

Broadband Assessment and Feasibility Study
for
Lincoln County, West Virginia

Final Report
June 21, 2022



Prepared by



and



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1 Executive Summary

This report documents a broadband needs assessment in Lincoln County, West Virginia. The study was conducted primarily in the Spring of 2022 by Blue Ridge Advisory Services Group (Blue Ridge) and Thompson & Litton Engineers (T&L). The study was funded by the Community Development Block Grant (CDBG) program, a federal program through the US Department of Housing and Urban Development (HUD). The objectives of the project are to:

- Identify broadband needs throughout the study area, and
- Develop a network plan solution that meets those communities' current and future needs.
- Provide Capital Cost Estimates (CAPEX) to implement sustainable solutions.

The purpose of this final report is to provide documentation to support applications for funding that will remedy the dire broadband situation in Lincoln County.

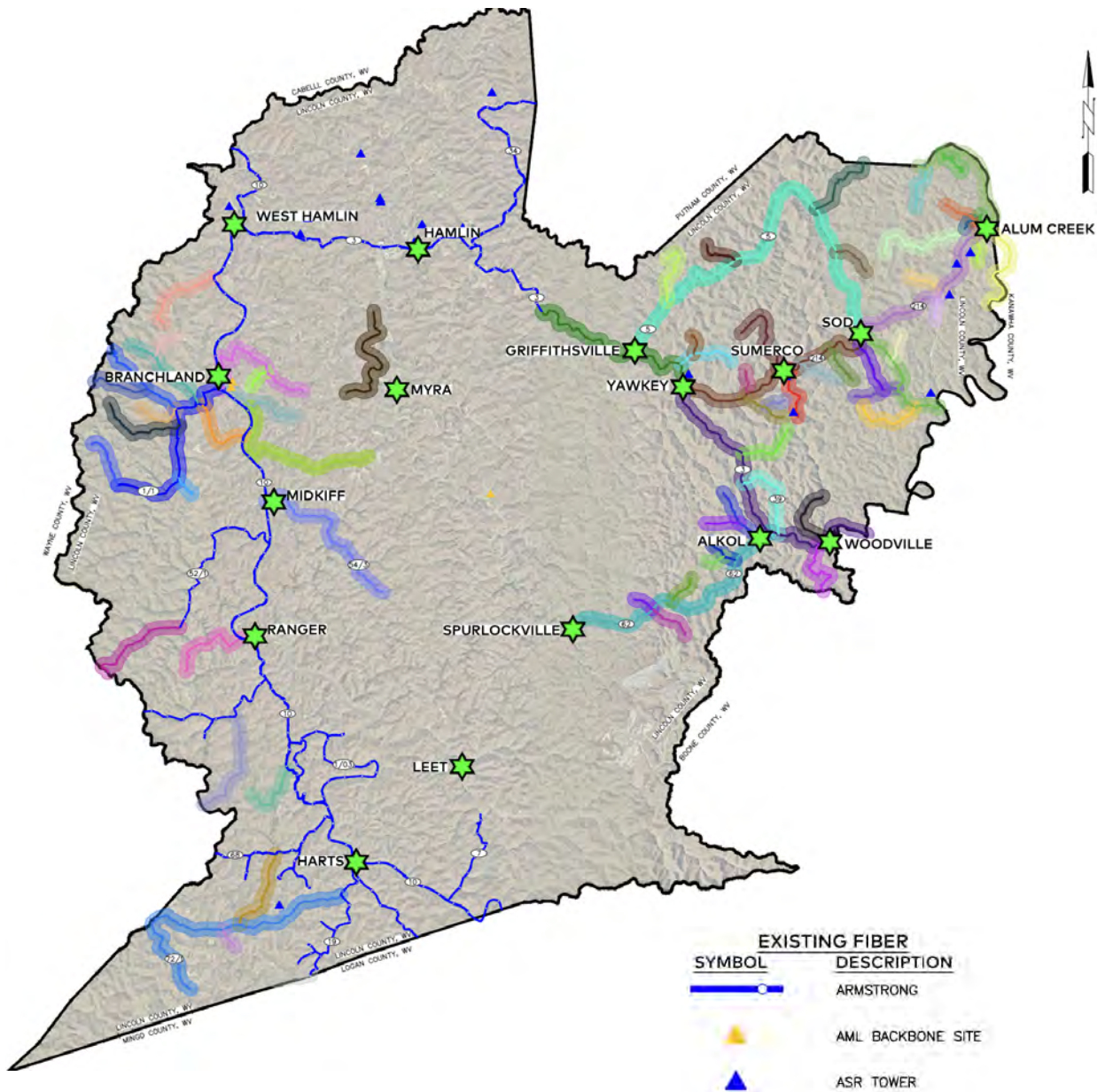
The project team approached the scope of work by conducting a market assessment, developing an inventory of assets, distributing a survey, conducting interviews, creating a network design, and formulating CAPEX estimates to fund solutions. We must note that the current inflationary economic environment in our nation makes it difficult to pinpoint the precise CAPEX of a project that may not be funded and implemented for years.

The total population of this mostly rural area is approximately 20,463. The total number of households is approximately 8,088. This study shows that roughly 60% of households would be considered unserved, and 20% of households would be considered underserved, for a total of 80% - primarily due to the lack of availability, reliability, and, in a few instances, affordability of broadband service.

Armstrong and Suddenlink have existing fiber backbones running through parts of the County, but there is a clear need for a last-mile residential network solution - and increased competition - to meet residents' needs. The initial network solution, as outlined in the map below, is designed to extend 181 total miles of fiber drops to address 5,142 unserved and underserved households. The CAPEX is estimated at \$17.8 Million. This network solution reaches 60% of total target households, focusing on those households that would be eligible for public funding. The remaining unserved or underserved households could be remediated if a service provider built a business case and used private funding to extend its network.

Armstrong cable has expressed a strong interest in entering a public-private-partnership (PPP) with the County to solve the unserved and underserved problem. Armstrong has a history of such PPP relationships.

The map below represents the proposed network routes that extend from Armstrong's existing network. It also shows cell tower locations.

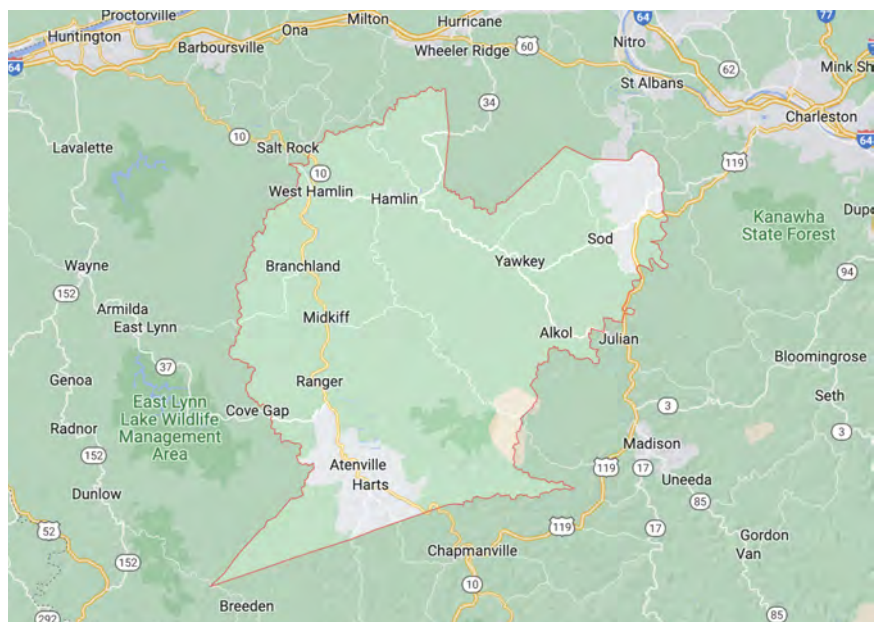


2 Introduction

This report is the summary of a comprehensive broadband study, conducted in Spring of 2022, for Lincoln County, West Virginia. As witnessed during the Covid pandemic, broadband is more critical now than ever, especially for emergency services communicating vital information, schools and students implementing online learning and completing homework, employees working from home, patients participating in telemedicine, and municipalities attracting investment to ensure future economic growth and development. This paradigm shift is expected to continue. Companies realize that employees are productive and that there are efficiencies in employees working from home. There is simply no sustainable economic or community development without ubiquitous broadband.

