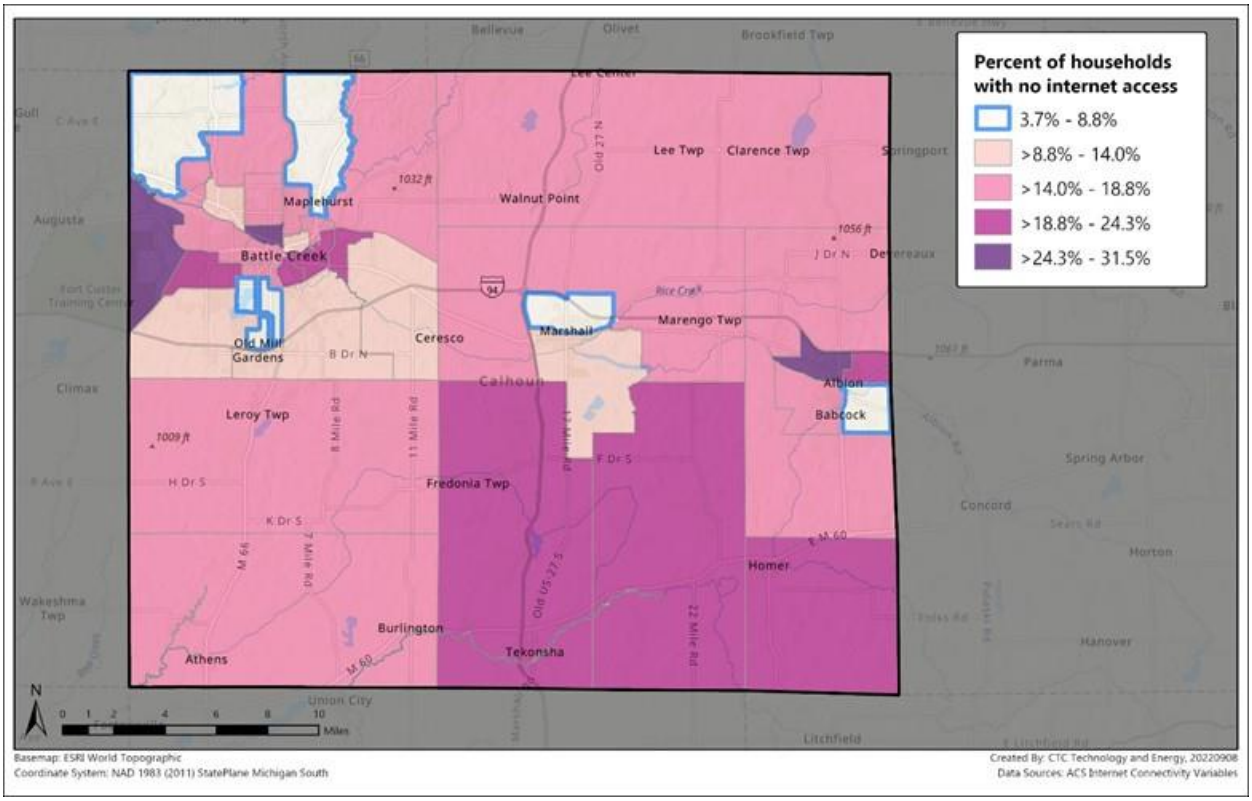


[27] "New AT&T Access Plan + New Federal Benefit = Free Internet," AT&T, https://about.att.com/story/2022/new-access-plan-plus-new-federal-benefit.html (accessed August 29, 2022).

3.4.1 Internet subscriptions and device ownership

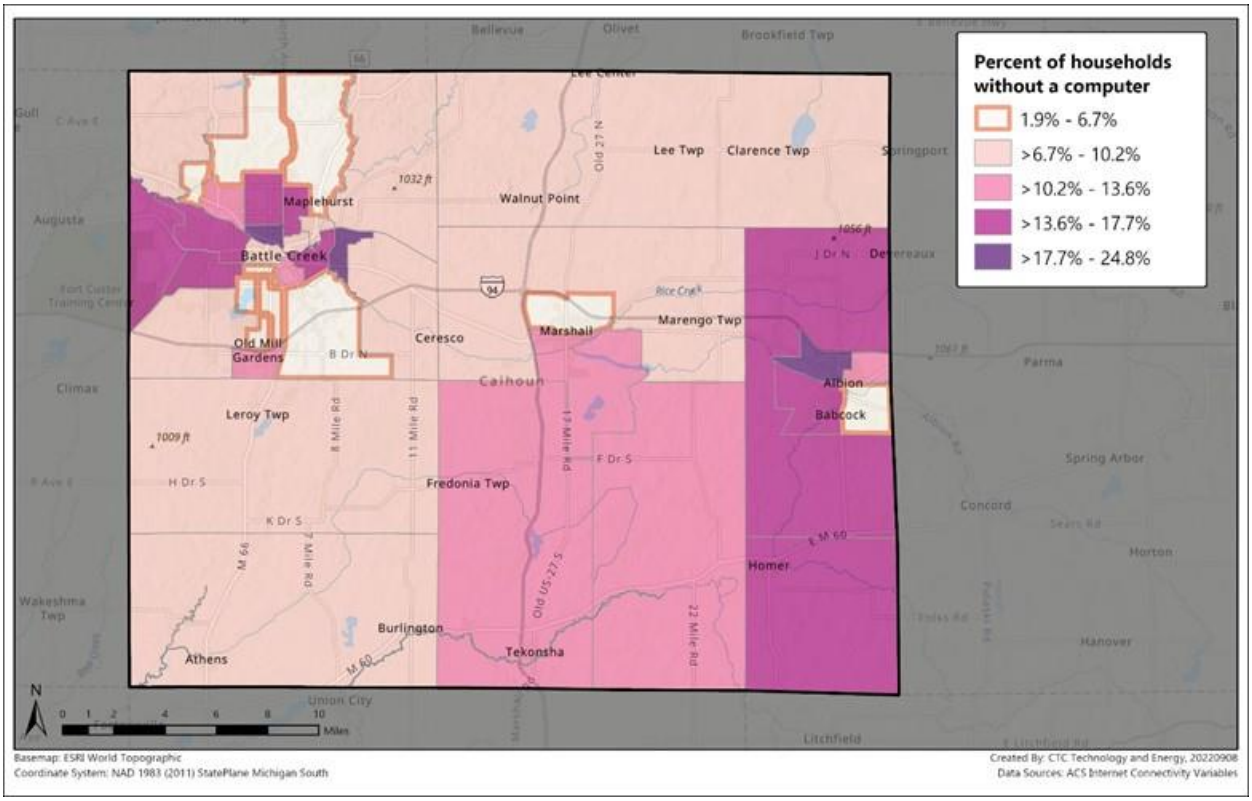
The U.S. Census Bureau collects data on a variety of topics in its American Community Survey, including information about household demographics and broadband access. As shown in Figure 14, these data indicate that there are several areas in Calhoun County where a large percentage of the population does not have internet subscriptions. These areas tend to be located in the southeastern portions of the County, with small pockets in the northwest near the Battle Creek area.

Figure 14: Percentage of households without internet subscriptions



In addition, an analysis of the rate of computer ownership (Figure 15) indicates a significant percentage of residents also lack a computer. As with internet subscriptions, this population tends to be concentrated in the eastern portion of the County with small portions around Battle Creek.

Figure 15: Percentage of households without a computer



These data indicate that the populations with the lowest levels of internet access tend to be concentrated in the northwestern and eastern portions of the County. Specifically, the Battle Creek area and the City of Albion show the highest rates of lack of internet access and household computers. When compared to Figure 13 which illustrates income levels, there is a clear connection between the areas identified in Figure 14 and Figure 15 and areas of Calhoun with high levels of poverty. Therefore, affordability is likely a significant barrier to internet and device access in Calhoun County.

3.4.2 ACP participation

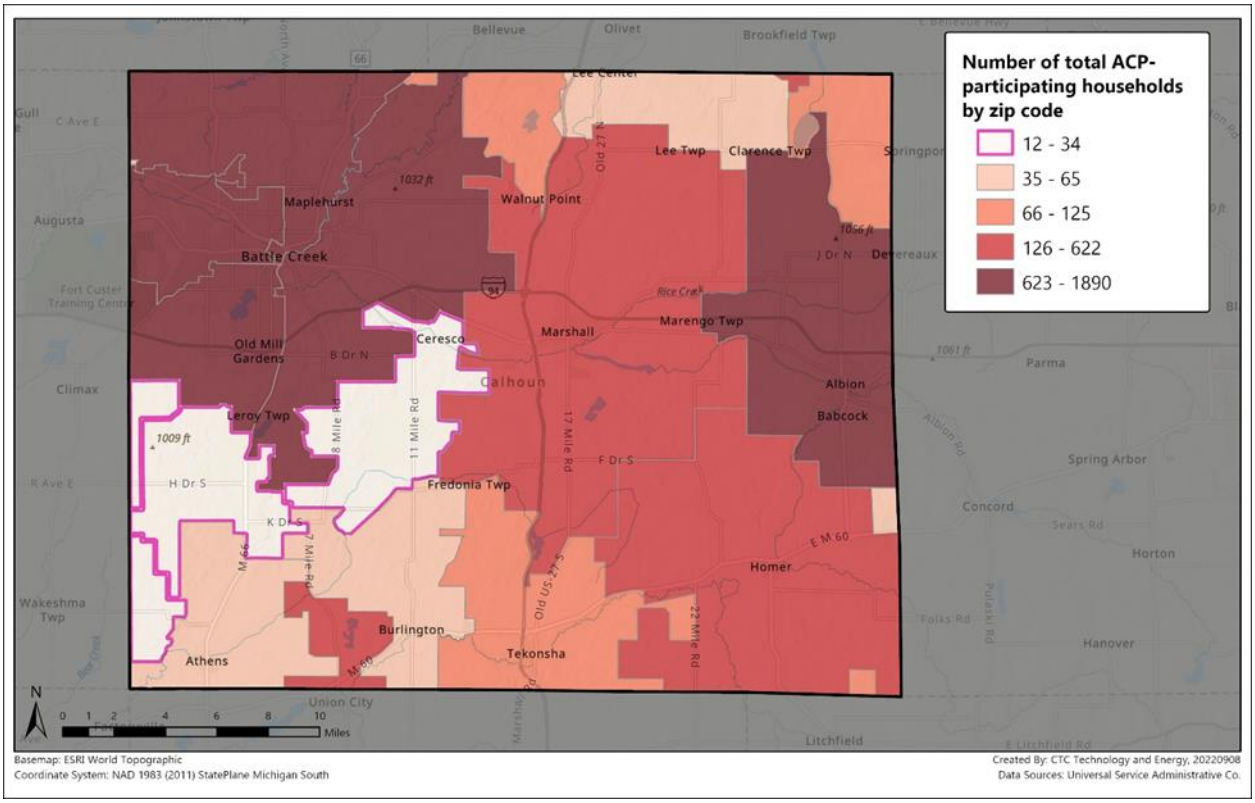
The Affordable Connectivity Program (ACP) is a federal program administered by the FCC that provides a benefit of $30 per month toward internet service for eligible low-income households.[28] Approximately 34 percent of households in Calhoun County—approximately

[28] "Affordable Connectivity Program," Federal Communications Commission, https://www.fcc.gov/acp (accessed November 10, 2022).

18,300 households—are eligible for ACP enrollment. However, as of September 2022, just 27.7 percent of eligible households (5,073 households) were enrolled in the program.[29]

An analysis of ACP enrollment data found higher enrollment numbers in the northwest and northeast corners of the County. The southwestern corner and central area near Ceresco show the lowest ACP enrollment.

Figure 16: Enrollment in the Affordable Connectivity Program



High enrollment numbers in the northwest and northeast of Calhoun County indicate that broadband affordability could be a concern in those areas. Factors such as lack of program awareness, lack of need, and difficulty in enrollment may also create barriers to ACP enrollment in the areas with low participation rates.

[29] Estimate is based on USAC ACP enrollment data and uses U.S. Census ACS 2021 5-year data to estimate eligibility; "ACP Enrollment and Claims Tracker," Universal Service Administrative Company, https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/; "S1901 – Census Bureau Tables," U.S. Census Bureau, https://data.census.gov/table?q=S1901&g=0500000US26025

4 A residential survey found affordability is a critical barrier for households who do not subscribe to internet services

To gather additional data about broadband access and adoption, the project team conducted a random sample telephone survey of Calhoun County residents.

Survey results suggest that most residents of Calhoun County have access to the internet (more than 8 in 10 households), have a computer (9 in 10 households), and are device secure, meaning they could replace their device in a reasonable timeframe if it were to be damaged.

However, survey results suggest a different reality for low-income households in Calhoun County. These households have lower rates of broadband adoption, citing cost as the reason for not seeking internet services, and may be significantly underutilizing available subsidy programs. These findings suggest residents of Calhoun County would benefit from more affordable service offerings, more promotion and enrollment support for subsidy programs, and affordable device repair services.

4.1 Key trends

Key findings from the survey are presented thematically in three subsections: broadband access gaps, device utilization gaps, and skills gaps in broadband and computer use.

4.1.1 Broadband access gaps

The survey found that there are few gaps in acquisition of residential internet services, but some residents are not taking advantage of available subsidized programs. The following are key findings:

- **Almost all respondents have internet access.** More than 80 percent of households have internet service. Cable (40 percent) and wireless (34 percent) are the leading types of internet service used by households who subscribe. 40 percent of customers subscribe to Comcast/Xfinity, and 26 percent use AT&T.
- **Most respondents purchase internet-only service.** 65 percent of households purchase internet-only service. Subscribers pay an estimated average of $125 for bundled service and $66 for internet-only service.
- **Some internet subscribers have issues with their service.** More than one-half of residential customers are satisfied with their service, but one-fifth are either not at all satisfied (12 percent) or only slightly satisfied (9 percent). 38 percent of subscribers said they lose connectivity at least monthly.
- **Some low-income households may be underserved.** 35 percent of households earning under $25,000 per year do not have internet service. Cost was the leading reason cited for not having internet service (mentioned by 78 percent of non-subscribers).

- **Residents may be underutilizing existing low-cost broadband programs.** One-fifth of low-income AT&T wired customers are enrolled in the ISP's Access program for low-income households, compared with 42 percent of Comcast/Xfinity customers enrolled in its Comcast Internet Essentials program. However, these figures are based on a small number of respondents.

4.1.2 Device utilization gaps

Most respondents have access to home internet service and computers, but some households may face significant challenges replacing or repairing a device if it were to be damaged. The following are key findings:

- **Most respondents have access to personal computing devices (desktop, laptop, and tablet) in the home.** This is particularly true among households earning $25,000 or more per year, where at least nine in 10 have a desktop or laptop computer. In comparison, about six in 10 of those earning under $25,000 per year have a desktop or laptop.
- **Most households would be able to replace non-working computers within a day (41 percent) or week (28 percent).** Respondents earning less than $75,000 would be less likely than those earning $75,000 or more per year to replace their computer within a day.

4.1.3 Skills gaps in using the internet

A small segment of respondents reported interest in improving their internet skills if a free or low-cost program were available. The following is a key finding:

- **One-fourth of respondents would be interested in a free or low-cost program to learn how to better use the internet.** Respondents with less than a graduate or similar education, those who earn under $100,00 per year, and those with children in the household are more interested in such a program to enhance internet skills.

4.2 Residential survey results

The results presented in this section are based on analysis of information provided by 500 residents of Calhoun County, from an estimated 54,124 households. Results are representative of the set of households with a confidence interval of ±4.4 percent. Unless otherwise indicated, the percentages reported are based on the "valid" responses from those who provided a definite answer and do not reflect individuals who said "don't know" or otherwise did not supply an answer because the question did not apply to them. Key statistically significant results ($p \leq 0.05$) are noted where appropriate.

4.2.1 Residential internet services

Respondents were asked about internet connection types and providers. This information provides valuable insight into residents' need for various internet and related communications services.

4.2.1.1 Internet Access

More than eight in 10 residents have internet service at home, as shown in Figure 17. Households with two or more members are more likely than households with one occupant to have internet service. Additionally, respondents ages 65+, those with a high school education or less, and those earning under $25,000 per year are less likely than their counterparts to have internet access (see Table 11).