2.1 Project Area

Lincoln County, West Virginia (the "County") is a mostly rural area situated in the southwestern corner of the state. As of 2010, Lincoln County's population density was low at 50 people per square mile, and the County has since lost population. As of the 2010 census, the County's population was 21,720. As of 2020, the population was down to 20,463, a decline of 6%. Lincoln County's economic index is 91% relative to the state of West Virginia's. In terms of Broadband, Lincoln County's percentage of households with broadband is 3% lower than the state and 10% less than the national figure.



The study area's key demographic factors for broadband are summarized in the table below. The total population of the study area is 20,463. The total number of households is 8,088.

Key Broadband Factors	Total Area of Interest	Lincoln County	West Virginia	United States
Residential				
Population 2021 (est)	20,463	20,463	1,782,959	331,893,745
Total Households for Area of Interest (est)	8,088	8,088	736,760	126,677,002
Median Household Income (est)	\$42,345	\$42,345	\$46,711	\$62,843
Households with Broadband	73%	73%	76%	83%
Economic Index (Income Relative to WV)	91%	91%	100%	n/a
Economic Index (Income Relative to US)	67%	67%	74%	100%
Commercial				
Businesses (est)	150	150	35,795	7,959,103
Employment (est)	1,660	1,660	554,433	135,117,259

SOURCE: US CENSUS BUREAU

Lincoln County is considered a bedroom community with a limited number of small businesses, as well as some residential-based businesses. Most residents commute to neighboring counties (Logan) and cities (Charleston, Huntington) for work. Residents in the southern portion of the county (the Mud River area, which has a more mountainous and less dense population) gravitate towards Logan County for commercial activities and services. American Electric Power (AEP) is the electric utility provider in Lincoln County.

2.2 Addressable Market

The total addressable market, or the total projected revenues for all broadband services (voice, video, data, and wireless) in the County are outlined in the table below. Data is the main area of

interest and is projected to total approximately \$11mm at year 1 and over \$12mm at year 10, with cumulative revenue projected at \$116mm over 10 years.

Total Addressable Market for Retail Telecom Services for Lincoln County, West Virginia			
Telecom Service	Annual Revenue at Year 1	Annual Revenue at Year 10	Cumulative 10 Year Revenue
Voice	\$1,758,354	\$1,309,580	\$15,227,097
Video	\$5,245,356	\$3,669,550	\$43,286,795
Data	\$10,958,813	\$12,318,186	\$116,135,251
Wireless	\$6,721,246	\$10,872,618	\$89,512,528
Total	\$24,683,768	\$28,169,935	\$264,161,671

**Area of interest*

2.3 Project Objectives, Scope, & Approach

The objectives of the project are to:

- Identify specific areas that are served and underserved.
- Identify solutions to deliver high-speed Internet service to these areas.
- Develop a preliminary capital cost estimate (CAPEX) to remediate the problem.
- Design a technology solution and potential provider(s) who can operate the network.
- Identify sources of capital and prepare preliminary documentation to support application submittals.

Market Assessment

The most important part of the assessment was identifying the unserved and their broadband needs. The project team accomplished this through a two-part approach:

1. Diagnostic Interviews with Key Stakeholders, and
2. Internet Surveys.

As part of the diagnostic interview process, which is very helpful in revealing assets that can be leveraged, gaps that need to be addressed, and specific needs that have not been considered, the team met with local stakeholders from the following fields:

- Local Community/Government Leaders (Administrators, Mayors, Town Managers, etc.),
- Emergency Planning and First Responder Directors,
- Educators,
- Librarians, and
- Business Leaders, including Healthcare.

The project team conducted seven diagnostic interviews (virtually - via Zoom or conference call) with the following leaders to define current and future needs of the various communities, areas in greatest need of broadband services, and existing and potential service providers.

- Tommy Adkins, Executive Director of the Lincoln County Economic Development Authority and Member of the Broadband Committee
- Melissa Brown, Director, Lincoln County Libraries
- Michael Griffith, CPA, Business Owner and Member of the Broadband Committee
- Allen Holder, Director, Lincoln County 911
- Josh Stowers, President of the Lincoln County Commission
- Angie Urling, Director of Curriculum, Assessment, and Technology, Lincoln County Schools
- Brian Vance, General Manager, Armstrong Communications

The project team also developed and distributed an internet survey tool to identify communities that fall below the FCC-defined service level for true broadband and query the reliability of their internet service. The key stakeholders helped distribute the survey via social media outlets, County websites, economic development websites, school mailing lists, and other media. The survey was live for three weeks and was kept open until the team was confident that it had produced a sufficient sample size to yield a confidence level of 95% with a confidence interval of +/- 5%.

The criteria used for mapping served, underserved, and unserved addresses include:

- **Service** – Whether the household had service or not, and, if not, why?

- **Provider** – Type of provider and its technology. DSL, satellite, and hotspot providers were generally considered unserved whereas cable (and any fiber) provider customers were generally considered served, unless they had serious reliability issues.
- **Speed** – Speed test results below the FCC definition of minimum broadband speeds of 10 Megabits per second (Mbps) down and 1 Mbps up would be considered *unserved*. Speed test results of below 25 Mbps down and 3 Mbps up would be considered *underserved*.
- **Reliability & Satisfaction** – Low service levels in households (even with sufficient speeds) would be considered underserved.
- **Service Address** – Any survey responses that contained invalid addresses, incomplete addresses, or duplicate addresses were removed from the mapping process.
- **Comments** – Any additional insights that might be useful in determining whether a household is served or unserved (a costly network line extension on one's street, for example).

Asset Inventory & Assessment

A comprehensive broadband assessment must evaluate the current infrastructure at both a local and regional level. Using a combination of industry resources (Fiber Locator, FCC antenna registration system, etc.), as well as local knowledge from our regional contacts (including Armstrong), the project team conducted an inventory of both regional and local fiber networks. This assessment was used as a basis for the proposed network design plan that is intended to meet the County's specific needs while leveraging existing assets.

Network Design

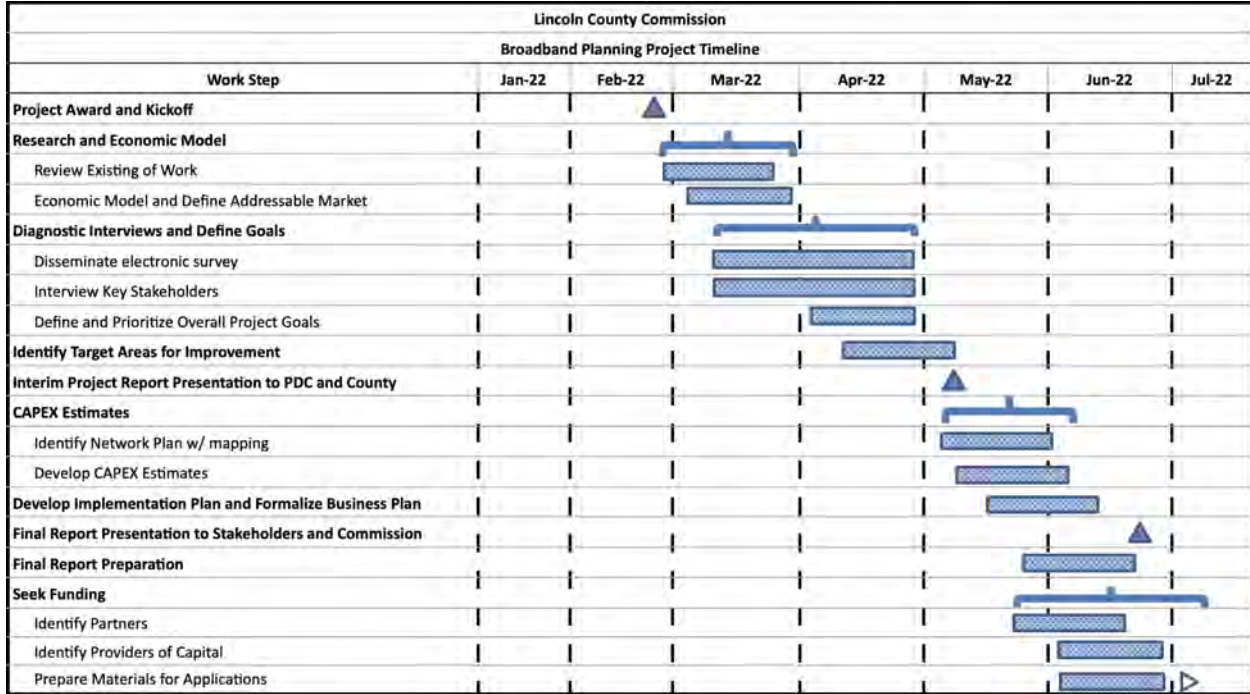
Based upon market research, the assets that can be leveraged, and the desirable points of interconnection, a proposed network design solution was developed. The network design displays the highest potential for network topography that achieves reaching the target areas and leveraging the useful network assets.

CAPEX Estimate

The project team used current industry metrics to formulate a high-level cost estimate for the CAPEX required to construct the network. The CAPEX estimate is a reasonably close estimate of the total resources required to build the network; the precise CAPEX will not be known until the network is engineered and permitted. One note of caution - the current supply chain issues, as well as inflation, have greatly impacted prices and may continue to impact these industry metrics into the future.

2.4 Timeline & Deliverables

The following graphic shows the project timeline and key milestones. The project began in March 2022 and was completed in June 2022.



The final deliverables of this study include:

- GIS & Network Maps,
- Digital softcopy of this written report (in PDF format),
- Digital softcopies of three (3) project presentations
- Review meeting with the Lincoln County Commission on June 2, 2022

All work products are the property of Lincoln County.

3 Needs Assessment

3.1 Key Findings from Diagnostic Interviews

Lincoln County's principal service providers include Armstrong, Frontier Communications, and Suddenlink. Armstrong is considered the most viable provider in the County to help solve what is primarily a last-mile problem. Those residents without access to Armstrong's services are receiving less than satisfactory services from other providers and would generally be considered underserved or unserved. Reliability is a key issue - especially with Suddenlink and Frontier - due to lack of investment in upgrading or extending network coverage. Interviewees have heard complaints about Frontier's phone lines being out for weeks. Suddenlink is so poorly managed that even offers of the customer funding line extensions go unassisted. One interviewee indicated it took 9 visits over a 3-month period for his Internet service to be restored. Approximately 4,000 complaints about Suddenlink have been filed with the Public Service Commission, and there has been media coverage about its service issues as well.

Lincoln County residents have a strong need for access to reliable broadband to meet their current and predicted future needs of working from home. Currently, working from home is a challenge. The County, being mostly rural, is focusing on attracting "live and work remotely" to grow the economy. Low tax rates, low cost of living, and low crime make it an attractive option, but the lack of broadband coverage has stalled investment. The County must have consistent, reliable broadband and cell service to attract businesses, and this is not the case in many areas.

Corridor G (U.S. 119 that runs through West Virginia and Lincoln County) is the most viable economic corridor in the area. Corridor G is an Appalachian Regional Commission (ARC) designation and indicates the highway with the best potential to grow the County and the region. The area from Sod to Alum Creek is considered to have the highest growth potential. The Lincoln Co. Industrial Park is marketed as having redundant fiber routes plus cheap land, energy and available labor.

In addition to the paucity of broadband coverage, the lack of wireless coverage is another key issue. AT&T and T-Mobile are the main wireless carriers. Certain areas within the county, especially along the ridgelines, have no cell phone coverage. There are 15 total cell towers in the County, primarily in the Hamlin/West Hamlin area, and also in the eastern part of the County. Two new towers were recently built in the southern region in Harts and Ranger, but the lack of county-wide cellular coverage, especially in the region with recreation lakes, presents a serious safety issue for those in need of emergency services.

Other key findings from our diagnostic interviews include:

- Availability, especially in the southern half of the County, is the key issue. There are also residents in the eastern portion of the County that can easily afford broadband but cannot get service.
- Many students live where there is little or no internet service, making homework a challenge. There are approximately 2,800 students in the County attending 8 schools. In the Ranger School District, 100% of students lack broadband. In the Harts School District, 90% lack broadband.

- The library system and its three branches in Hamlin, West Hamlin, and Alum Creek serve as an “internet lifeline”. Some residents drive 30 minutes to use the library services. The 911 Center uses Armstrong for its broadband service but needs another option for a reliable service provider to supply a redundancy route.

3.2 Key Findings from Survey Results

Using the online survey process, the project team pinpointed the exact locations of the served, unserved, and underserved. The survey generated 362 responses, 321 of which had sufficient quality data that could be mapped and utilized for network routing. This gave the team high confidence in the following key findings from the survey:

Diagnostic Interviews	Survey Responses	Number of Households	Confidence Interval	Confidence Level	Mappable Responses	Confidence Interval - Mappable
7	362	8,088	5.03%	95%	321	5.36%

- 62% of respondents indicated students were living at the household address.
- 12% of respondents have no internet service whatsoever. The top three reasons cited were reliability (40%), availability (36%), and affordability (24%).
- Approximately 33% of respondents reported using Frontier Communications, with extremely low reliability and customer satisfaction scores (4 out of 10 and 3 out of 10, respectively).
- Almost half of the respondents (45%) reported speeds of less than 25 x 3
 - 30% reported speeds of less than 10 x 1 (10 Mbps download by 1 Mbps upload), which would be considered “unserved”.
 - 15% reported speeds of less than 25 x 3 (25 Mbps download by 3 Mbps upload), which would be considered “underserved”.
- 60% of respondents pay more than \$70/month or more for internet access and cited data cap issues. Several respondents indicated paying more than \$100/month for service. Two Viasat subscribers reported paying more than \$200/month.

3.3 Service Providers

The following is a breakdown of service providers in Lincoln County (with detail from surveys also included):