Figure 17: Have home internet service (82 percent)

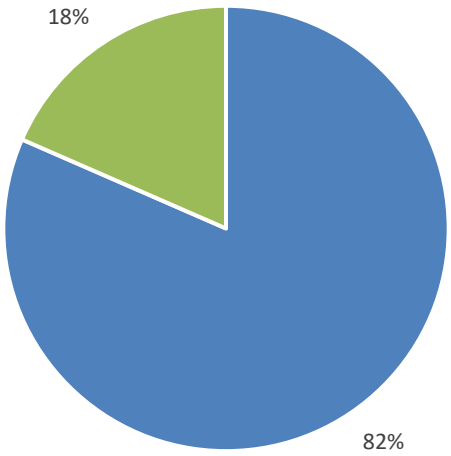


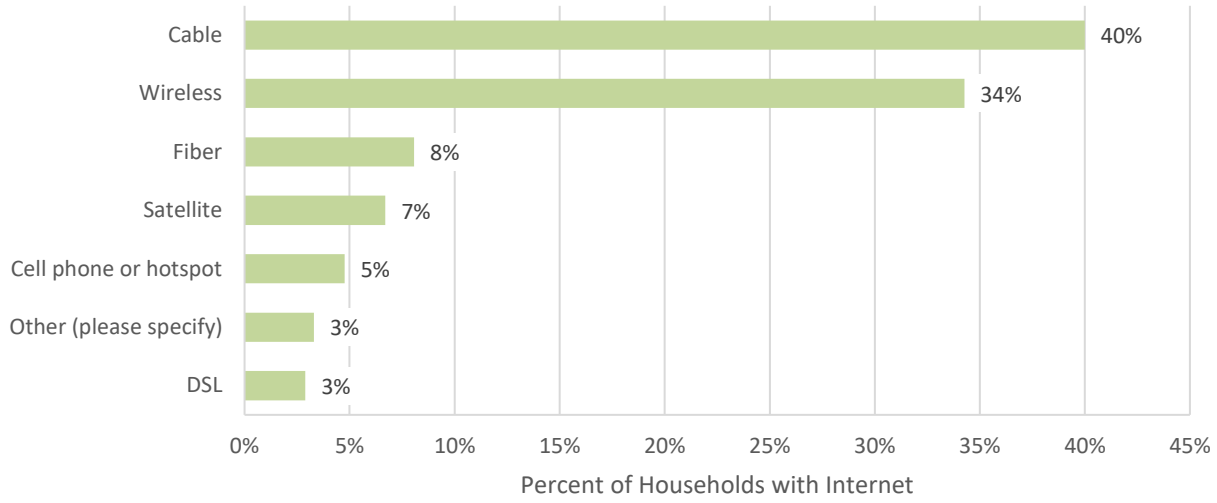
Table 11: Home internet usage by key demographics

	Total internet usage
TOTAL	**82%**
Respondent age	
< 35 years	84%
35 to 44 years	90%
45 to 54 years	89%
55 to 64 years	82%
65 years and older	69%
Education	
HS education or less	71%
Two-year/technical degree	87%
Four-year college degree	86%
Grad, prof, doctorate	92%
Income	
Less than $25,000	65%
$25,000 to $49,999	80%
$50,000 to $74,999	88%
$75,000 to $99,999	93%
$100,000 or more	90%
Race/ethnicity	
Hispanic/Latino	63%
Black/African American, non-Hispanic	88%
White, non-Hispanic	81%
Other/more than one, non-Hispanic	100%
Household size	
One HH member	62%
Two HH members	82%
Three HH members	92%
Four + HH members	97%
Children in household	
No children in HH	77%
Children in HH	92%

4.2.1.2 Home internet service

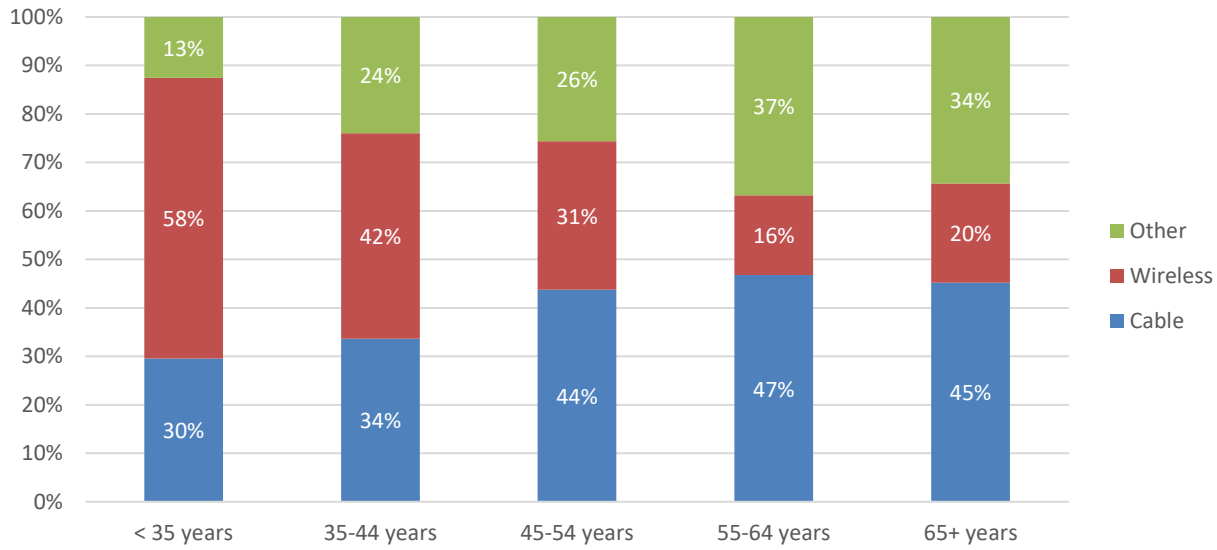
Cable (40 percent) and wireless (34 percent) are the leading connection types used by households with internet service, followed by fiber (eight percent), satellite (seven percent), and cellphone or hotspot (five percent), as shown in Figure 18.

Figure 18: Home internet service connection



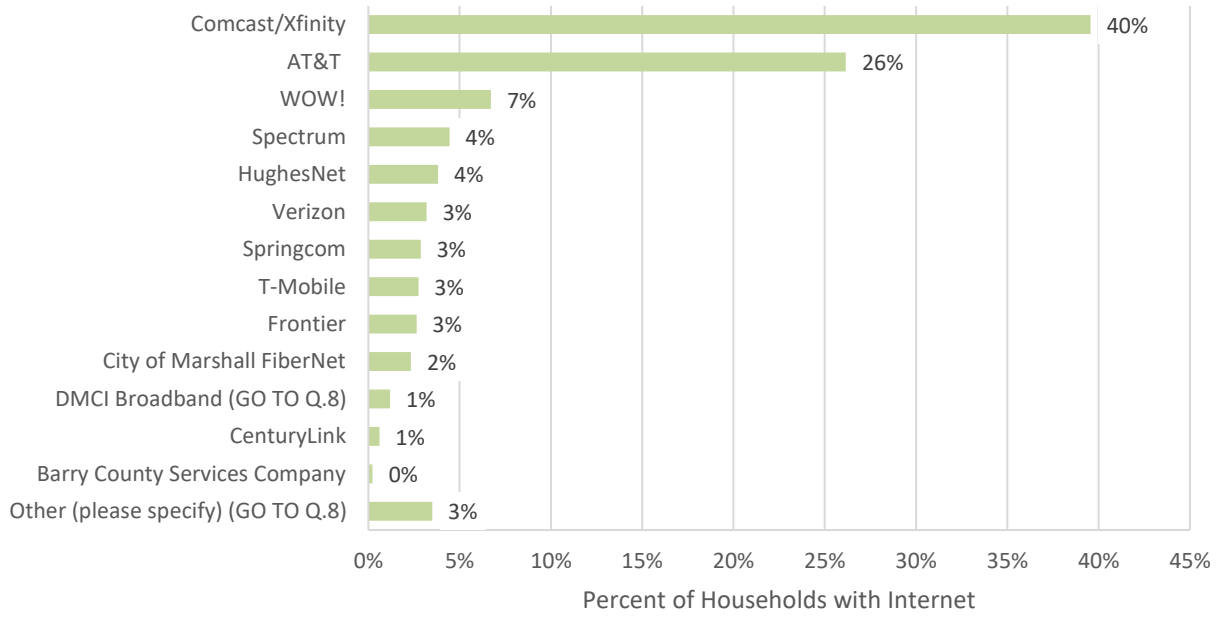
Respondents' use of different internet connection types varies across age groups, as illustrated in Figure 19. Respondents under age 45 are less likely than older respondents to have a cable modem connection. Younger respondents are much more likely to have wireless internet service. Specifically, 58 percent of respondents under age 35 stated they have a wireless connection.

Figure 19: Home internet service connection by respondent age



Four in 10 customers subscribe to Comcast/Xfinity, and 26 percent use AT&T (see Figure 20). Other internet service providers are each used by fewer than 10 percent of subscribers.

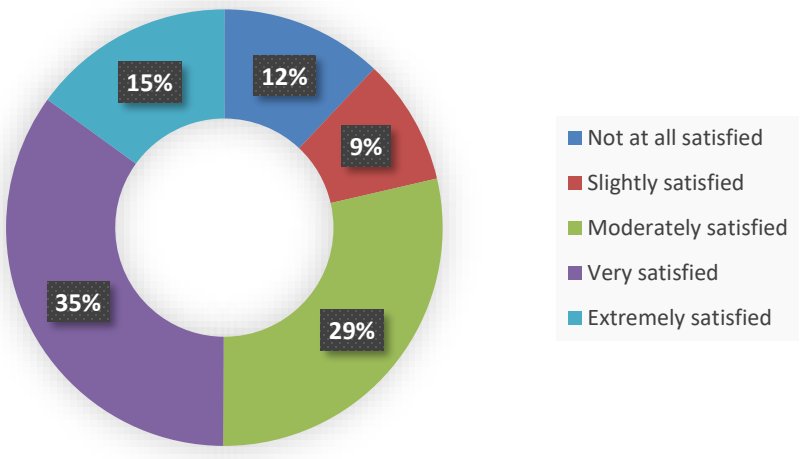
Figure 20: Home internet service provider



4.2.1.3 Satisfaction with home internet service

Overall, one-half of customers are very (35 percent) or extremely (15 percent) satisfied with their internet service. Another 29 percent are moderately satisfied, and one-fifth of respondents are either not at all satisfied (12 percent) or slightly satisfied (nine percent), as shown in Figure 21.

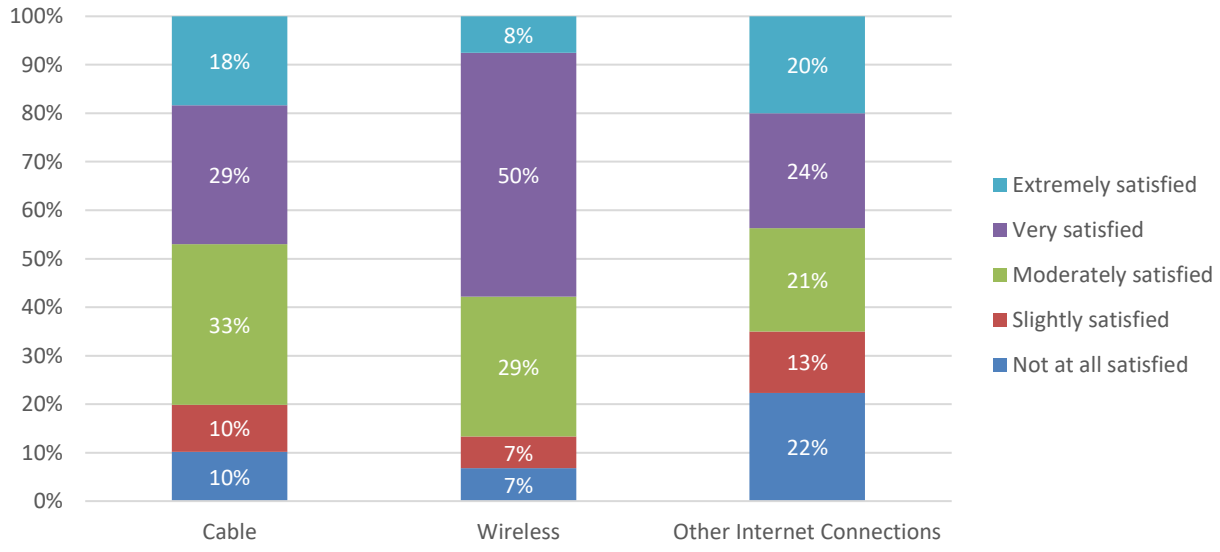
Figure 21: Satisfaction with home internet service



As shown in Figure 22, 18 percent of respondents with a cable internet connection are extremely satisfied with their service, compared with eight percent of those with a wireless connection.

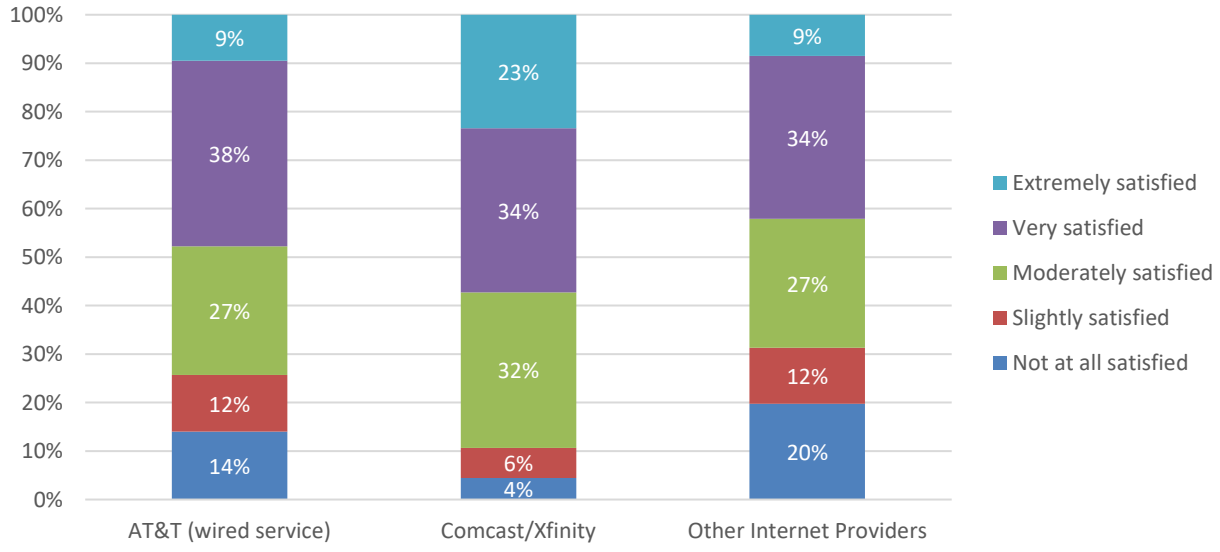
However, fewer respondents with a wireless connection had a moderate or lower level of satisfaction.

Figure 22: Satisfaction with home internet service by internet service connection



Comcast/Xfinity customers expressed a higher overall level of satisfaction with their internet service than did AT&T customers (see Figure 23). Specifically, 23 percent of Comcast/Xfinity customers are extremely satisfied, compared with nine percent of AT&T customers.