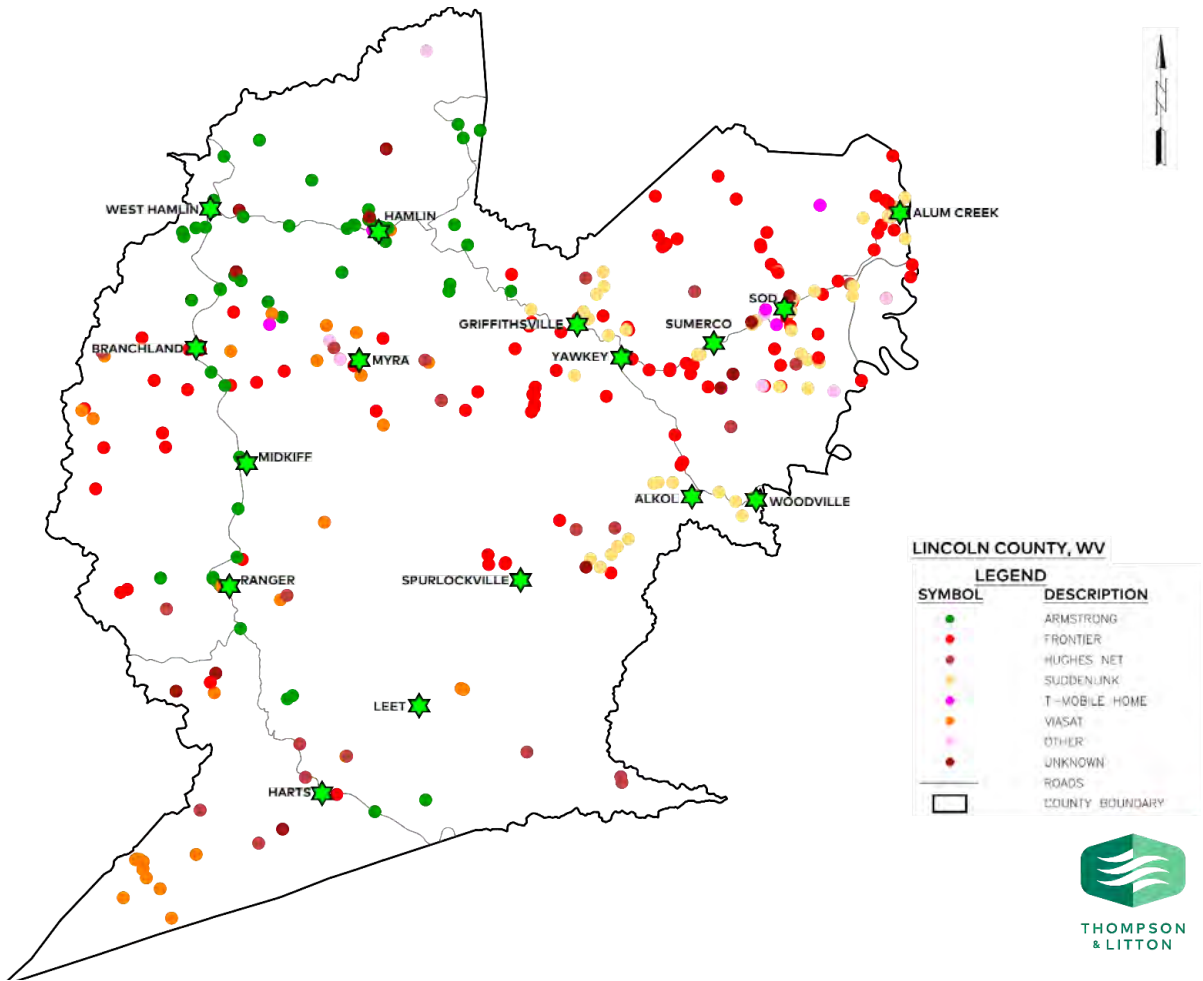
- **Armstrong** – Armstrong is a family-owned and operated provider. It has fiber deployed along the major arteries throughout the County - including Route 10, Route 3, and Route 34 - and to all schools in the County. It uses a combination of Fiber to the Home (FTTH), Hybrid Fiber Coax (HFC), and traditional copper based Digital Subscriber Line (DSL) to serve customers in Hamlin (the County Seat), West Hamlin, and to the more dense communities along Route 10 to Harts. The areas that have FTTH include Midkiff, Branchland, Ranger, & Atenville (along State Route 10). The company uses reverse

nodes to make buildouts more cost effective. Armstrong is very interested in working with the County to expand into unserved and underserved areas and is considered a high potential partner. Its customer satisfaction rates and reliability levels above average - 7 out of 10 for both. Some customers complained about affordability. 67% pay more than \$70 per month.

- **Frontier Communications** – Frontier uses a DSL network to serve areas throughout the County, including Alkol, Alum Creek, Branchland, Griffithsville, Myra, Ranger, Sod, Spulockville, Sumerco, and Yawkey. Respondents complained that Frontier is their only option and about service being off more than it is on. During power outages, both “phone and internet are compromised leaving us without 911 capabilities and no cell service either”.
- **HughesNet** – A satellite provider with very low reliability and customer satisfaction rates (3 out of 10, on average). HughesNet serves Alkol, Alum Creek, Griffithsville, Sumerco, and Sod. Over 90% of respondents reported paying more than \$70 per month for speeds of less than 25 x 3 Mbps.
- **Starlink** – A satellite provider serving a small portion of the County. There were no responses from Starlink subscribers.
- **Suddenlink** - A cable provider that covers about 35% of the eastern portion of the county, specifically Alkol, Alum Creek, Branchland, Griffithsville, Myra, Ranger, Sod, Spulockville, Sumerco, and Yawkey. While 25% of speed test results were above 25 x 3, respondents reported low reliability (4 out of 10, on average) and low customer satisfaction rates (3 out of 10, on average). One respondent commented "I can always rely on the internet to be slow or not working. I can also rely on Suddenlink to say a tech needs to come look at it and the tech to say nothing is wrong. It is most likely faulty infrastructure throughout the county causing the issues. Working from home was a complete nightmare."
- **Viasat** – A satellite provider with low reliability (4 out of 10, on average) and even lower customer satisfaction rates (3 out of 10, on average). Viasat serves Hamlin, Harts, Midkiff, Myra, and Ranger. Viasat received the largest percentage of complaints in the survey.
- **Other** – Some respondents reported using cell service through AT&T for Internet service, but if there are clouds or inclement weather (or even tree coverage in the summer), they have no service. One resident in Sumerco reported using Assurance Wireless, which is a federal program for emergency/lifeline assistance.

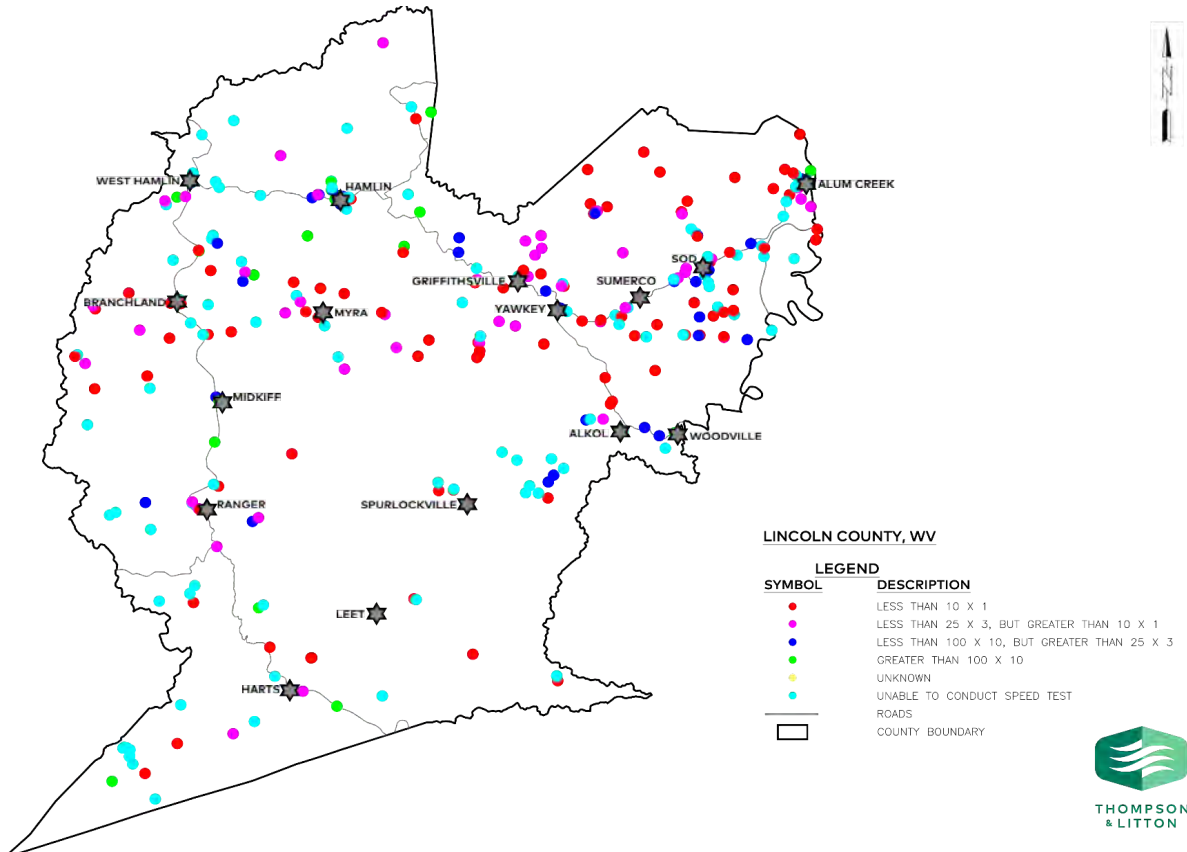
3.4 Provider Map

The map below depicts the various service providers and service locations throughout Lincoln County, as reported through the survey. The green data points show where Armstrong has service and that would be considered served. The majority of all other data points would be considered underserved or unserved.



3.5 Speed Map

The following map shows speed test results from the survey by location. Speed test results below the current FCC definition of minimum broadband speeds of 10 Megabits per second (Mbps) download and 1 Mbps upload (10x1) would be considered *unserved*. Speed test results of below 25 Mbps download and 3 Mbps upload (but greater than 10x1) would be considered *underserved*.

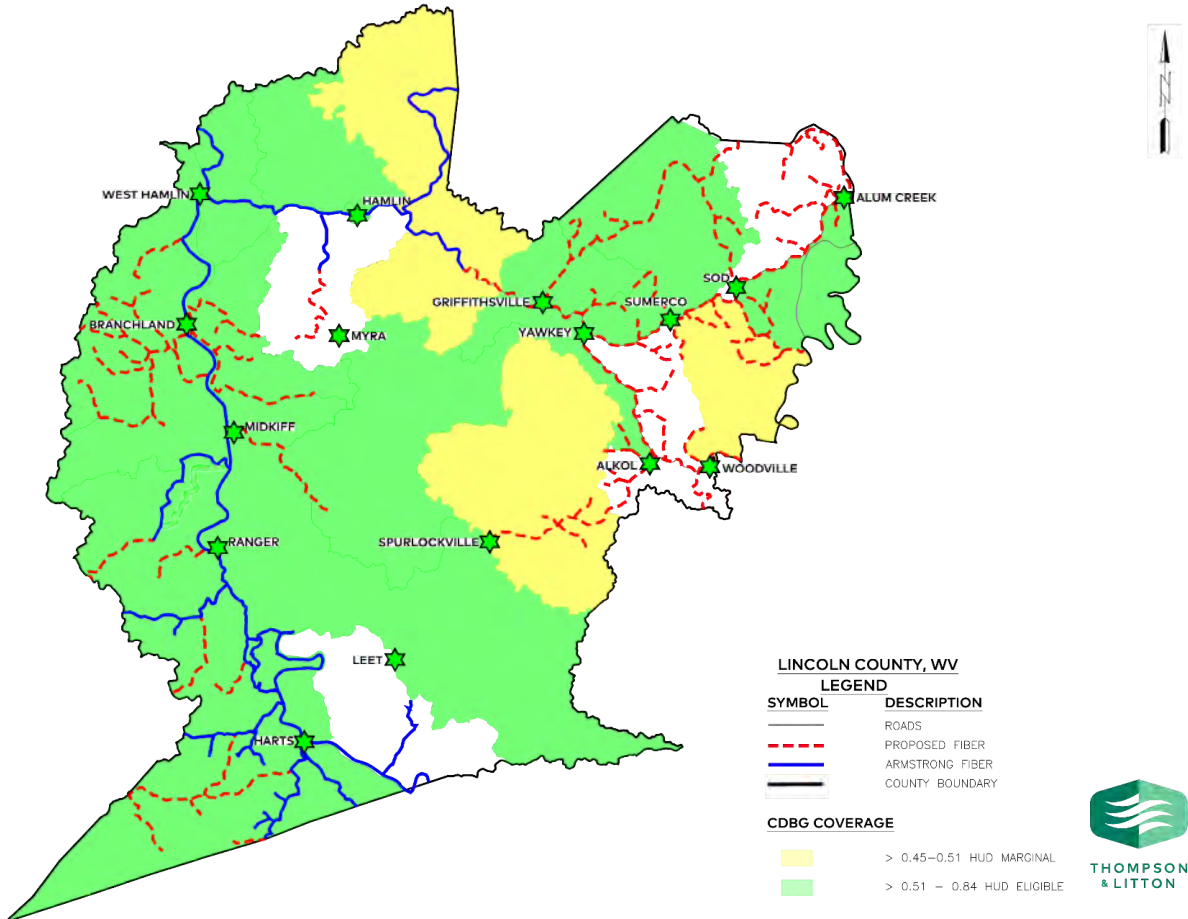


It is important to note that, in new funding applications, speed test results must be greater than 100 x 10 Mbps to be considered served.



3.6 HUD/CDBG Map

The following map shows census block areas in the County with lower incomes (as of 2021). These block areas would be considered eligible for broadband funding through the Community Development Block Grant (CDBG) program, which is a federal program through the US Department of Housing and Urban Development (HUD). The green shades show those areas that are low to moderate income areas and that would be considered HUD-eligible. The yellow shades show those areas that would be eligible for funding according to the state of West Virginia. The white areas shown on the map would not be considered HUD-eligible.