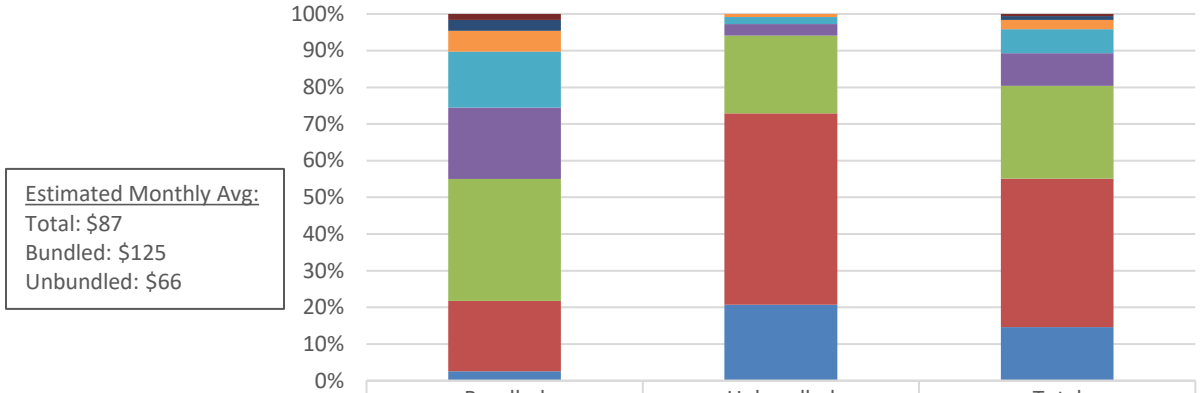
Figure 23: Satisfaction with home internet by internet service provider



4.2.1.4 Internet service cost and programs for low-income subscribers

Respondents were asked to give the cost of their home internet service, as shown in Figure 24. The estimated monthly average cost for internet service is $87 across all subscriber types, $125 for bundled services, and $66 for unbundled internet service. More than one-half of respondents pay $80 or less per month for their home internet service. Another 25 percent pay $81 to $120 per month, and 20 percent pay over $120 per month.

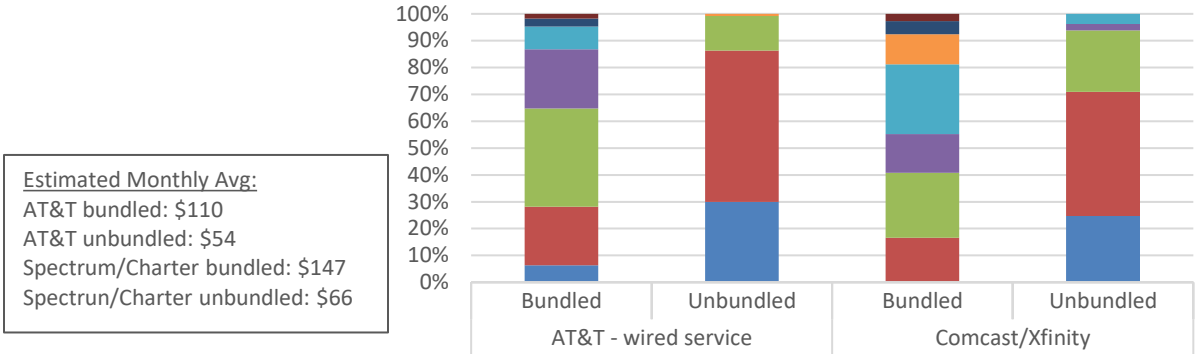
Figure 24: Monthly price for internet service



	Bundled	Unbundled	Total
More than $280	2%	0%	1%
$241 to $280	3%	0%	1%
$201 to $240	6%	1%	3%
$161 to $200	15%	2%	7%
$121 to $160	19%	3%	9%
$81 to $120	33%	21%	25%
$41 to $80	19%	52%	41%
$0 to $40	3%	21%	15%

36 percent of AT&T wired customers bundle their internet service with television and/or phone services; they pay an estimated monthly average of $110 for all bundled services and $54 for internet-only. Four in 10 Comcast/Xfinity customers bundle their internet service with television and/or phone services; they pay an estimated monthly average of $147 for all bundled services and $66 for unbundled internet service (see Figure 25).

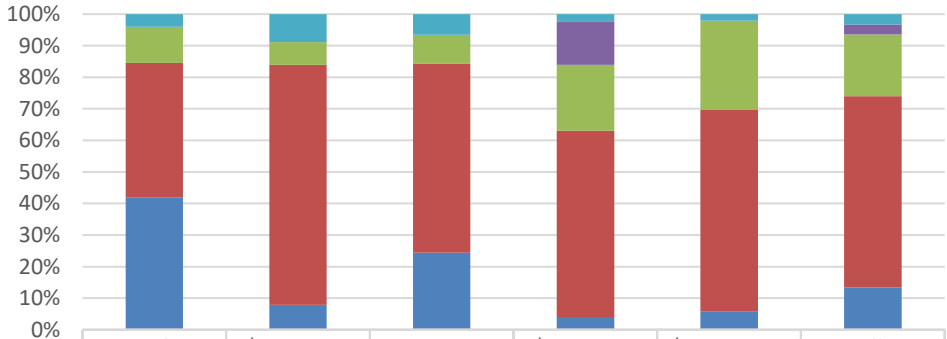
Figure 25: Monthly price for internet service by internet service provider



	AT&T - wired service		Comcast/Xfinity	
	Bundled	Unbundled	Bundled	Unbundled
More than $280	2%	0%	3%	0%
$241 to $280	3%	0%	5%	0%
$201 to $240	0%	1%	11%	0%
$161 to $200	8%	0%	26%	4%
$121 to $160	22%	0%	15%	2%
$81 to $120	37%	13%	24%	23%
$41 to $80	22%	56%	17%	46%
$0 to $40	6%	30%	0%	25%

As illustrated in Figure 26, just 13 percent of all Comcast/Xfinity customers are enrolled in the ISP's Internet Essentials program for low-income households. More than four in 10 customers earning under $25,000 per year said they are enrolled in the program, although this is based on a small number of respondents.

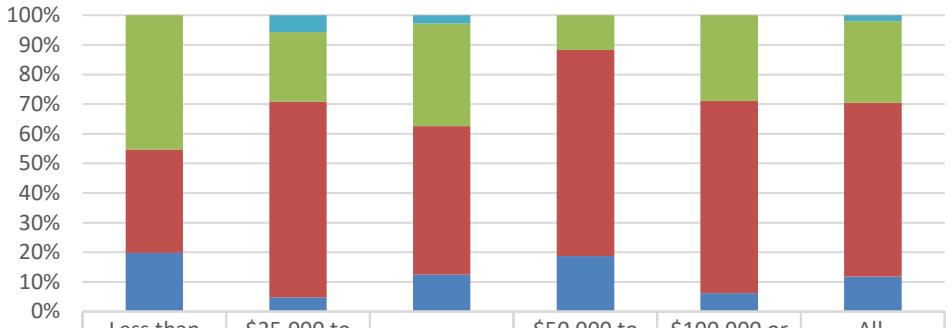
Figure 26: Enrolled in Comcast Internet Essentials program by household income



	Less than $25,000 (n=28)	$25,000 to $49,999 (n=30)	< $50k Total (n=58)	$50,000 to $99,999 (n=37)	$100,000 or more (n=29)	All Subscribers (n=160)
Other	4%	9%	7%	2%	2%	3%
Attempted but was declined	0%	0%	0%	14%	0%	3%
Have not heard of program	12%	7%	9%	21%	28%	20%
No	43%	76%	60%	59%	64%	61%
Yes	42%	8%	24%	4%	6%	13%

Just 12 percent of all AT&T wired customers, and 20 percent of customers earning under $25,000 per year, are enrolled in the AT&T Access program for low-income households. Another 28 percent of customers said they had not heard about the program (see Figure 27).

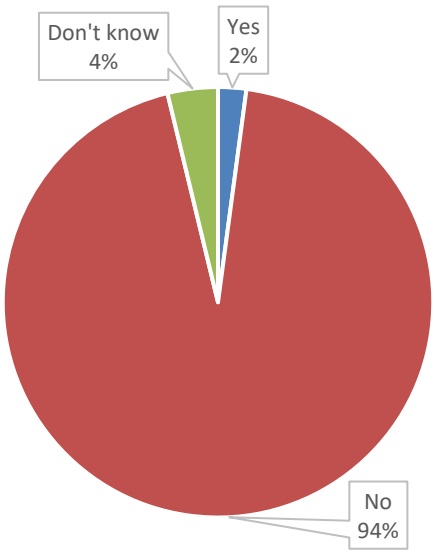
Figure 27: Enrolled in AT&T Access program by household income



	Less than $25,000 (n=21)	$25,000 to $49,999 (n=20)	< $50k Total (n=41)	$50,000 to $99,999 (n=26)	$100,000 or more (n=23)	All Subscribers (n=105)
Other	0%	6%	3%	0%	0%	2%
Attempted but was declined	0%	0%	0%	0%	0%	0%
Have not heard of program	45%	23%	35%	12%	29%	28%
No	35%	66%	50%	70%	65%	59%
Yes	20%	5%	12%	19%	6%	12%

All other internet subscribers were asked if they are enrolled in a government or broadband provider discount or subsidy program. As shown in Figure 28, just two percent of those who responded said they have enrolled in such a program, while four percent do not know.

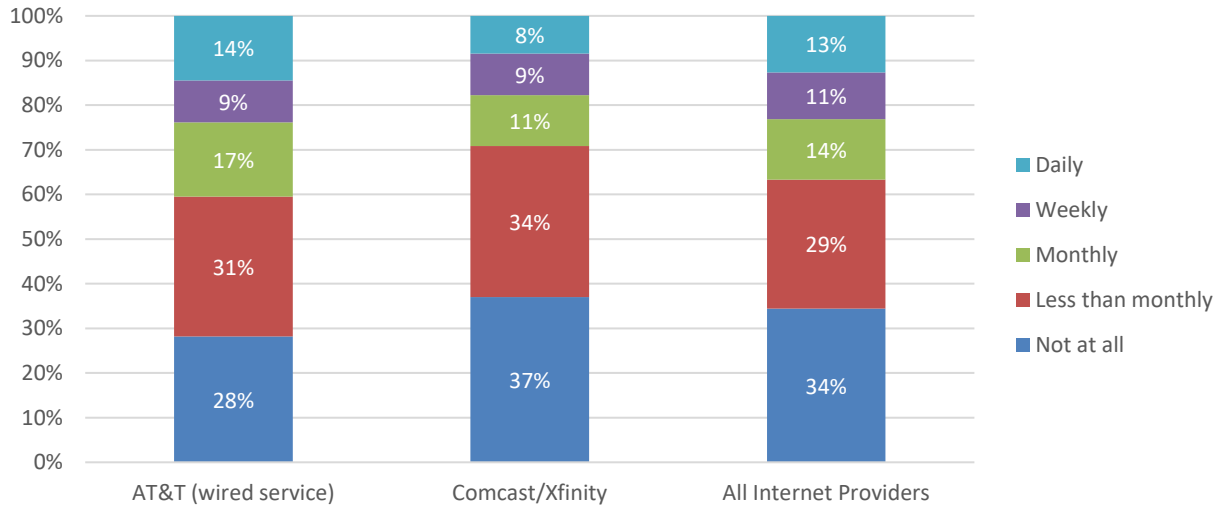
Figure 28: Enrolled in discount or subsidy program



4.2.1.5 Internet connectivity

Respondents were asked how often they lose internet connectivity at home. As shown in Figure 29, 34 percent of respondents said they never lose internet connectivity, and 29 percent do so less than monthly. 38 percent of subscribers said they lose connectivity at least monthly. The difference between AT&T and Comcast/Xfinity is not statistically significant.

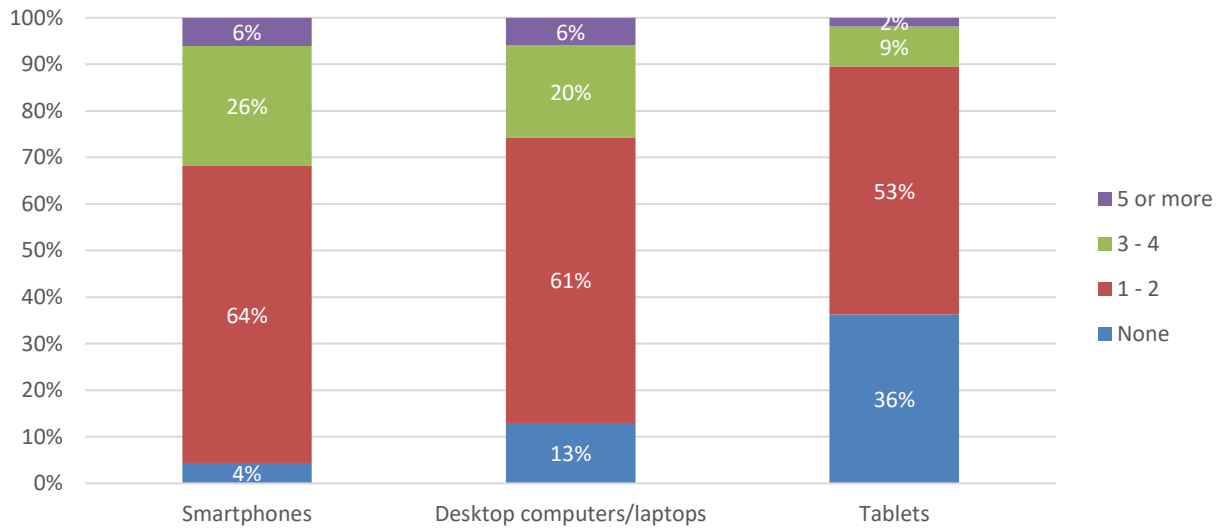
Figure 29: How often lose internet connectivity



4.2.2 Computing devices used in household

Respondents were asked a series of questions about what computing devices are used in their household, as well as how long it would take to replace a lost or damaged computer. Most households have at least one smartphone (96 percent), desktop/laptop computer (87 percent), or tablet computer (64 percent), as shown in Figure 30.

Figure 30: Number of computing devices in household



Respondents in low-income households earning under $25,000 per year are less likely than those in higher-earning households to have personal computing devices (see Table 12).

Table 12: Number of computing devices in household, by household income

		Less than $25,000	$25,000 to $49,999	$50,000 to $74,999	$75,000 to $99,999	$100,000 or more
Desktop computers/laptops	None	39%	7%	7%	7%	2%
	1 – 2	49%	58%	80%	73%	58%
	3 – 4	7%	32%	9%	18%	29%
	5 or more	4%	3%	4%	2%	11%
Tablets	None	56%	39%	35%	37%	22%
	1 – 2	34%	58%	59%	47%	57%
	3 – 4	10%	3%	3%	16%	16%
	5 or more	0%	0%	3%	0%	4%
Smartphones	None	9%	3%	6%	1%	3%
	1 – 2	72%	56%	77%	74%	48%
	3 – 4	10%	41%	12%	23%	37%
	5 or more	9%	1%	4%	2%	12%

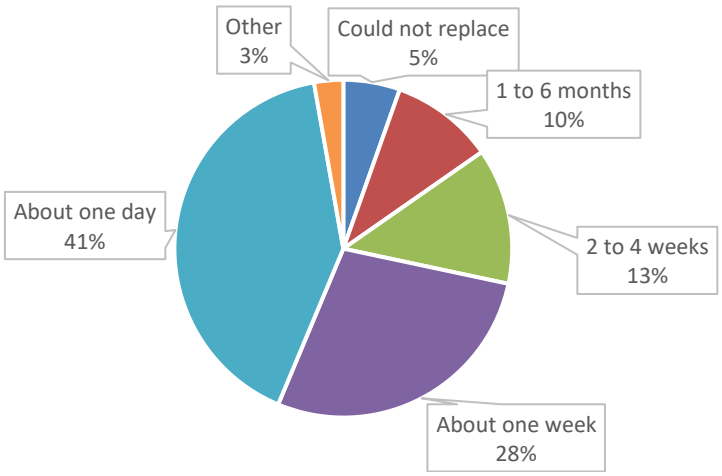
The number of personal computing devices in the home is strongly associated with household size. About one-half of households with four or more members have three to four or more desktop computers or laptops, and nearly three-fourths have three to four or more smartphones (see Table 13).