Source: Region Two, 2021

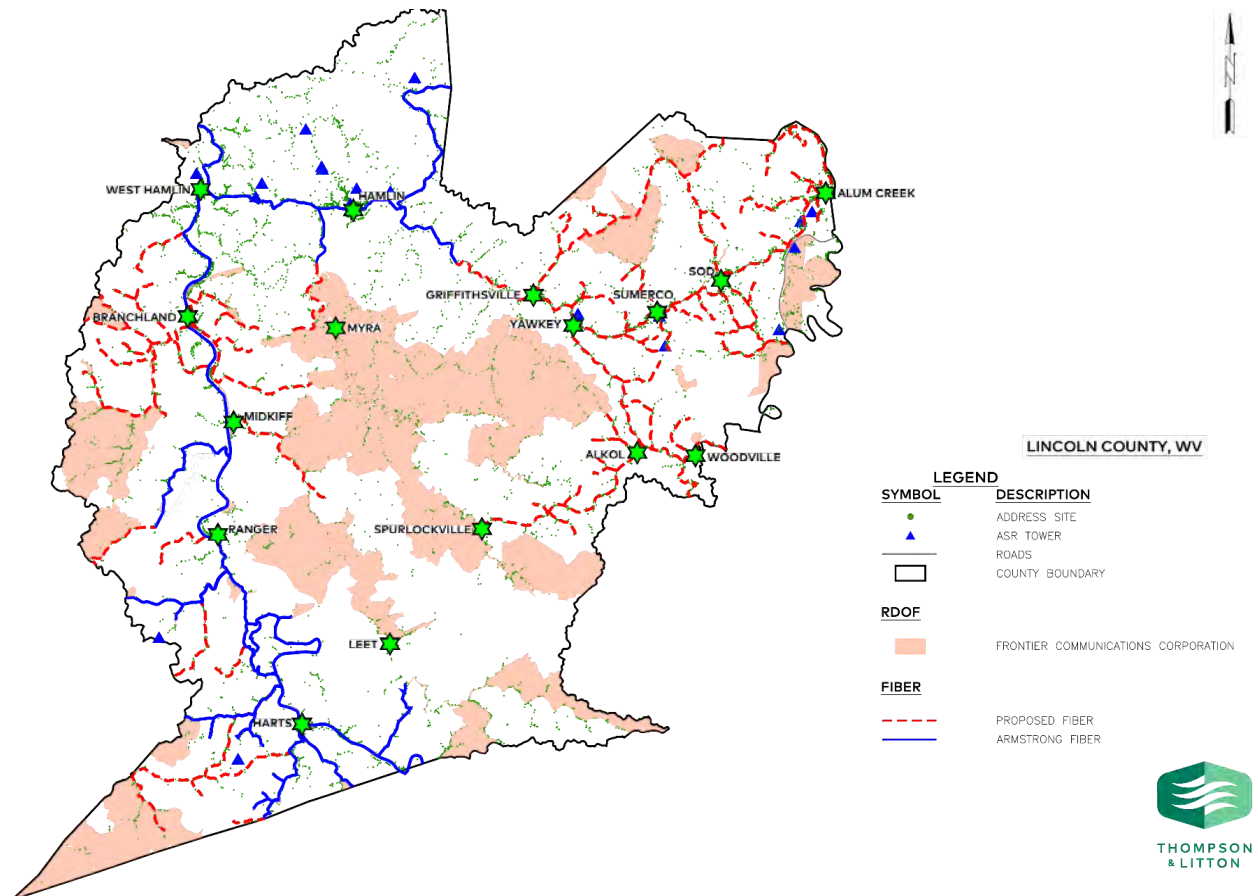
3.7 RDOF Map

The Rural Digital Opportunity Fund, or RDOF, is a reverse auction through the FCC. The following map shows the RDOF funds that were awarded by the FCC. The pink shading depicts areas within Lincoln County that are already being funded through federal dollars, so other federal or state funding would not be available to those areas.

Frontier Communications won the reverse auction for those areas but has not been officially awarded its funding yet. Frontier is currently going through the application process with the FCC. Once awarded, Frontier will have seven years to build out into these areas. During that time, no other entity was funded by federal money (this sentence seems awkward). RDOF is still in the process of awarding funding, and the seven-year timeline does not begin until the final award is complete.

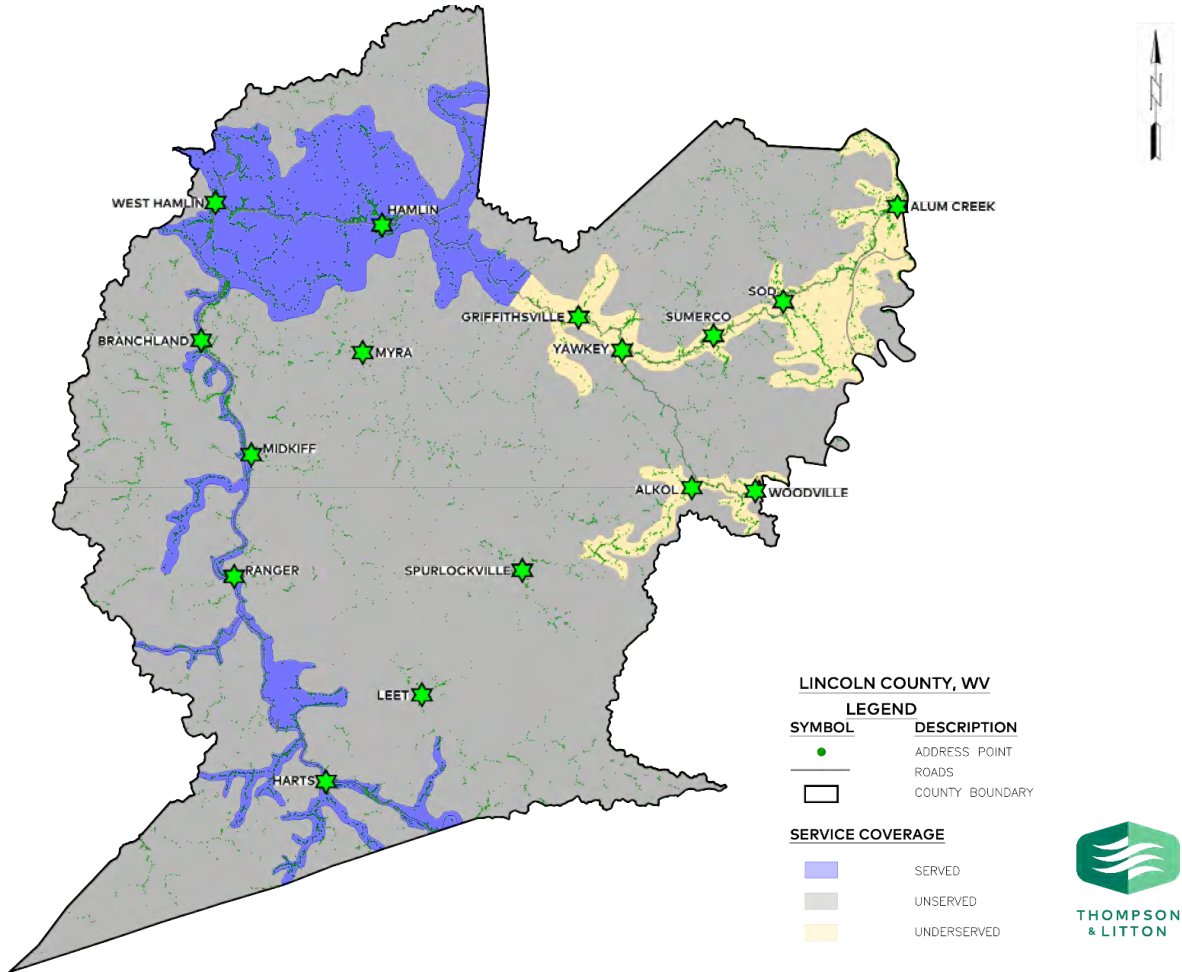
The proposed network map in Section 4.1 of this report does not include network extensions into those pink areas, since they would not be eligible for funding. However, it does not mean that an investor-owned enterprise such as Armstrong cannot extend its network into the already blocked off RDOF areas – they just cannot use public money to do so.

It is also important to note that those areas that are outlined in yellow on the HUD/CDBG map above coincide with several areas that have been pegged for RDOF. As a result, with Armstrong’s backbone, they could build into some of those areas and be able to make a solid business case to do so.



3.8 Served, Unserved, and Underserved Map

The map below illustrates the areas considered served (shaded in blue), underserved (shaded in yellow), and unserved (shaded in gray) for each community in Lincoln County.



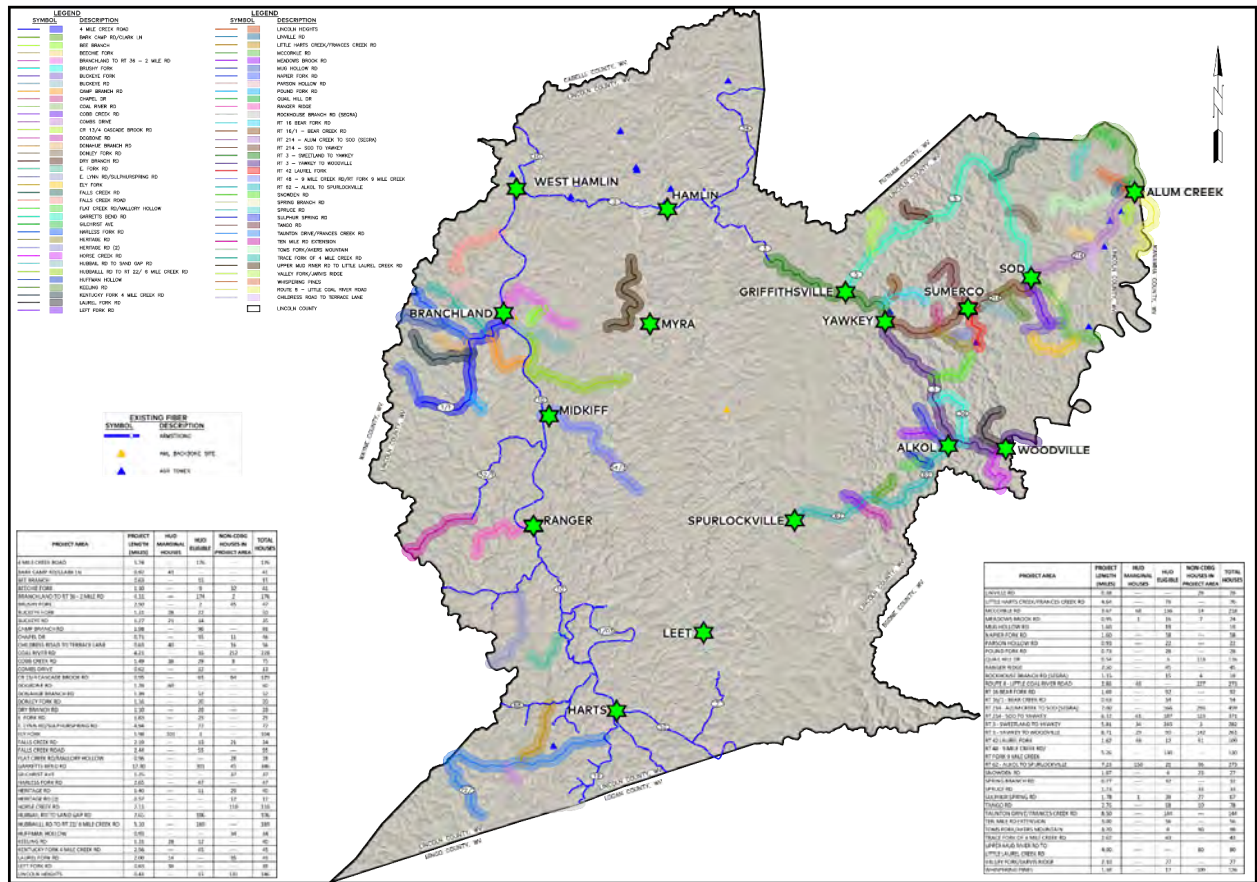
If the new criteria for broadband moves to 100 x 10 Mbps, the underserved areas in the map above would be considered unserved.