Table 13: Number of computing devices in household, by household size

		One HH member	Two HH members	Three HH members	Four + HH members
Desktop computers/laptops	None	29%	8%	7%	9%
	1 – 2	66%	73%	62%	42%
	3 – 4	3%	17%	25%	33%
	5 or more	1%	2%	5%	16%
	Total Weighted Count	*79*	*148*	*67*	*104*
Tablets	None	59%	36%	33%	21%
	1 - 2	38%	60%	55%	55%
	3 - 4	2%	3%	12%	20%
	5 or more	1%	1%	0%	5%
	Total Weighted Count	*76*	*145*	*68*	*104*
Smartphones	None	9%	4%	2%	2%
	1 - 2	87%	84%	52%	25%
	3 - 4	3%	10%	46%	52%
	5 or more	0%	1%	1%	21%
	Total Weighted Count	*79*	*148*	*68*	*102*

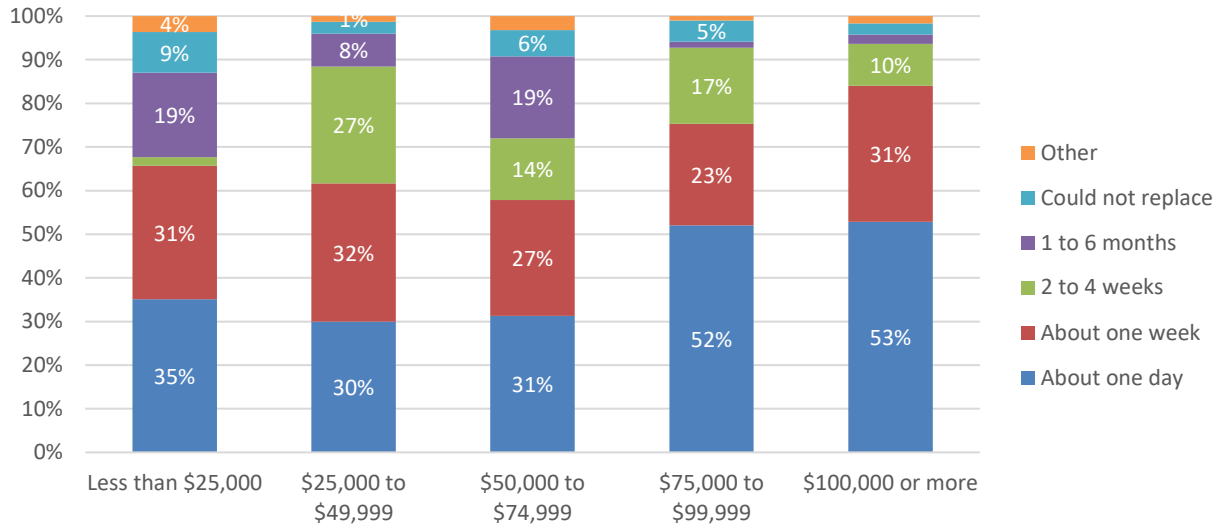
Respondents were asked how long it would take to replace their primary computer if it became lost or damaged beyond repair, as shown in Figure 31. Most respondents would be able to replace their computer in a day (41 percent) or a week (28 percent). Another 13 percent said it would take two to four weeks, and 10 percent said it would take one to six months to replace their computer. Just five percent said they could not replace their computer if it became unusable.

Figure 31: When could replace computer



Respondents earning less than $75,000 would be less likely than those earning $75,000 or more per year to replace their computer within a day. Nine percent of respondents in low-income households said they would not be able to replace a lost or damaged computer in the foreseeable future; two-thirds of those in low-income households could replace it in a week or less (see Figure 32).

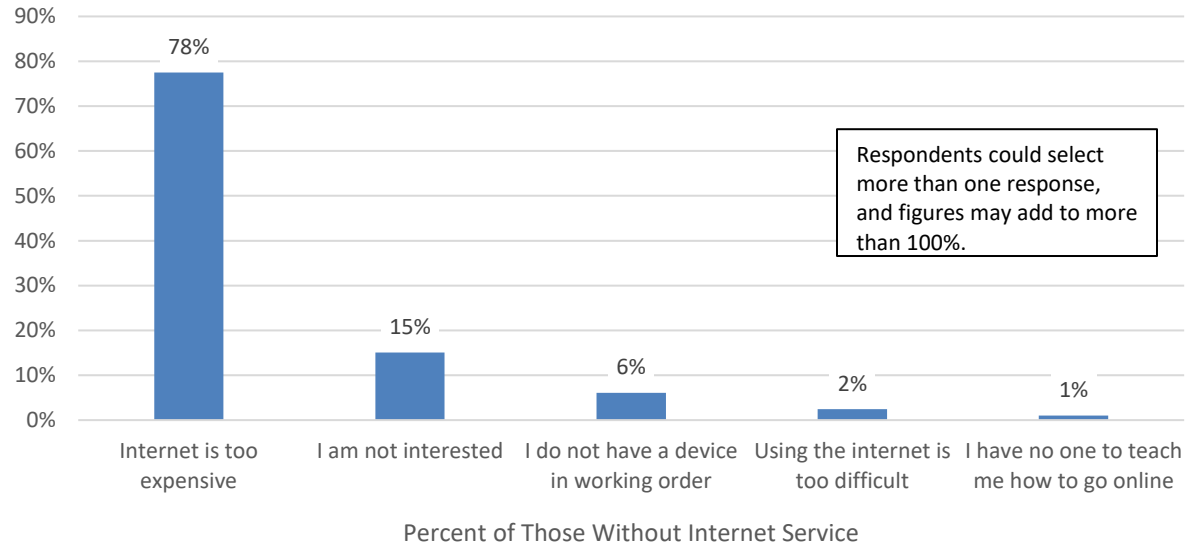
Figure 32: When could replace computer by household income



4.2.3 Reason for not using the internet

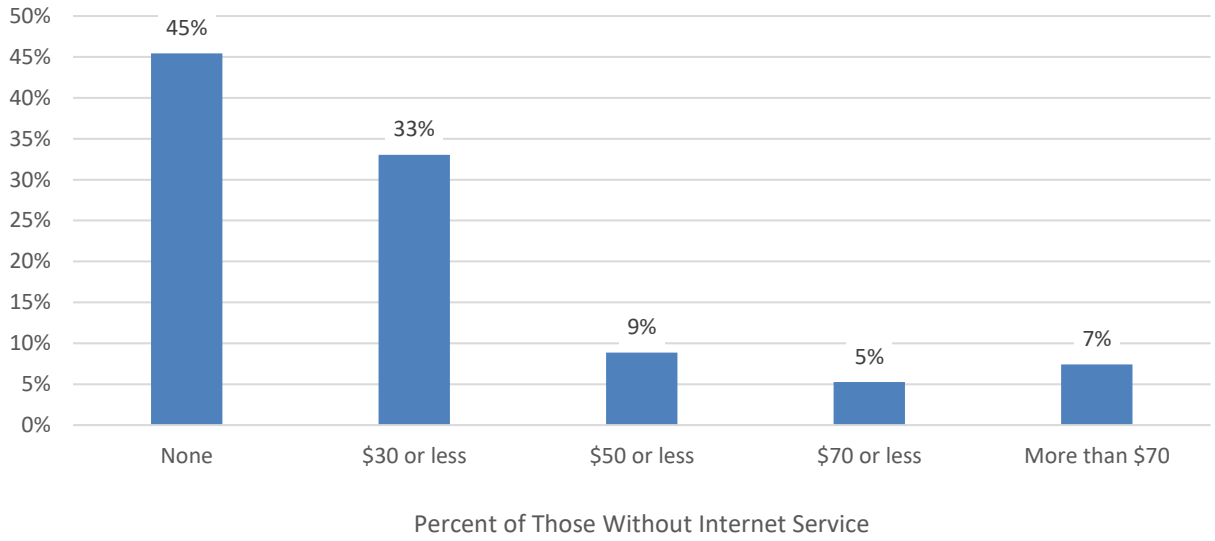
As illustrated in Figure 33, the leading reason cited by respondents for not having internet service is it being too expensive (78 percent). Additionally, 15 percent said they are not interested, and six percent said they do not have a device in working order. Barriers to obtaining internet service do not vary significantly by demographics; keep in mind that figures are based on a relatively small subsample of respondents who do not have internet service.

Figure 33: Reasons for not having home internet access



Respondents were also asked how much they would be willing to pay for internet service. As shown in Figure 34, 45 percent of non-subscribers would not pay for internet access, and 33 percent would pay $30 or less per month.

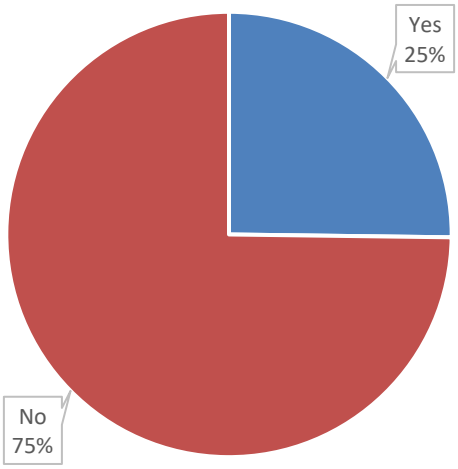
Figure 34: Amount willing to pay for internet access



4.2.4 Program to better use the internet

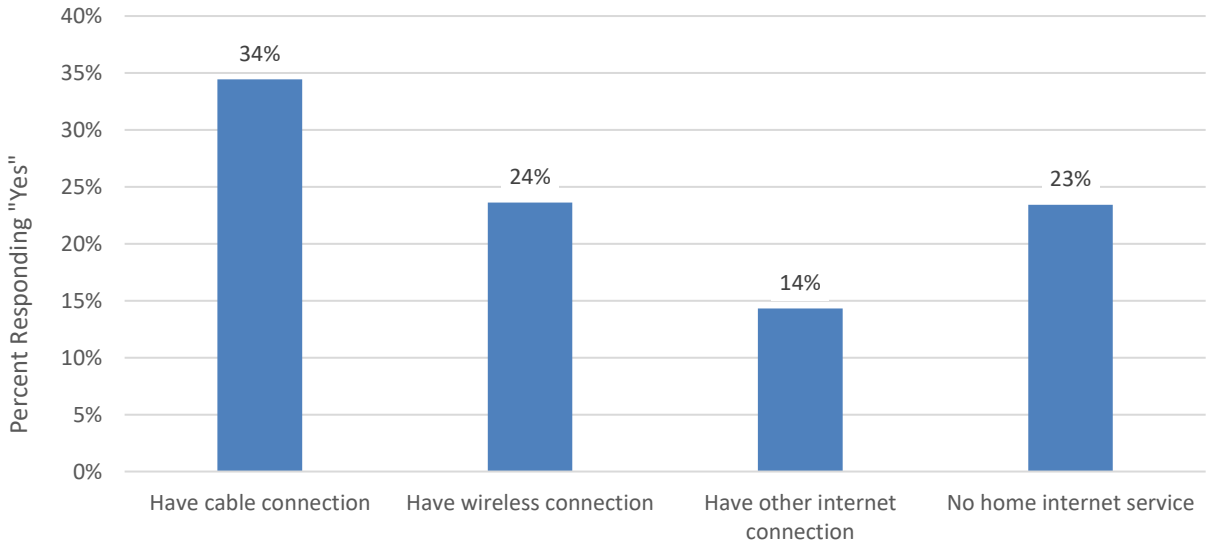
One-fourth of respondents would be interested in a free or low-cost program to learn how to better use the internet (see Figure 30).

Figure 35: Interested in program to learn how to better use the internet



Cable internet subscribers would be somewhat more interested in a program to learn how to better use the internet, compared with those with other connections or those without home internet service (see Figure 36).

Figure 36: Interested in program to learn how to better use the internet by home internet service connection



Additionally, respondents with less than a graduate or similar education, those who earn under $100,00 per year, and those with children in the household would be more likely than their counterparts to be interested in such a program to enhance internet skills (see Table 14).

Table 14: Interested in program to learn how to better use the internet, by key demographics

	Interested in program	*Weighted count*
TOTAL	**25%**	***492***
Respondent age		
< 35 years	29%	*115*
35 to 44 years	25%	*71*
45 to 54 years	29%	*84*
55 to 64 years	16%	*85*
65 years and older	26%	*125*
Education		
HS education or less	25%	*161*
Two-year/technical degree	35%	*154*
Four-year college degree	22%	*88*
Grad, prof, doctorate	11%	*74*
Income		
Less than $25,000	29%	*91*
$25,000 to $49,999	31%	*107*
$50,000 to $74,999	25%	*75*
$75,000 to $99,999	34%	*47*
$100,000 or more	13%	*81*
Race/ethnicity		
Hispanic/Latino	24%	*23*
Black/African American, non-Hispanic	40%	*48*
White, non-Hispanic	23%	*359*
Other/more than one, non-Hispanic	29%	*38*
Household size		
One HH member	19%	*130*
Two HH members	25%	*178*
Three HH members	24%	*74*
Four + HH members	35%	*105*
Children in household		
No children in HH	22%	*350*
Children in HH	34%	*138*

5 High-level design and cost estimates for a fiber-to-the-premises network offer potential next steps

Due to the geographic dispersion of the underserved and unserved areas across the County, the Taskforce directed CTC to model the cost of a fiber-to-the-premises (FTTP) network to address connectivity and competition on a countywide basis, as well as a middle-mile network to connect County facilities, which could potentially act as a steppingstone for partners to build last-mile service in underserved areas.

5.1 Three cost models

CTC explored three scenarios:

1. **Construct a countywide network that would extend to all locations in the County.** This model would maximize costs to the County, but also allow the County to exert maximum control over subscription pricing and bring down the cost of service. Because much of the network would be constructed in areas already served, only a fraction of the overall cost would be supported by federal or state grants, and the County would therefore need to take on much of the financing on its own.

   A variety of business models could support this scenario, which lends itself to an open-access approach to providing high-speed, reliable, and future-proof broadband. At one end of a control scale, the County would take on building, operating, and financing the network and could set affordable pricing tiers for low-income and middle-income households. At another end of the control scale, the County could partner with a private operator and share some of the capital build cost against future revenue potential for the operator, and hope that the competitive pressures of allowing internet service providers (ISP) to use this infrastructure could depress subscription costs.

2. **Construct only to unserved and underserved areas of the County.** This scenario would reduce costs to the County compared to constructing a countywide network, as unserved locations are eligible for grant funding. While underserved areas are also expected to be eligible for future state funding, it is not clear that there will be enough funds available to cover the County's underserved areas in addition to its unserved areas. Although this scenario lowers the costs to the County, however, it is unlikely to significantly increase competition as deployment is focused on unserved areas only. Future, and likely slower, expansion from unserved into underserved and served areas would be necessary to create competition.

3. **Construct a middle-mile network connecting key County government sites as anchors.** Such an infrastructure could serve the County's own internal needs as an alternative to its current arrangement of leasing service from several providers. At the same time, the

County could offer the infrastructure to potential ISPs to reach unserved, underserved, and served areas. While potentially beneficial to the County government, the impact on reaching unserved areas would likely be minimal unless access to ISPs was granted at below-market fees.

5.2 FTTP conceptual design

CTC developed a conceptual high-level network design and cost model that is able to support a variety of uses, including providing fiber-to-the-premises (FTTP) service to the residents and businesses of the County, while aligning with industry best practices.

The recommended architecture is a hierarchical data network that would provide scalability and flexibility, both in terms of initial network deployment and ability to accommodate the increased demands of future applications and technologies. The central characteristics of this hierarchical network include:

- **Capacity** – ability to consistently provide efficient transport for subscriber data at advertised speeds, even at peak times
- **Availability** – high levels of reliability and resiliency; the ability to quickly detect faults
- **Efficiency** – no traffic bottlenecks; efficient use of resources
- **Scalability** – ability to grow in terms of physical service area and increased data capacity, and to integrate newer technologies without new construction

This architecture offers scalability to meet long-term needs. It is consistent with best practices for either a standard or an open-access network model to provide customers with the option of multiple network service providers. The FTTP design would support the current industry standard Gigabit Passive Optical Network (GPON) technology, as well as emerging 10 Gbps XGS-PON and NG-PON2 standards.

The cost of building a FTTP network will depend in large part on what percentage of the network infrastructure is built on aerial poles as opposed to inside underground conduit. A desk survey of Calhoun County was conducted using satellite imagery to estimate what percentage of the network route may feature utility poles on which fiber infrastructure may be deployed, and how much make-ready will be necessary to make room for the fiber infrastructure. If utility poles are not available, the design assumes infrastructure will be installed underground using conduits.

Based on the desk survey, the design assumed 95.2 percent of the network utilizes aerial infrastructure and 4.8 percent of the network utilizes underground infrastructure.

The network design was defined based on the following criteria:

- The underground design utilizes conduit and fiber installed in the public right-of-way or in an easement on the side of the road.
- The aerial fiber design will make use of existing poles where possible.
- Fiber strand counts will range from 216- to 288-count cables, providing capacity for future use.
- Underground vault spacing will be no more than 750 feet along distribution routes.
- The network will target up to 288 passings per secondary distribution point, each served from a fiber distribution cabinet (FDC) containing optical splitters.
- Where possible, the distribution plant network routes will avoid crossing major roadways, railways, and waterways.
- In aerial portions of the network, we assume that the builder is able to obtain an attachment agreement from the pole owners.

In a scenario where the County decides to deploy its own FTTP network to service residents, the County would need to establish a head end facility to act as a central hub. The conceptual design for this model is shown in Figure 37.

Figure 37: Conceptual design for a County-owned FTTP network

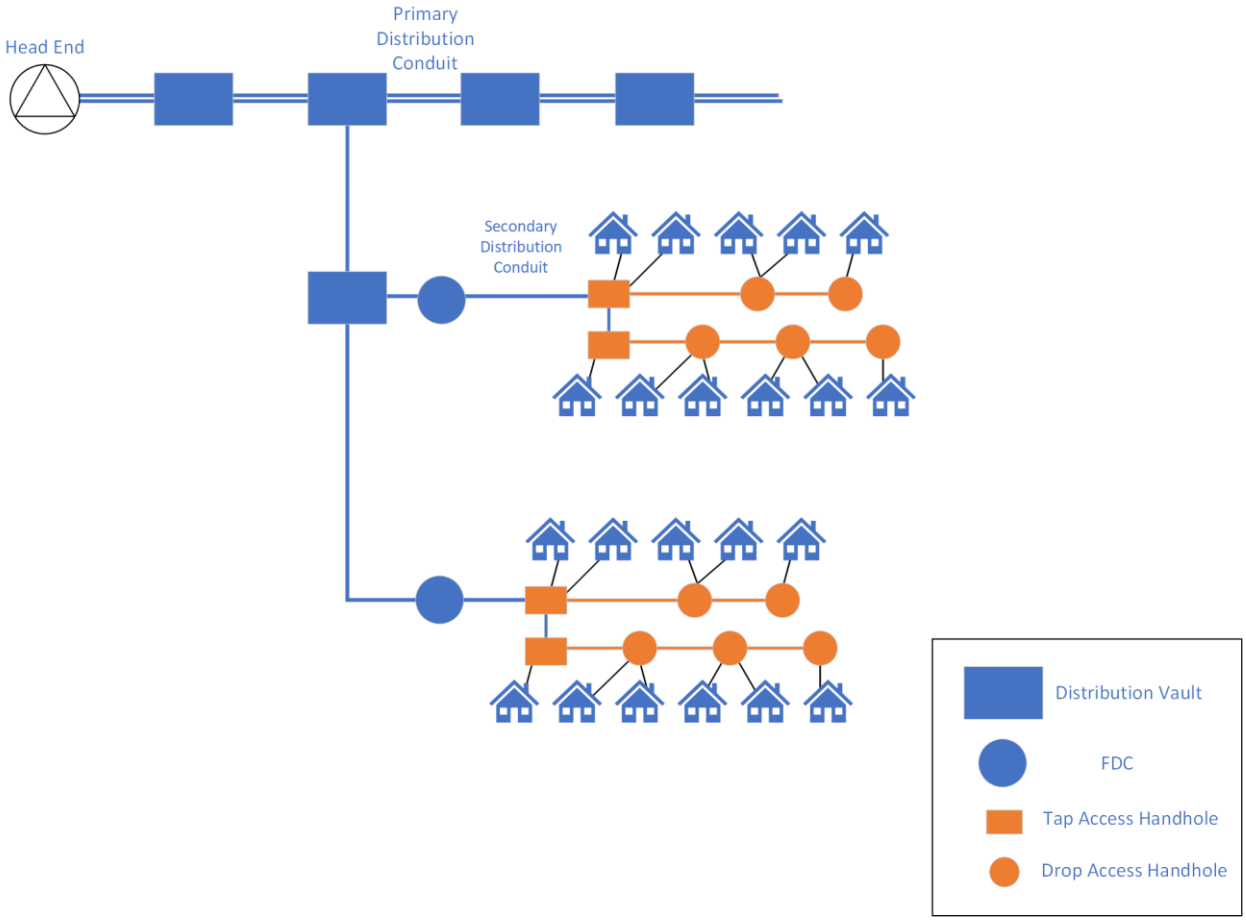
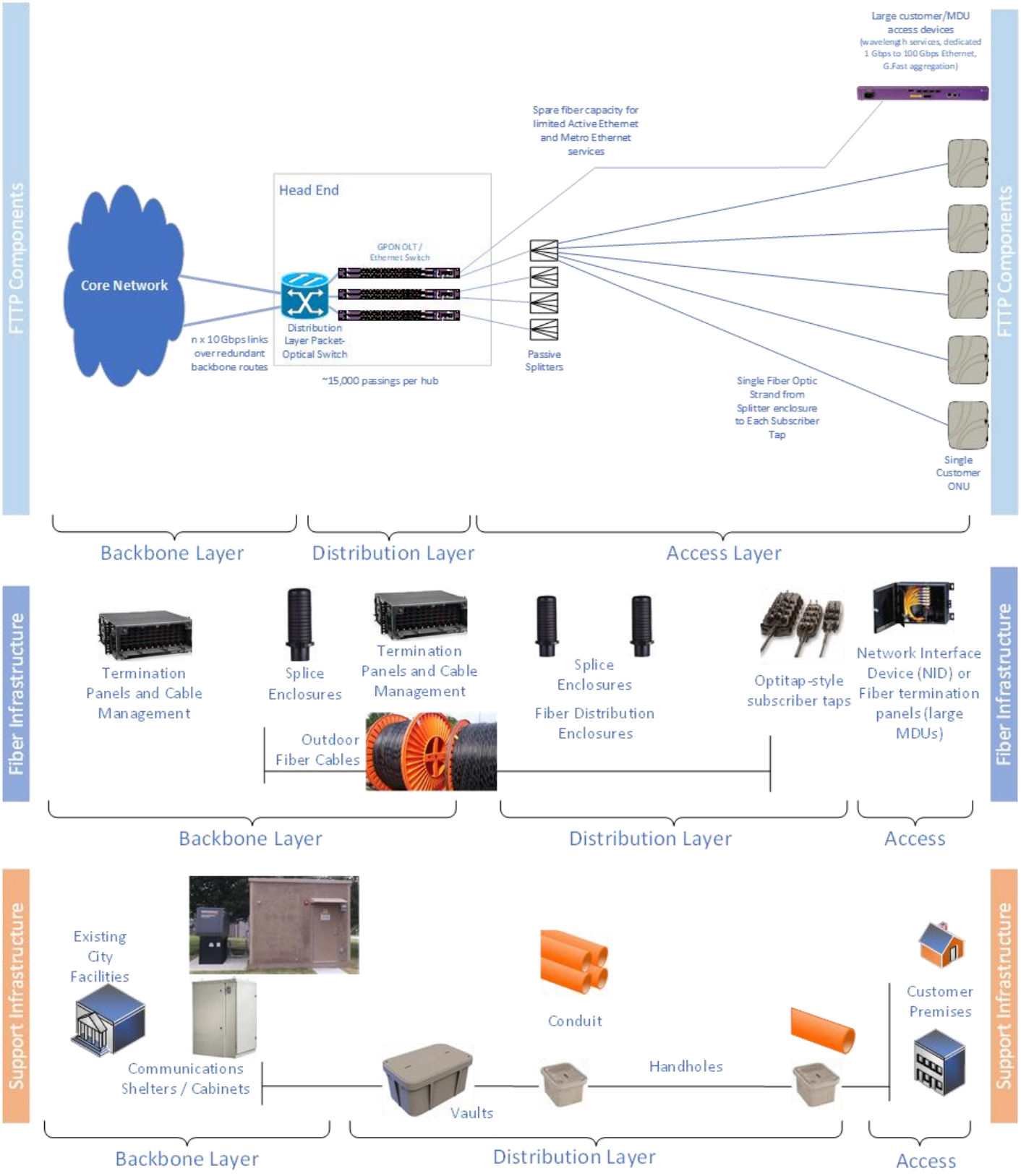


Figure 38 below shows the logical representation of the FTTP network architecture recommended based on the conceptual outside plant design above. This representation illustrates the primary functional components in the FTTP network, their relative position to one another, and the flexibility of the architecture to support multiple subscriber models and classes of service.

Figure 38: High-level FTTP architecture and components



5.2.1 Cost components

The estimated cost for the backbone and distribution plant includes the following elements:

- **Project management** – encompasses overall project and contract management, including oversight of the construction and engineering contractor(s), equipment suppliers, and right-of-way agreements; we assumed a one-person project management team for three years to construct the entire countywide network.
- **Engineering and as-builts** – includes system-level architecture planning, preliminary designs, and field walk-outs to determine candidate fiber routing; development of detailed engineering prints and preparation of permit applications; and post-construction "as-built" revisions to engineering design materials.
- **Conduit and vault infrastructure** – consists of all labor and materials related to underground communications conduit construction, including conduit placement, vault/handhole installation, and surface restoration; includes all work area protection and traffic control measures inherent to roadway construction activities.
- **Utility pole make-ready** – consists of the labor needed for preparing poles for the addition of new aerial cabling. This includes moving existing cables to make room for new cables or replacing poles if the existing pole is at maximum capacity.
- **Fiber optic cables and components** – consists of the material and labor costs specific to the installation of fiber optic cables, taps, splice enclosures, and other related components, irrespective of the cable pathway (underground conduit or aerial placement).
- **Fiber splicing, testing, and documentation** – includes all labor related to splicing of outdoor fiber optic cables.
- **Post-Covid market demand contingency –** accounts for price increases on material due to supply chain interruptions during the pandemic. This contingency is not applied to the project management and engineering and as-builts categories since they do not incorporate construction material.

The estimated total cost for distribution electronics is listed separately.

5.3 Constructing a countywide network would cost approximately $360 million

The total estimated implementation cost for an FTTP network passing approximately 66,000 business and residential addresses in the County, assuming a 60 percent take-rate, is approximately $362.8 million.

- The backbone and distribution plant would cost approximately $307.3 million.
- Assuming a 60 percent take-rate, network electronics, subscriber drops, and customer premises equipment (CPE) would cost an estimated $55.5 million. The total implementation cost per subscriber would be $9,150.

Table 15: Estimated cost summary for countywide network

Fixed cost element	Cost
Backbone and distribution plant	$307,340,000
Number of passings	66,066
Cost per passing	***$4,652***
Distribution network electronics, subscriber drops, and CPE (60 percent take-rate)	$55,500,000.00
Number of subscribers (60 percent take-rate)	39,640
Cost per subscriber	***$1,650***
Total implementation cost (with 15 percent contingency)	**$362,840,000**

Aside from the high cost of a countywide FTTP network, there are a number of additional considerations for the County, including:

- The County would assume the significant financial and political risk, as well as maintenance responsibility, of undertaking such a large build.
- The County does not have experience in operating such a large network. The County would likely need to identify and rely on a private company with operational experience in managing and operating a network. Even with a private partner for operations, there would be staffing costs and expansion of skill sets required to oversee such a partner.
- Obtaining grants to fund construction would be very difficult as grants will not cover areas that are considered served, and seeking grants for underserved areas will be challenging.
- Building such a network could incentivize incumbents to upgrade their networks to preempt loss of market share. While this would be a welcome development in terms of ensuring high-speed, reliable service to County residents, it could significantly drive down

take-rates for ISPs using the County infrastructure since residents would have less incentive to switch from an incumbent to a new provider, adding additional risks to the County as well as a partner operator.

5.4 Constructing to unserved and underserved locations only would cost approximately $129 million

Alternatively, the County could build infrastructure to only unserved and underserved locations and then make that infrastructure available to ISPs or operate the network on its own. The total estimated implementation cost for an FTTP network passing approximately 10,555 unserved and underserved locations in the County, assuming a 60 percent take rate, would be approximately $128.6 million.

- The backbone and distribution plant would cost approximately $119.7 million.
- Assuming a 60 percent take-rate, distribution network electronics, subscriber drops, and CPE would cost an estimated $8.9 million. The total cost per subscriber would be approximately $20,300.

The per passing costs of extending infrastructure to the most sparsely populated areas would be relatively high, and the County would have very limited leverage to ensure affordable service to low-income residents across the County.

Table 16: Estimated cost summary for network serving only unserved and underserved locations

Fixed cost element	Cost
Backbone and distribution plant	$119,685,000
Number of passings	10,555
Cost per passing	***$11,339***
Distribution network electronics, subscriber drops, and CPE (60 percent take-rate)	$ 8,900,000.00
Number of subscribers (60 percent take-rate)	6,333
Cost per subscriber	***$1,650***
Total implementation cost (with 15 percent contingency)	**$128,585,000**

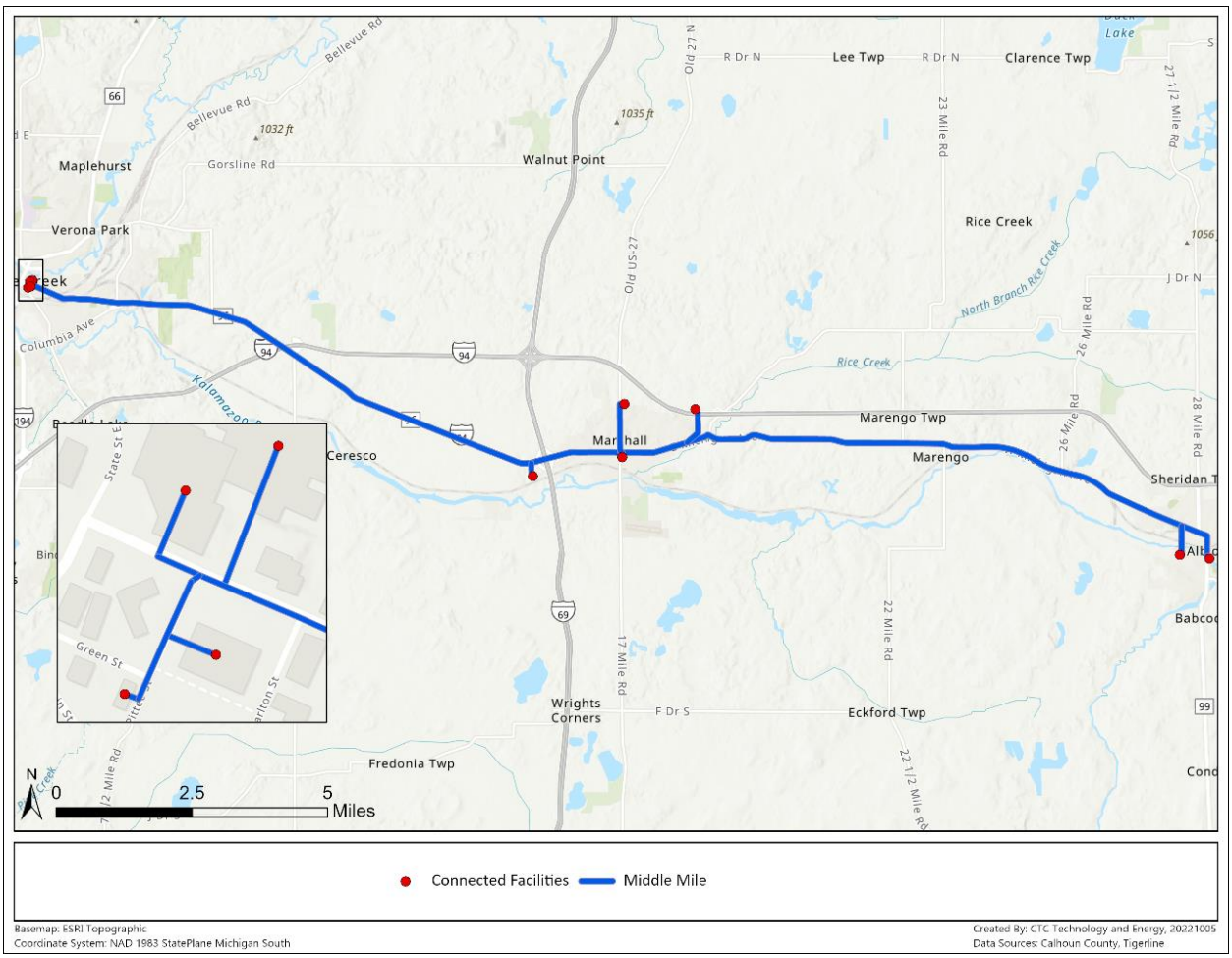
5.5 Constructing a middle-mile network connecting County facilities would cost $3.3 million

CTC also developed a conceptual, high-level network design and cost estimate for a fiber-based middle-mile network to connect 10 County-owned facilities. The design (shown in Figure 39)

builds 288-count fiber cable from Battle Creek, through Marshal, to Albion, predominantly following Route 96.