4 Network and CAPEX

4.1 Proposed Network Plan

The map below illustrates the proposed network extension plan for last-mile fiber network extensions throughout Lincoln County and is a cumulation of maps in previous sections. The network is designed to leverage existing fiber backbones and to extend from those backbones into communities of greatest need. This would then allow last-mile providers access to those households.

The routes identified maximize target areas directly impacted by these routes and attempt to interconnect with existing networks. The blue line depicts Armstrong's fiber route. The other colored lines depict the proposed network routes. These network extensions would be considered eligible routes for which the County can seek funding. Most of the proposed network extensions lie in the eastern portion of the County along route 3 into Alum Creek and also off of Route 10. Tower assets are also listed and are typically located along the fiber routes.



While the RDOF funding designations may appear as an obstacle, the most important task that Lincoln County can do is show progress. The County should do what it can incrementally over time – to build and move forward with the proposed network extensions.

4.2 High-Level CAPEX Estimate

The high-level cost estimate to deploy last-mile networks to 5,142 households via 71 routes totaling 181 miles is approximately \$17.8 million. The project areas are listed in order of lowest to highest cost in the table below. Also listed are the estimated number of household connections (assuming a 60% take rate for target areas, plus a 30% take rate for other addresses served by Suddenlink), the total square mileage for each project area, and the estimated number of households per square mile.

PROPOSED LAST MILE BROADBAND PROJECTS (LINCOLN COUNTY)										
Route Name/Description	Priority Ranking	Length (miles)	Target Households (HH)	Other Addresses	Total HH Passed	Est. HH	Area (Sq. miles)	EST HH/Sq. Mile	Prelim Cost Est. (Aerial)	Est. Cost per Connection (Aerial)
Rt 8 - Little Coal River Rd	1	2.9	162	111	273	179	1.1	248.5	\$524,679	\$1,922
Little Harts Creek/Frances Creek Rd	2	4.6	20	158	178	65	1.8	101.3	\$415,337	\$2,333
Rt 214 - Alum Creek to Sod (SEGRA)	3	7.0	352	107	459	349	2.7	173.1	\$1,093,579	\$2,383
Branchland to Rt 36 - 2 Mile Rd	4	4.3	56	120	176	86	1.6	107.8	\$439,143	\$2,495
Rt 3 - Sweetland to Yawkey	5	5.8	199	63	262	198	2.2	119.0	\$729,600	\$2,785
Childress Rd to Terrace Ln	6	0.6	47	9	56	45	0.2	246.4	\$155,162	\$2,771
Rt 214 - Sod to Yawkey	7	6.1	331	10	341	301	2.3	147.1	\$960,161	\$2,816
McCorkle Rd	8	3.7	169	17	186	157	1.4	133.8	\$528,389	\$2,841
Camp Branch Rd	9	2.0	48	23	71	50	0.8	94.7	\$232,675	\$3,277
Rt 42 Laurel Fork	10	1.6	68	1	69	62	0.6	112.4	\$227,295	\$3,294
Rt 16 Bear Fork Rd	11	1.7	65	0	65	59	0.6	103.4	\$223,596	\$3,440
Coal River Rd	12	4.2	142	6	148	130	1.6	92.8	\$512,290	\$3,461
Rt 48 - 9 Mile Creek Rd/Rt Fork 9 Mile Creek	13	5.3	45	85	130	66	2.0	65.2	\$453,055	\$3,485
E. Lynn Rd/SulphurSpring Rd	14	4.9	37	81	118	58	1.9	63.1	\$413,905	\$3,508
Whispering Pines	15	1.4	41	9	50	40	0.5	95.7	\$178,073	\$3,561
Ely Fork	16	2.0	67	4	71	62	0.8	94.7	\$253,080	\$3,565
CR 13/4 Cascade Brook Rd	17	1.0	40	0	40	36	0.4	111.2	\$153,670	\$3,842

PROPOSED LAST MILE BROADBAND PROJECTS (LINCOLN COUNTY)

Route Name/Description	Priority Ranking	Length (miles)	Target Households (HH)	Other Addresses	Total HH Passed	Est. HH	Area (Sq. miles)	EST HH/Sq. Mile	Prelim Cost Est. (Aerial)	Est. Cost per Connection (Aerial)
Hubbail Rd to Sand Gap Rd	18	2.7	20	41	61	30	1.0	60.8	\$235,967	\$3,868
Hubbailll Rd to Rt 22/ 6 Mile Creek Rd	19	5.1	40	114	154	70	1.9	79.7	\$453,890	\$2,947
Rt 3 - Yawkey to Woodville	20	8.7	222	18	240	205	3.3	72.7	\$929,287	\$3,872
Rt 62 - Alkol to Spurlockville	21	7.2	242	6	248	220	2.7	90.6	\$859,817	\$3,467
Horse Creek Rd	22	2.1	80	0	80	72	0.8	100.1	\$288,054	\$3,601
4 Mile Creek Road	23	5.7	82	52	134	89	2.2	61.6	\$520,360	\$3,883
Falls Creek Road	24	2.4	21	34	55	29	0.9	59.5	\$225,049	\$4,092
Napier Fork Rd	25	1.6	43	1	44	39	0.6	72.6	\$186,187	\$4,232
Toms Fork/Akers Mountain	26	3.2	68	10	78	64	1.2	64.4	\$331,548	\$4,251
Upper Mud River Rd to Little Laurel Creek Rd	27	4.0	37	43	80	46	1.5	52.8	\$343,492	\$4,294
Cobb Creek Rd	28	1.5	41	0	41	37	0.6	72.6	\$177,834	\$4,337
Garretts Bend Rd	29	12.3	204	48	252	198	4.7	54.1	\$1,114,709	\$4,423
Donahue Branch Rd	30	1.4	37	0	37	33	0.5	70.3	\$167,214	\$4,519
Ten Mile Rd Extension	31	3.0	38	18	56	40	1.1	49.3	\$267,231	\$4,772
Sulphur Spring Rd	32	1.8	41	1	42	37	0.7	62.3	\$201,233	\$4,791
Ranger Ridge	33	2.5	17	28	45	24	0.9	47.5	\$217,889	\$4,842
Taunton Drive/Frances Creek Rd	34	8.5	57	80	137	75	3.2	42.6	\$665,325	\$4,856
Dogbone Rd	35	1.3	25	4	29	24	0.5	59.8	\$145,437	\$5,015
Tango Rd	36	2.8	38	12	50	38	1.0	47.8	\$253,986	\$5,080
Pound Fork Rd	37	0.7	15	4	19	15	0.3	68.7	\$106,357	\$5,598
Huffman Hollow	38	0.9	22	0	22	20	0.4	62.5	\$123,839	\$5,629
Trace Fork of 4 Mile Creek Rd	39	2.6	38	2	40	35	1.0	40.3	\$242,769	\$6,069

PROPOSED LAST MILE BROADBAND PROJECTS (LINCOLN COUNTY)

Route Name/Description	Priority Ranking	Length (miles)	Target Households (HH)	Other Addresses	Total HH Passed	Est. HH	Area (Sq. miles)	EST HH/Sq. Mile	Prelim Cost Est. (Aerial)	Est. Cost per Connection (Aerial)
Harless Fork Rd	40	2.7	25	12	37	26	1.0	36.9	\$228,450	\$6,174
Rockhouse Branch Rd (SEGRA)	41	1.2	15	4	19	15	0.4	43.6	\$123,898	\$6,521
Buckeye Fork	42	1.3	21	0	21	19	0.5	42.3	\$138,098	\$6,576
Spruce Rd	43	1.2	20	0	20	18	0.5	42.9	\$133,146	\$6,657
E. Fork Rd	44	1.8	18	7	25	18	0.7	36.1	\$169,492	\$6,780
Falls Creek Rd	45	2.2	26	4	30	25	0.8	36.2	\$206,553	\$6,885
Laurel Fork Rd	46	2.0	27	0	27	24	0.8	35.6	\$187,331	\$6,938
Chapel Dr	47	0.7	14	0	14	13	0.3	52.1	\$101,763	\$7,269
Heritage Rd	48	1.4	19	0	19	17	0.5	35.8	\$138,635	\$7,297
Meadows Brook Rd	49	1.0	15	0	15	14	0.4	41.7	\$113,398	\$7,560
Bee Branch	50	0.6	12	0	12	11	0.2	50.3	\$95,200	\$7,933
Beechie Fork	51	1.1	15	0	15	14	0.4	36.0	\$119,662	\$7,977
Dry Branch Rd	52	1.1	15	0	15	14	0.4	36.0	\$119,662	\$7,977
Snowden Rd	53	1.7	20	0	20	18	0.6	31.6	\$162,273	\$8,114
Keeling Rd	54	1.3	16	0	16	14	0.5	32.2	\$130,044	\$8,128
Bark Camp Rd/Clark Ln	55	0.9	13	0	13	12	0.3	37.3	\$108,923	\$8,379
Gilchrist Ave	56	1.3	15	0	15	14	0.5	31.7	\$125,927	\$8,395
Spring Branch Rd	57	0.8	12	0	12	11	0.3	41.1	\$101,047	\$8,421
Rt 16/1 - Bear Creek Rd	58	0.6	11	0	11	10	0.2	46.1	\$93,589	\$8,508
Donley Fork Rd	59	1.2	14	0	14	13	0.4	31.9	\$120,557	\$8,611
Brushy Fork	60	2.5	25	0	25	23	0.9	26.4	\$215,742	\$8,630
Flat Creek Rd/Mallory Hollow	61	0.6	10	0	10	9	0.2	47.1	\$89,055	\$8,905
Kentucky Fork 4 Mile Creek Rd	62	2.6	23	0	23	21	1.0	23.7	\$215,026	\$9,349

PROPOSED LAST MILE BROADBAND PROJECTS (LINCOLN COUNTY)

Route Name/Description	Priority Ranking	Length (miles)	Target Households (HH)	Other Addresses	Total HH Passed	Est. HH	Area (Sq. miles)	EST HH/Sq. Mile	Prelim Cost Est. (Aerial)	Est. Cost per Connection (Aerial)
Mug Hollow Rd	63	1.6	11	3	14	11	0.6	23.1	\$135,712	\$9,694
Buckeye Rd	64	1.3	11	0	11	10	0.5	22.9	\$120,319	\$10,938
Left Fork Rd	65	0.6	8	0	8	7	0.2	33.5	\$88,757	\$11,095
Valley Fork/Jarvis Ridge	66	2.1	16	0	16	14	0.8	20.1	\$184,538	\$11,534
Quail Hill Dr	67	0.5	7	0	7	6	0.2	34.2	\$83,387	\$11,912
Heritage Rd (2)	68	0.6	7	0	7	6	0.2	32.4	\$84,640	\$12,091
Combs Drive	69	0.6	6	0	6	5	0.2	25.5	\$85,117	\$14,186
Parson Hollow Rd	70	0.9	5	0	5	5	0.4	14.2	\$96,453	\$19,291
Linville Rd	71	0.4	3	0	3	3	0.1	20.8	\$70,261	\$23,420
Total		181	3,792	1,350	5,142	3,818	69	65	\$17,774,683	\$3,457

4.3 Funding

This final report can be used to develop funding applications and to provide investors with documentation to support capital investment.

As the County seeks funding for fiber-related investments, it is important to consider the CDBG program. Focusing on the HUD-eligible areas outlined in Section 3.4 could prove to be very valuable in successfully being awarded grant funding. We witnessed this in Wayne County. Additionally, most of the green and yellow areas overlap with those areas that we consider unserved and/or underserved.

The County should continue to leverage the efforts that Region 2 has underway for funding. Region 2 was recently awarded the GigReady grant that was applied for through Gov. Justice's program to award \$3.9 million in grant funding for broadband improvement projects across West Virginia. The GigReady program kickoff meeting will be held mid-June of 2022, during the time of this report.

Below is a summary of Region Two's Funding Efforts (From the West Virginia Broadband State Broadband Plan 2020-2025):

Appalachian Regional Commission (ARC)

The Appalachian Regional Commission (ARC) Central Appalachian Broadband Initiative. In 2018, the Council and the West Virginia Development Office (WVDO) coordinated the release of a request for proposals for projects to be funded by an available \$3.2 million in Appalachian Regional Commission (ARC) funding as part of the agency's broadband initiative. The goal of the initiative is to provide funding for the deployment of broadband that will increase economic and business development or provide service to unserved customers. Funding is limited to ARC-designated distressed counties in West Virginia that have been most negatively impacted by the downturn in the coal industry. Eligible counties include Boone, Clay, Logan, Lincoln, McDowell, Mingo, Webster, and Wyoming.

West Virginia Broadband Hub

In 2018, the Council initiated the creation of the West Virginia Broadband Hub. With ARC POWER funding, this project incorporated existing highway permit data into the State's broadband mapping initiative. The project also included the integration of broadband into the West Virginia Development Office (WVDO) Site Selection program, and the creation of a Guide to Broadband Development in West Virginia. The West Virginia Geological and Economic Survey (WVGES) served as the lead applicant for Technical Assistance funding through the ARC POWER program. This application was strongly supported by the West Virginia Department of Commerce in partnership with the West Virginia Department of Transportation. The ten counties included in this project are: 1. Boone 2. Clay 3. Lincoln 4. Logan 5. Mingo 6. McDowell 7. Nicholas 8. Wayne 9. Webster 10. Wyoming

Source: https://broadband.wv.gov/wp-content/uploads/2020/01/West_Virginia_State_Broadband_Plan_2020-2025.pdf

In summary the broadband needs of Lincoln County are substantial. There can be no sustainable economic development or community development without ubiquitous broadband coverage. While not part of our scope of services, the same can be said of mobile services, particularly mobile data (e.g. 4g LTE and 5g service). We encourage County leadership to make this a strategic priority, and explore all possible methods of funding and implementation including public-private partnerships.