The estimated cost to construct the network would be approximately $3.3 million, or around $330,000 per facility. These costs are itemized in Section 5.5.4.

Figure 39: Full view of County middle-mile design



5.5.1 Objectives and key attributes

The middle-mile design would provide the County with cost-effective and flexible infrastructure optimized for long-term use. The key design criteria for the network include:

- **Connect target County-owned facilities (as determined by Calhoun County) to each other using fiber infrastructure.**
    - Calhoun County Building (315 W Green St, Marshall, MI 49068)
    - Calhoun County Justice Center (161 E Michigan Ave, Battle Creek, MI 49014)

  - Toeller Building (190 E Michigan Ave, Battle Creek, MI 49014)
  - Calhoun Health & Wellness Center (34 Green St, Battle Creek, MI 49014)
  - Calhoun County Jail (185 E Michigan Ave, Battle Creek, MI 49014)
  - Marshall Regional Law Enforcement Center (714 Old US 27, Marshall, MI 49068)
  - Juvenile Home (14555 18 1/2 Mile Rd, Marshall, MI 49068)
  - Public Health Department- Albion (115 Market Place, Albion, MI 49224)
  - Albion Building (101 N Albion St, Albion, MI 49224)
  - Calhoun County Road Department (13300 15 Mile Rd, Marshall, Michigan 49068)

- **Provide infrastructure that can potentially be utilized to serve residents in Calhoun County through either an ISP- or County-owned FTTP deployment if the County chooses to go through the state-outlined processes to do so.**

The recommended design and architecture would adopt the same approach as for FTTP. This architecture offers scalability to meet long-term needs. The middle-mile design would provide Active Ethernet (AE) services to County facilities.

5.5.2 Assumptions and criteria

The middle-mile infrastructure utilized the same assumptions as the FTTP network for make-ready, including the percentage of the network infrastructure that could utilize aerial poles as opposed to underground conduit. Based on the desk survey, the design assumed 95.2 percent of the network utilizes aerial infrastructure and 4.8 percent of the network utilizes underground infrastructure.

The network design and cost estimates assume the following:

- The middle-mile network will serve 10 County-owned facilities selected by the County.
- Internet connectivity will be procured at one of the County-owned facilities, and it will then be distributed through the middle-mile network to the other facilities.
- Two pairs of fiber strands will be run to each facility. Due to the high costs that would be necessary to deploy a physical ring between all facilities, the network design cannot provide physical redundancy as all fiber strands on the middle mile are placed in a single conduit along a single path. However, by running two pairs of fiber strands to each facility, the design can provide port redundancy in the event a port or fiber strand fails.
- The network will support backbone speeds from 10-25 Gbps on the core router at the head end.

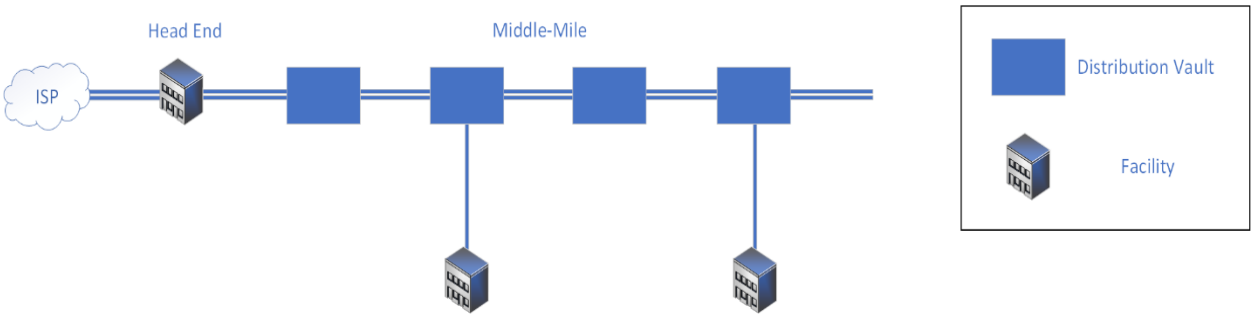
5.5.3 Middle-mile conceptual design

Figure 40 below shows the conceptual architecture for the physical plant in the middle-mile network. One facility will act as the head end, providing a demarcation point where the ISP will deliver its service. The head end will then distribute the connectivity along the middle-mile fiber. Fiber will be deployed to each other facility and terminated at a network interface device located on the facility's premises, which acts as the demarcation point where the facility's internal network connects to the County middle mile to gain network connectivity.

Due to the high cost necessary to construct a physical ring between the County facilities, the network design implements a level of port redundancy by connecting two pairs of fibers at each facility. In the event one port on the electronics or one fiber pair fails, the network can switch to the other port to avoid disruption.

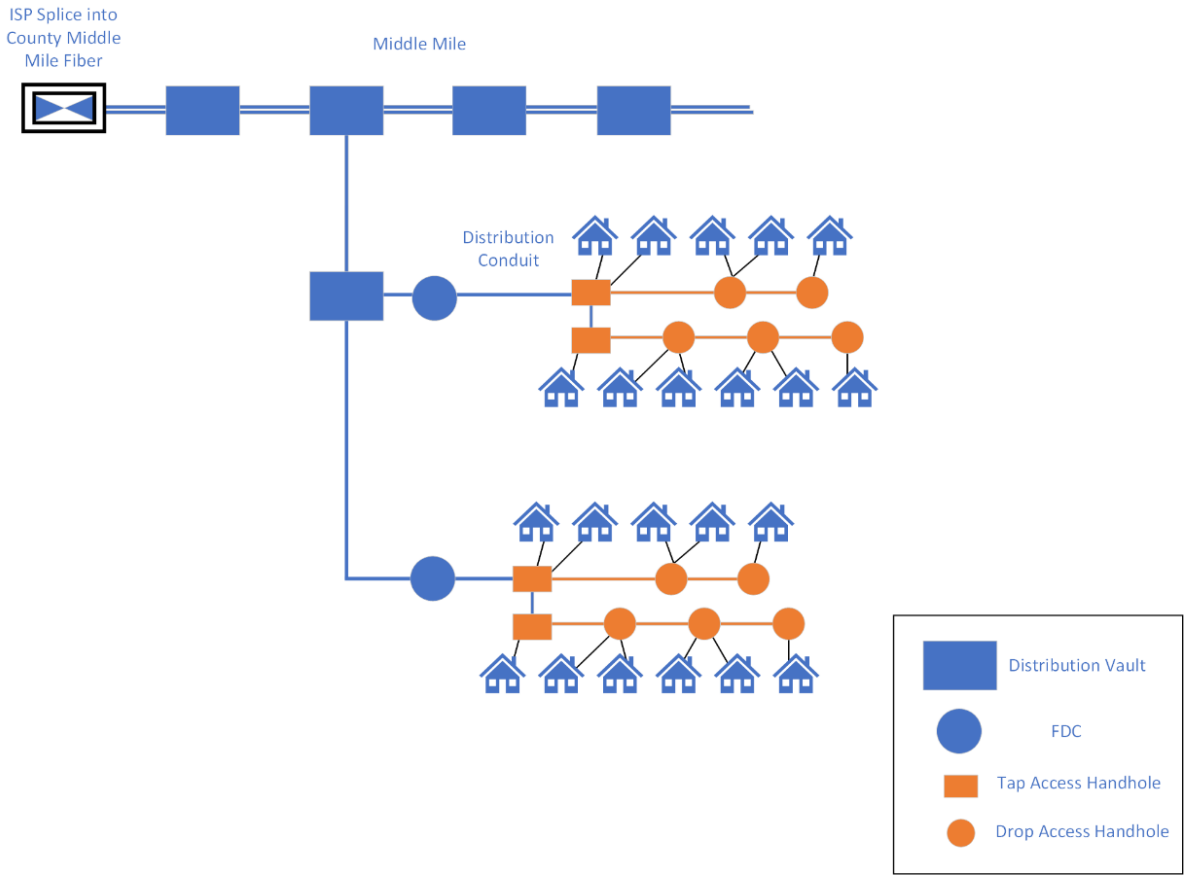
The design deploys 288-count fiber cables along the middle mile. However, the County's needs do not necessitate the termination of all 288 fiber strands at any of the facilities. Any unused fiber strand can remain unterminated for future use.

Figure 40: Conceptual design for the middle-mile network



If the County pursues utilizing its middle-mile fiber to aid last-mile service providers, providers can splice into the middle mile at distribution vaults deployed along the network route, providing access to unused fiber strands. This would lower middle-mile costs necessary for a service provider to deploy service across Calhoun County compared to a scenario where the service provider must deploy its own fiber. The concept is illustrated below.

Figure 41: Conceptual design for an ISP-owned FTTP network using County middle mile



5.5.4 Cost estimate for middle-mile design

Construction of the middle-mile design connecting County facilities is estimated to cost approximately $3,255,000, or $325,500 per facility, including a 20 percent contingency on construction material. These costs are itemized below in Table 17. Note that the costs have been rounded.

Table 17: Estimated cost summary for County middle-mile design

Fixed cost elements	Cost
Project management	$900,000
Engineering and as-builts	$275,000
Conduit and vault infrastructure	$105,000
Materials	*$25,000*
Labor	*$80,000*
Aerial strand	$290,000
Materials	*$75,000*
Labor	*$215,000*
Utility pole make-ready	$345,000
Fiber optic cables and components	$710,000
Materials	*$545,000*
Labor	*$165,000*
Fiber splicing, testing, and documentation	$75,000
Post-Covid market demand contingency on construction material (20%)	$305,000
Network electronics	$250,000
Estimated total implementation costs	**$3,255,000**
Cost per facility	**$325,500**

6 Federal funding may be available to address County and resident connectivity needs

Historic levels of federal funding present opportunities for Calhoun County to minimize the financial burden of network construction while serving the needs of the County, private providers, and citizens. The County has positioned itself well to leverage this moment. In anticipation of the wave of fiscal support, the County has commissioned a preliminary design and cost estimate for a candidate network, identified unserved and underserved areas, engaged with local stakeholders, and established relationships with incumbent and potential ISPs. These preliminary steps are foundational to optimizing broadband projects for grant awards.

To achieve its goals, Calhoun County has indicated it could potentially bond a significant amount to fund the development of broadband infrastructure. The County also has $6.5 million remaining from its allocation under the American Rescue Plan Act (ARPA) Capital Projects Fund (CPF), representing a significant opportunity, as allocations from these funds can be leveraged as matches for other broadband grant opportunities.

The following scenarios present two approaches the County could take to bring internet service to underserved residents while addressing its own internal communications needs.

6.1 County partners with ISP to submit grant applications for an FTTP network

The County could release a Request(s) for Proposal (RFP) to select a partner to construct the proposed network. The terms of the final agreement could obligate the ISP to apply to funding opportunities as the County's private partner.

The County could also attract a private partner by using its remaining allocation under CPF or bond revenue to meet a given grant opportunity's matching fund requirement.

It should be noted, that only last mile networks to unserved areas are fundable under various grant programs, while some parts of the underserved areas may be eligible for grant funding as well, especially if part of a primarily unserved-focused design.[30]

Though historic levels of federal funding will soon flow into the State through a State-administered BEAD program, many grant programs are still under development. As the County and its private partner's network expansion plans develop, the County should monitor announcements from the potential funding streams discussed below. As rules are announced,

[30] If ARPA funds area available, they are much more flexible, and can be considered eligible if it is designed to facilitate reaching unserved areas.

the County and its private partner should seek to align the project with the best-fit opportunity's eligibility criteria.

The uniqueness of this moment cannot be overstated. While the State is still in the process of determining the precise funding mechanisms and processes for issuing grants, the current and forthcoming funding opportunities represent the greatest investment in broadband to date.

6.2 County issues middle-mile RFP

Should the County decide it wants to construct and own a middle-mile network connecting County facilities, the County could issue a Request for Proposal (RFP) to solicit bids from private providers to construct the limited-scope network while the County maintains ownership. There are likely no broadband grant mechanisms to fund such a network, since almost all federal and state grant funding focuses on last mile deployment. If the middle mile design is part of a broader solicitation targeting unserved areas, it is possible that some part of this infrastructure could be fundable as part of a larger FTTP design.

The County could allocate funds raised through bonding to compensate the winning bidder for these services. To fund this middle-mile network, the County may also be eligible to receive long-term direct or guaranteed loans to fund such a project through the U.S. Department of Agriculture (USDA) Rural Utility Service (RUS) Telecommunications Infrastructure Loan Program. Eligible expenses under this opportunity include improvement, expansion, construction, acquisition, and operation of telephone lines, facilities, or systems to furnish and improve telecommunications, 911, and emergency communications services in rural areas. As the County's plans for a middle-mile network develop, the County could explore the potential to receive funding under this opportunity and align the project with the eligibility criteria as appropriate.

Once this middle-mile network is complete, the County could implement a pilot partnership program with a County grant funded with bonds or other funding sources to incentivize ISPs to expand service through unserved portions of the County.

To minimize risk and maximize benefit, the County could itself or in partnership with the County Economic Development Council administer these monies in a revolving loan fund. Revolving loan funds are frequently used by economic development agencies to provide access to capital for community-oriented economic development initiatives.[31]

[31] "Revolving Loan Fund Best Practices Handbook: Characteristics of High Performing RLFs," Council of Development Finance Agencies & the U.S. Department of Commerce, September 2020, https://www.eda.gov/files/rlf/resources/RLF-Best-Practices-Handbook.pdf (accessed November 15, 2022).

Under such an arrangement, ISPs could be awarded funding drawn from the County's bond revenue to finance network expansion. The ISP would then repay this amount to the County as the network begins serving customers and generating revenue, replenishing the grant funds. The County could offer multiple rounds of funding for this program, facilitating private network expansion throughout the unserved areas within its jurisdiction. To further facilitate private providers' network expansion, the County could also offer to lease fiber strands from its middle-mile network at below-market rates.

6.3 The American Rescue Plan Act (ARPA)

The American Rescue Plan Act (ARPA) of 2021 established two potential funding sources for broadband projects: the Coronavirus State and Local Fiscal Recovery Funds (SLFRF) program and the Coronavirus Capital Projects Fund (CPF). The flexibility of these funds allows for creative solutions and a wide range of projects. Funds for both programs will be administered by the State and provide significant latitude if the fund administrators decide to use them for broadband.

Funding can be used for direct grants issued by the County or as a match for future federal funding opportunities. Targeting a smaller project in anticipation of additional funding from the Broadband Equity, Access, and Deployment (BEAD) program (discussed in Section 6.4.1) can advance the County's efforts to fill gaps in broadband service, remaining consistent with the goal of covering all unserved areas.

6.3.1 Coronavirus Capital Projects Fund

The $10 billion CPF program—authorized under ARPA and administered by the U.S. Treasury—will provide flexible funding opportunities for a wide range of broadband-related projects to be administered at the state level.

Michigan has received $250.6 million in CPF funds, which it will administer through the Michigan Department of Labor and Economic Opportunity's (LEO) Michigan High-Speed Internet Office (MIHI). 100 percent of Michigan's allocation will be used for broadband infrastructure grants, with the goal of bringing service to an estimated 67,857 locations currently lacking service speeds of at least 100 Mbps download, 20 Mbps upload.[32] Funding will be distributed through a new broadband-specific grant opportunity, the Realizing Opportunity with Broadband Infrastructure Networks (ROBIN) program. Projects must be capable of delivering service of at least 100 Mbps download, 100 Mbps upload to be eligible under this program.[33] Though publicly available information on this grant opportunity is limited, Calhoun County should continue monitoring this opportunity, as many locations in the County will be eligible under these criteria.

[32] "Capital Projects Fund Award Fact Sheet: Michigan," U.S. Department of the Treasury, Capital Projects Fund Award Fact Sheet - Michigan (treasury.gov) (accessed November 3, 2022).
[33] Ibid.

6.3.2 Coronavirus State and Local Fiscal Recovery Funds

The U.S. Treasury released interim final rules for the SLFRF program in May 2022. This ARPA program will distribute $350 billion in emergency funding to eligible state, local, territorial, and Tribal governments. Calhoun County received $26 million in funding from this opportunity.[34] Approximately $6.5 million of this funding remains available, representing a significant potential, as allocations from these funds can be leveraged as matches for other broadband grant opportunities.

Congress created this program with no limitations on how it could be spent on broadband. When Treasury announced its interim final rules, those guidelines included new restrictions that were not part of the authorizing legislation. The interim rules said the Fiscal Recovery Funds should not be targeted for areas where there is "reliable" 25/3 Mbps broadband service. Treasury has since clarified that these funds can be used in areas that already have 25/3 service if the funds are primarily targeted for areas where 25/3 speeds are not available.

Based on the legislation that created it, this program can fund broadband deployments and digital inclusion strategies designed to facilitate such connectivity and enables states and localities "to identify the specific locations within their communities to be served and to otherwise design the project" to fit their needs. [35] Treasury provided interim rules establishing certain minimum requirements on how recipients can use funds for broadband deployments.[36] It also provided guidance about the range of digital inclusion projects that can use program funds. Key guidance includes the following:

- **Infrastructure projects must support 100 Mbps symmetrical speeds unless geographical, topographical, or fiscal constraints make it impractical.** For the purposes of the Fiscal Recovery Funds, Treasury's approach to broadband infrastructure matches some of the most forward-thinking states' broadband grant programs. In its interim rules, Treasury expects the funds to be used on broadband deployments that are capable of at least 100/100 Mbps speeds to address Americans' modern communications needs. The program also strongly favors fiber deployments, because fiber is capable of affordably meeting the steady annual increase in broadband capacity demands faced by the nation's networks.

[34] "American Rescue Plan Act (ARPA): Coronavirus Local Fiscal Recovery Fund," Department of Treasury, Michigan.gov. American Rescue Plan Act (ARPA): Coronavirus Local Fiscal Recovery Fund (michigan.gov) (accessed November 4, 2022).
[35] "Coronavirus State and Local Fiscal Recovery Funds, Interim Final Rule," Department of the Treasury, 31 CFR Part 35, RIN 1505-AC77, released May 10, 2021, page 71, https://home.treasury.gov/system/files/136/FRF-Interim-Final-Rule.pdf. "Interim Final Rules," Interim Final Rules.
[36] "Coronavirus State and Local Fiscal Recovery Funds Frequently Asked Questions," pages 11-12, U.S. Department of the Treasury.

The interim rules also outline a scenario in which symmetrical 100 Mbps service may be considered "impractical due to geographical, topographical, or financial constraints,"[37] and in that case, require projects to provide 100/20 Mbps service with the ability to scale to 100 Mbps symmetrical. This appears to be a concession to incumbent cable providers who can cost-effectively extend to unserved locations from their current network footprint and are on a roadmap to symmetric speeds. Most cable companies have implemented DOCSIS 3.1—and while they currently limit upstream speeds to 35 to 50 Mbps, field upgrades would allow them to deliver gigabit speeds upstream and would also put them on a long-term roadmap to DOCSIS 4.0's 10/6 Gbps-per-user capability.

- **Projects must prioritize areas that lack 25/3 Mbps.** The interim final rules state that projects will be expected to address unserved and underserved areas, with unserved areas defined as those that do not yet have access to speeds of at least 25/3 Mbps. This suggests wide latitude in designing projects—as long as they address unserved locations. **Projects are encouraged to prioritize affordability as well as local broadband solutions.** After noting that the U.S. has some of the most expensive broadband service in the world,[38] the program's interim rules emphasize the need for affordable broadband service. "Treasury also encourages recipients to prioritize support for broadband networks owned, operated by, or affiliated with local governments, non- profits, and co-operatives—providers with less pressure to turn profits and with a commitment to serving entire communities."[39]

- **Projects should prioritize last-mile connectivity.** While Treasury underscores this, states and localities are not precluded from setting their own priorities, and other initiatives that could improve affordability by investing in capacity bottlenecks such as middle-mile or data center builds could be funded.

- **Infrastructure projects are expected to meet strong labor standards.** This includes project labor agreements, community benefit agreements, and wages at or above the prevailing rate with local hire provisions. Treasury notes it will release additional guidance related to workforce reporting requirements at a later date, but expect fair (high) wage provisions, benefits, and local sourcing as key components.

[37] Interim Final Rules, page 75, U.S. Department of the Treasury.
[38] "Even in areas where broadband infrastructure exists, broadband access may be out of reach for millions of Americans because it is unaffordable, as the United States has some of the highest broadband prices in the Organization for Economic Co-operation and Development (OECD)." "Interim Final Rules," page 70, U.S. Department of the Treasury.
[39] "Interim Final Rules," pages 76-77, U.S. Department of the Treasury.

- **Projects can address a wide array of broadband-related concerns.** In addition to infrastructure, SLFRF dollars can also be used for an array of other initiatives that respond to the public health and economic impacts of the pandemic. While Treasury leaves the door open for a wide variety of fundable initiatives, it offers the general guidance that recipients should "identify a need or negative impact of the Covid-19 public health emergency and, second, identify how the proposed program, service, or other intervention addresses the identified need or impact." [40]

- **Allocations from these funds can be leveraged as matches for other broadband grant opportunities.** Because these funds are considered locally administered, Fiscal Recovery Funds can be leveraged if an entity is already targeting a federal grant or state grant opportunity that requires matching funds.

6.4 Infrastructure Investment and Jobs Act (IIJA)

The $1 trillion Infrastructure Investment and Jobs Act (IIJA)—including $65 billion in broadband funding—was signed into law on November 15, 2021. Over the coming six months, the agencies responsible for administering the funds will release requests for comments; develop frameworks and rules; and issue notices of funding opportunities—including for the kinds of programs that could address gaps identified in Calhoun County.

The U.S. Department of Commerce's National Telecommunications and Information Administration (NTIA) will administer $48.2 billion of the broadband funding: [41]

- Broadband Equity, Access, and Deployment (BEAD) Program: $42.45 billion "for broadband deployment, mapping, and adoption projects"

- Digital Equity Act Programs: $2.75 billion "for grant programs that promote digital inclusion and equity to ensure that all individuals and communities have the skills, technology, and capacity needed to reap the full benefits of our digital economy"

- Tribal Broadband Connectivity Program: $2 billion

Of these, BEAD and the Digital Equity Act programs represent opportunities for securing funding. BEAD funding will be made available through a competitive solicitation of grant proposals with what is supposed to be an extensive engagement with local communities. If the grant program allows for counties and other local government units to partner with ISPs and the process gives preference for locally supported partners, the County could have significant influence on whether a given project is selected for funding. The Digital Equity Act programs are also expected to result

[40] "Interim Final Rules," page 10, U.S. Department of the Treasury.
[41] "Grants," NTIA, https://ntia.gov/category/grants (accessed November 17, 2021).

in a state-administered competitive grant program. Depending on how this program gets structured, the County could apply itself, support local non-profit organizations' applications, or otherwise facilitate successful grant applications. In addition to these programs, the IIJA allocates an additional $14 billion to the Affordable Connectivity Program—a subsidy that goes directly to low-income broadband subscribers.

6.4.1 Broadband Equity, Access, and Deployment (BEAD) program

Michigan will receive a minimum of $100 million in funding from the Broadband Equity, Access, and Deployment (BEAD) program, representing the initial minimum distribution to each state.[42] Additional allocations will be distributed based on a state's unserved and high-cost areas—which could result in up to $1.3 billion for Michigan.[43]

NTIA reports that "the first priority for funding is for providing broadband to unserved areas (those below 25/3 Mbps), followed by underserved areas (those below 100/20 Mbps), and then serving community anchor institutions (1/1 Gbps)."[44] A subgrantee that receives funding to deploy a network will be required to ensure the network is capable of delivering at least 100/20 Mbps service within four years of the date of the subgrant—and to offer a low-cost service for low-income subscribers.[45] BEAD funding requires a 25 percent match but is flexible as to the source of match so long as it is not derived from federal funding. In preparation for this opportunity, the County should begin setting aside funding now and continue to develop strong private partnerships to share the fiscal burden.

However, the law also indicates that BEAD grants can also be applied broadly to address broadband needs, including for broadband planning (up to 5 percent of funding), connecting anchor institutions, supporting broadband adoption efforts, and constructing infrastructure to serve low-income families in multi-dwelling buildings.[46]

Timing of this funding is highly dependent on the FCC's completion of the new broadband mapping—the first iteration of which was released in late November 2022—that will determine how the overall allocations will be calculated for each eligible entity.

6.4.2 Digital Equity Act programs

NTIA's digital equity program, which was established in the Digital Equity Act as part of the IIJA, comprises three elements:

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[42] "The Broadband Equity, Access & Deployment Program (BEAD): $42.45 Billion for State Broadband Grants," National Law Review, $45.45 Billion for State Broadband Grants (natlawreview.com) (accessed December 6, 2021).
[43] *Michigan: Estimated BEAD Funding*, Cartesian, 28 Sept 2022. ACA Connects & Cartesian - BEAD Program Framework (accessed November 10, 2022).
[44] "Grants," NTIA, https://ntia.gov/category/grants (accessed November 17, 2021).
[45] IIJA, p. 771, https://www.congress.gov/bill/117th-congress/house-bill/3684 (accessed November 17, 2021).
[46] IIJA, p. 767, https://www.congress.gov/bill/117th-congress/house-bill/3684 (accessed November 17, 2021).

- State Digital Equity Planning Grant Program ($60 million)
- State Digital Equity Capacity Grant Program ($1.44 billion)
- Digital Equity Competitive Grant Program ($1.25 billion)

NTIA has stated that these programs aim "to promote the meaningful adoption and use of broadband services across the targeted populations in the Act, including low-income households, aging populations, incarcerated individuals, veterans, individuals with disabilities, individuals with a language barrier, racial and ethnic minorities, and rural inhabitants."[47]

The State Digital Equity Planning Grant Program provides funding directed to state broadband offices to develop digital equity plans, with required local stakeholder engagement and input. These plans serve as the framework for each state's digital equity projects that can be funded through the State Digital Equity Capacity Grant Program and the Competitive Digital Equity Capacity Program.

NTIA requires states to include their "vision" for digital equity in their statewide plans, as well as identify barriers to digital equity, and outline measurable objectives and methods for addressing those barriers. These methods could include digital literacy programs, public computing and broadband access programs, workforce development, and affordability and subsidy programs. These plans must also coordinate with and incorporate the BEAD planning process.[48]

6.5 Affordable Connectivity Program

The $14.2 billion Affordable Connectivity Program (ACP) is a federal broadband program administered by the FCC. The ACP provides a $30 monthly subsidy that may be used toward a broadband subscription with an ACP-participating provider. The program is available to households with an income at or below 200 percent of established Federal Poverty Guidelines,[49] or if a member of the household meets at least one of the other eligibility criteria outlined by the FCC.[50] Decision makers may choose to leverage this program with potential partners to further the County's digital equity efforts. For example, to address the affordability barrier to connectivity, the County might consider a programmatic effort to promote the ACP to help residents pay for internet subscriptions.

[47] "Grants," NTIA, https://ntia.gov/category/grants November 17, 2021).
[48] NTIA Notice of Funding Opportunity, State Digital Equity Planning Grant Program, Section IV.C, May 13, 2022 (Digital Equity Planning), https://broadbandusa.ntia.gov/resources/grant-programs/digital-equity-programs (accessed June 5, 2022).
[49] "Do I Qualify", Universal Service Administrative Company, https://www.affordableconnectivity.gov/do-i-qualify/ (accessed October 3, 2022).
[50] Affordable Connectivity Plan, https://www.fcc.gov/acp (accessed October 3, 2022).

Appendix A: Community assessment methodology and data sources

These analyses are built on publicly available data, including the FCC's Form 477 data and the U.S. Census Bureau's American Community Survey.

This assessment recognizes that Form 477 data, which are self-reported by ISPs, represent a best-case scenario because 1) the data are presented at the census block level, and 2) the FCC considers a census block served by broadband if just one of the premises in the block could be served. The data thus tend to overestimate service availability, especially in less populated areas where census blocks are larger, and in areas with a high density of multi-dwelling units, which may lack internal wiring sufficient to deliver broadband speeds to all units or may have exclusivity agreements with ISPs that are not reflected in the data.

FCC service data are also inconsistent for non-populated areas such as parks or wildlife reserves. For example, if an ISP has extended service to a single visitors' center or building, FCC data may show a large unserved area around that location as being served. In addition, a provider that reports it offers service on Form 477 may not offer residential broadband services in the market at all.

While the data are thus flawed, Form 477 represents the most comprehensive national data set for broadband availability and presents value for understanding broadband investment and availability patterns.

The drawbacks inherent in Form 477 data are also expected to be ameliorated when the FCC releases updated broadband maps at the address level, the first iteration of which was released in November 2022. However, the recently released maps are still inaccurate and are going through a challenge process as of the writing of this report; the FCC expects more accurate iterations to follow as ISPs, governments, and residents challenge locations, coverage status, and claimed speed availabilities. The analysis presented in this report was conducted with the FCC Form 477 data released in June 2021.

To augment and improve on Form 477 data, the analysis includes a review of publicly available information (e.g., websites, telephone conversations with the ISPs' customer service representatives) about internet service providers operating in Calhoun County to confirm service availability and pricing.

Appendix B: Stakeholder engagement and market sounding interviews

Internet service providers have expansion plans within the County, but some service area gaps will remain

Though portions of Calhoun County remain unserved or underserved, many providers have a presence in and around the area. Comcast, Springcom, and AT&T are planning to expand their network footprint within the County or are evaluating grant opportunities to facilitate such expansion. However, no provider presented definite expansion plans that will extend service across the entirety of Calhoun County. Midwestern Energy & Communications (MEC) and Mercury Broadband have been selected to receive funding under the FCC's Rural Digital Opportunity Fund (RDOF). Under this program, MEC has agreed to expand its service territory in the northeastern and southwestern portions of Calhoun County, while Mercury Broadband will expand service to in the north-central region. Many providers are interested in opportunities to partner with the County if the agreements are mutually beneficial.

Cities' appetite for involvement in broadband expansion projects is varied

Cities and municipalities in Calhoun County are interested in partnership opportunities that facilitate expanded internet services within their jurisdictions. However, the City of Marshall (Marshall), City of Albion (Albion), and Battle Creek are approaching challenges in internet service availability from very different circumstances. The City of Marshall currently owns and operates an FTTP network serving more than 1,700 customers. Two other cities, Albion and Battle Creek, have considered installing fiber infrastructure but abandoned those plans. In Albion this was due to high cost of deployment, while Battle Creek was not interested in becoming an internet service provider.

The Nottawaseppi Huron Band of the Potawatomi may solve reservation connectivity gap with AT&T fiber

The Nottawaseppi Huron Band of the Potawatomi (NHBP, the Band) is a federally recognized tribe with nearly 1,500 members, the majority of whom reside in the Pine Creek Indian Reservation in Fulton, Michigan.[51] As of spring 2022, AT&T cellular service was the only internet service option available on the reservation areas within Calhoun County; NHBP had recently entered into an arrangement with AT&T in which the Band funded extension of AT&T's fiber infrastructure to the 33 homes on the reservation. NHBP will own the resulting fiber infrastructure.

[51] "History," Nottawaseppi Huron Band of the Potawatomi, https://nhbp-nsn.gov/history/ (accessed November 3, 2022).

The recently established Michigan High-Speed Internet Office has undertaken grant program preparations

As of spring 2022, the Michigan Department of Labor and Economic Opportunity High-Speed Internet Office (MIHI, the Office) was in the process designing a grant program to distribute $250 million in funding from the American Rescue Plan Act's (ARPA) Capital Projects Fund. This funding will be distributed through the new Realizing Opportunity with Broadband Infrastructure Networks (ROBIN) program, a competitive grant program aimed at providing funding to expand broadband infrastructure to locations without access to speeds of at least 100 Mbps download, 20 Mbps upload.

Educational institutions emphasize connectivity struggles among students from rural areas

The educational institutions engaged by the project team currently have their internal connectivity needs met. However, both institutions, Calhoun Independent School District (CISD) and the Kellogg College (Kellogg), noted that many students struggle accessing the internet from home. CISD noted students in rural areas outside of Battle Creek and Marshall do not have internet connections at home. Kellogg, along with a group of other local community anchor institutions (CAIs), coordinated the hours of operation to ensure residents could access the internet from a public location at any time of day.

Pole access arrangement with regional public utility company may facilitate network expansion

Consumer Energy, a public utility that provides natural gas and electricity across Michigan, is willing to grant internet service providers access to its utility poles to facilitate network expansions.

Appendix C: Survey process and methodology

As part of an effort to evaluate and improve broadband connectivity in the area, Calhoun County conducted a survey of residents in July 2022. The survey captured information about residents' current communications services. A copy of the survey instrument is included in Appendix D.

Coordination and responsibilities

Calhoun County acquired the services of CTC Technology & Energy (CTC) to conduct the survey. In close coordination with the County, CTC and its partner market research firm, Clearspring Research, managed the project—including development of the questionnaire, sample selection, data collection, survey data analysis, and reporting of results. CTC and Clearspring have substantial experience conducting similar surveys for municipalities and utilities nationwide.

CTC developed the draft survey instrument based on the project objectives and provided it to County staff for review and comment. The County provided revisions and approved the final instrument before deployment.

Data collection and response

CTC purchased a commercially available dataset of phone numbers of Calhoun County residents from the vendor Data Axle. The survey was conducted between July 11, 2022 and July 19, 2022 to gather a total of 500 responses.

The margin of error is a common measure of statistical validity or accuracy. The margin of error for aggregate results at the 95 percent confidence level for 500 responses is ±4.4 percent. That is, for questions with valid responses from all survey respondents, one would be 95 percent confident (19 times in 20) that the survey responses lie within ±4.4 percent of the target population as a whole. The margin of error is larger for various subgroups.

Data analysis

The survey responses were entered into SPSS software[52] and the entries were coded and labeled. SPSS databases were formatted, cleaned, and verified prior to the data analysis. The survey data were evaluated using techniques in SPSS including frequency tables, cross-tabulations, and means functions. Statistically significant differences between subgroups of response categories are highlighted and discussed where relevant.

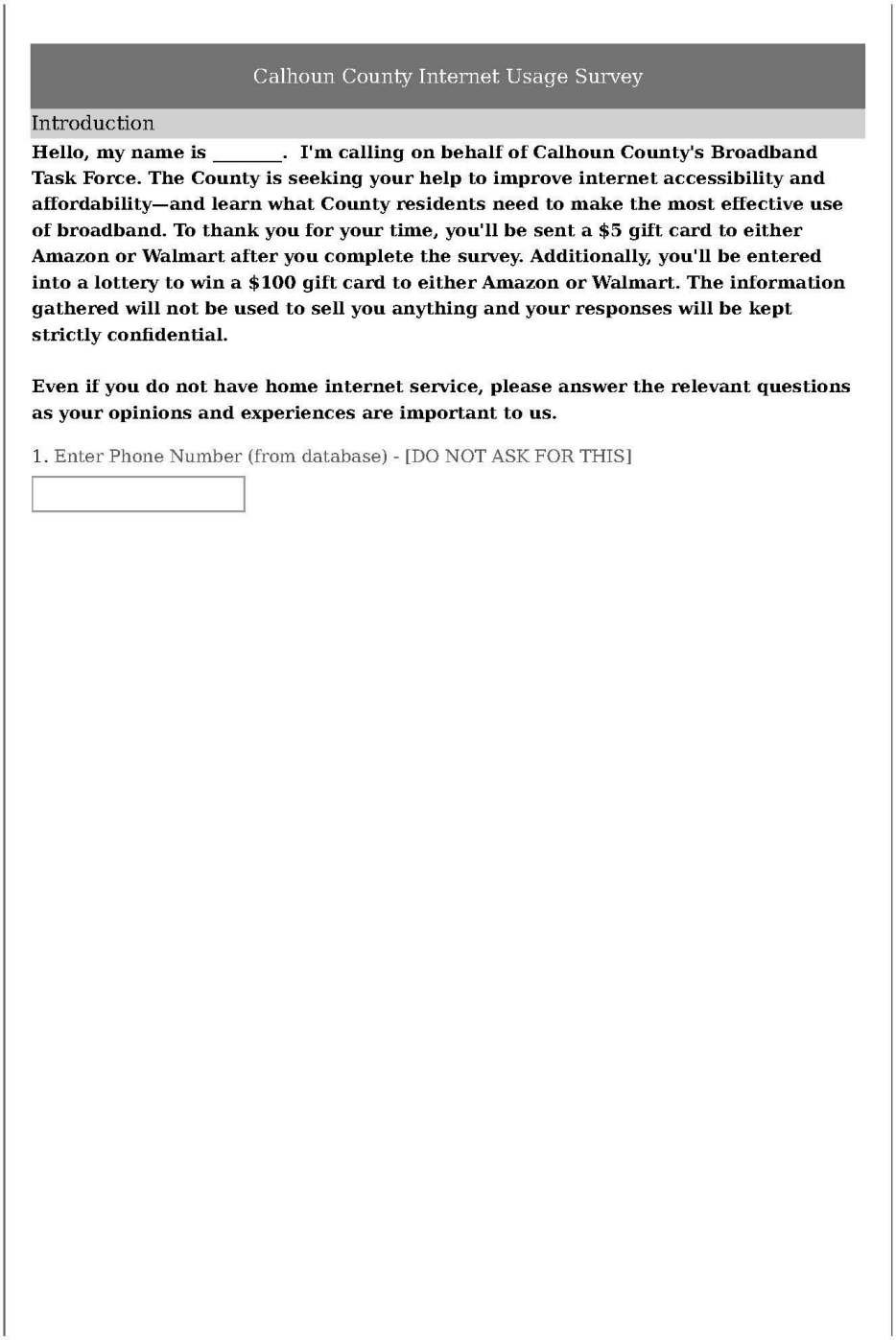
The survey responses were weighted based on the age of the respondent, household income, and ethnicity. Since younger individuals and individuals of Hispanic, Latino, or Spanish origin were less likely to respond, the weighting corrects for the potential bias based on the age and ethnicity

[52] "SPSS Software," IBM, https://www.ibm.com/spss

of the respondent. In this manner, the results more closely reflect the opinions of the County's adult population.

Appendix D: Survey instrument

This appendix includes a copy of the residential survey instrument. Survey results are discussed in Section 4.



Calhoun County Internet Usage Survey

Introduction

Hello, my name is _____. I'm calling on behalf of Calhoun County's Broadband Task Force. The County is seeking your help to improve internet accessibility and affordability—and learn what County residents need to make the most effective use of broadband. To thank you for your time, you'll be sent a $5 gift card to either Amazon or Walmart after you complete the survey. Additionally, you'll be entered into a lottery to win a $100 gift card to either Amazon or Walmart. The information gathered will not be used to sell you anything and your responses will be kept strictly confidential.

Even if you do not have home internet service, please answer the relevant questions as your opinions and experiences are important to us.

1. Enter Phone Number (from database) - [DO NOT ASK FOR THIS]

Calhoun County Internet Usage Survey

2. Do you have home internet service?

- ◯ Yes
- ◯ No [Go to Q.14]

3. How do you or other people in your household connect to the internet? Select only the primary method. (READ OPTIONS)

- ◯ Cable
- ◯ Fiber
- ◯ DSL
- ◯ Satellite
- ◯ Wireless
- ◯ Cell phone or hotspot
- ◯ Other (please specify)

4. How satisfied are you with your home internet service?

Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
◯	◯	◯	◯	◯

5. Who is your primary home internet service provider? (DO NOT READ ANSWERS)

- ◯ AT&T (GO TO Q.7)
- ◯ Comcast/Xfinity (GO TO Q.6)
- ◯ Frontier (GO TO Q.8)
- ◯ CenturyLink (GO TO Q.8)
- ◯ Spectrum (GO TO Q.8)
- ◯ HughesNet (GO TO Q.8)
- ◯ Springcom (GO TO Q.8)
- ◯ WOW! (GO TO Q.8)
- ◯ DMCI Broadband (GO TO Q.8)
- ◯ T-Mobile (GO TO Q.8)
- ◯ Eaglenet (GO TO Q.8)
- ◯ CTS Telecommunications Corporations (GO TO Q.8)
- ◯ City of Marshall FiberNet (GO TO Q.8)
- ◯ Skyweb Networks (GO TO Q.8)
- ◯ Barry County Services Company (GO TO Q.8)
- ◯ Telephone and Data Systems/TDS (GO TO Q.8)
- ◯ Ethx Corp. (GO TO Q.8)
- ◯ KALTELCO (GO TO Q.8)
- ◯ Aeron Wireless LCC (GO TO Q.8)
- ◯ Mercury Broadband (GO TO Q.8)
- ◯ Other (please specify) (GO TO Q.8)

6. If you are a Comcast/Xfinity customer, are you enrolled in Comcast Internet Essentials, which provides $9.95 home internet service and other benefits to eligible low-income subscribers? (DO NOT READ ANSWERS) (ANSWER AND GO TO Q.9)

- ◯ Yes
- ◯ No
- ◯ I have not heard of this program until now
- ◯ I attempted to enroll in this program, but was declined
- ◯ Other, please specify:

7. If you are an AT&T customer, are you enrolled in AT&T Access, which provides home internet service for $30 or less and other benefits to eligible low-income subscribers? (DO NOT READ ANSWERS) (ANSWER AND GO TO Q.9)

- ◯ Yes
- ◯ No
- ◯ I have not heard of this program until now
- ◯ I attempted to enroll in this program, but was declined
- ◯ Other, please specify:

8. For the home service you just mentioned, are you enrolled in any government or broadband provider discount or subsidy program? If so, which program?

- ◯ No
- ◯ Don't know
- ◯ If Yes, which ones?

9. Please estimate how much you pay PER MONTH for your home internet service (DO NOT READ ANSWERS)

- ☐ $0 to $40
- ☐ $41 to $80
- ☐ $81 to $120
- ☐ $121 to $160
- ☐ $161 to $200
- ☐ $201 to $240
- ☐ $241 to $280
- ☐ More than $280
- ☐ Unsure (GO TO Q.11)

10. Is the price mentioned in the previous question a price that includes TV and/or phone?

- ◯ Yes
- ◯ No

11. How often do you lose internet connectivity at home?

Not at all	Less than monthly	Monthly	Weekly	Daily
◯	◯	◯	◯	◯

12. How many of the following are used in your household? (READ DEVICE ANSWERS; MARK APPROPRIATE NUMBER)

	0 or None [SKIP TO Q.16 IF THERE ARE NO DEVICES]	1 - 2	3 - 4	5 or more
Desktop computers/laptops	◯	◯	◯	◯
Tablets	◯	◯	◯	◯
Smartphones	◯	◯	◯	◯

13. If your primary computer or computing device were lost or damaged beyond repair, how long would take you to replace it? (DO NOT READ ANSWERS)

- ◯ I could not do so in the foreseeable future
- ◯ 1 to 6 months
- ◯ 2 to 4 weeks
- ◯ About one week
- ◯ About one day
- ◯ Other (please specify)

14. If you do not have home internet access, what are the reasons why? [Read options, select all that apply]

- ☐ Internet is too expensive
- ☐ I'm concerned about my safety and privacy
- ☐ I do not have a device in working order
- ☐ I am not interested
- ☐ I do not need to go online because I have someone who will do it for me
- ☐ I have no one to teach me how to go online
- ☐ Using the internet is too difficult

15. If you do not have home internet, how much would you be willing to pay for internet access?

- ◯ None
- ◯ $30 or less
- ◯ $50 or less
- ◯ $70 or less
- ◯ More than $70

16. Would you be interested in a free or low-cost program to learn how to better use the internet?

- ◯ Yes
- ◯ No

Calhoun County Internet Usage Survey

INFORMATION ABOUT YOU

The following questions will assist in describing the total group of survey respondents. Your individual information will not be reported separately -- it will be reported only as a part of a larger group to help ensure that the respondents are a representative sample of the residents of the County.

17. What is your age?

18. What is the highest level of education you have completed? (DO NOT READ ANSWERS)

- ◯ Grade school
- ◯ Some high school
- ◯ Completed high school
- ◯ Two-year college or technical degree
- ◯ Four-year college degree
- ◯ Graduate, professional, or doctorate degree
- ◯ Prefer not to answer

19. What is your approximate annual household income? (DO NOT READ ANSWERS)

- ◯ Less than $25,000
- ◯ $25,000 to $49,999
- ◯ $50,000 to $74,999
- ◯ $75,000 to $99,999
- ◯ $100,000 to $124,999
- ◯ $125,000 to $149,999
- ◯ $150,000 to $174,999
- ◯ $175,000 to $199,999
- ◯ $200,000 or more
- ◯ Prefer not to answer

20. What is your race/ethnicity? (CHECK ALL THAT THEY MENTION) (DO NOT READ ANSWERS)

- [ ] Black/African American
- [ ] Asian/Asian American
- [ ] Hispanic/Latino
- [ ] Native American/Indigenous American
- [ ] White
- [ ] Middle Eastern/Arab American
- [ ] Native Hawaiian/Pacific Islander
- [ ] Refuse to Answer
- [ ] Comments:

21. How many adults and how many children 17 and younger reside in your home?

Adults (Including yourself)	
Children age 17 and younger	

Calhoun County Internet Usage Survey

Gift Card Information

Thank you for completing the survey. Please answer the following questions so we can properly send your gift card.

22. Which gift card would you life? [Read options]

- ◯ Amazon - instant gift code [Go to Q.26]
- ◯ Amazon - email gift code [Go to Q.25]
- ◯ Walmart - can be mailed or emailed [Go to Q.23]
- ◯ I don't want a gift card [Do not read, submit survey]

23. How would you like the Walmart gift card delivered to you?

- ◯ Mailed [Go to Q.24]
- ◯ Emailed [Go to Q.25]

24. What is your mailing address?

Name	
Address	
Address 2	
City/Town	
State	
ZIP/Postal Code	

25. What is your email?

26. Here is the Amazon gift code. [Read out ONE claim code given to you by David Tidd.] [Write the claim code in the box before submitting the survey]

Appendix E: Eligibility requirements for ISP's low-cost programs

Comcast Internet Essentials

When Comcast started its Internet Essentials program, it only allowed families with children that qualified for the National School Lunch Program to apply. The company later expanded the program to four qualifying groups:[53]

- Families that have a child who qualifies for the National School Lunch Program (NSLP)
- Families that receive HUD housing assistance
- Low-income veterans who receive federal or state public assistance

In August 2019, Comcast announced a major expansion of its eligibility requirements—adding eight additional categories that will enable more low-income residents to acquire the service:

- Families who qualify for Medicaid
- Families who are approved for Supplemental Nutrition Assistance Program (SNAP) benefits
- Families who are eligible for Temporary Assistance for Needy Families (TANF)
- Families who are eligible for the Low-Income Home Energy Assistance Program (LIHEAP)
- Families who are eligible for the Women, Infants, and Children (WIC) program
- Families who are eligible for tribal assistance
- Families who have received a Federal Pell Grant from a local community college [Colorado and Illinois only]
- Families who have a family member who qualifies for Supplemental Security Income (SSI)

Even with the expanded eligibility requirements, however, Comcast stipulates that a customer of the Internet Essentials program must not have received service from Comcast within the past 90 days.[54] This stipulation is it difficult for households currently purchasing service to switch to the more affordable Internet Essentials plan (for example, if job loss means a customer now qualifies for the lower-cost service).

AT&T Access

Households are eligible for AT&T Access if they participate in the Supplemental Nutrition Assistance Program (SNAP), National School Lunch, or if their household income is below 200

[53] Comcast, "Internet Essentials Programs," 2019, https://www.internetessentials.com/ (accessed January 2022).
[54] Comcast, "FAQs," 2019, https://www.internetessentials.com/get-help (accessed January 2022).

percent of the federal poverty line. Additionally, households that enroll with AT&T via the federal Affordable Connectivity Program are also eligible.[55] Households must not have accrued any debt to AT&T within the last six months to be able to apply.[56]

[55] "Access from AT&T," AT&T, https://www.att.com/internet/access/ (accessed August 29, 2022).

[56] "The Access program from AT&T," AT&T, https://www.att.com/support/article/u-verse-high-speed-internet/KM1094463/ (accessed August 29, 2022).