LINK UP Lawrence

Lawrence County

Broadband Expansion Study 2023

November 2023

Prepared By

Michael Baker INTERNATIONAL

Forward

As our communities continue to grow, so does the value of fast, reliable, and affordable broadband. Compounded by COVID-19 and the inequities of the digital divide, the absence of quality broadband consistently and disproportionately impacts both urban and rural populations. Driven by the hope for a better connected, digitally resilient future, we are pleased to present the Lawrence County Broadband Expansion Study, mission critical to the County's assessment of areas most in need of broadband improvement.

Connecting people and industries, broadband plays a vital role in economic growth and productivity. In that spirit, we sought feedback from Lawrence County residents, business owners, local officials, and community organizations to help inform this report, includng the identification of 44 Connectivity Opportunity Areas (COAs), 1,333 unserved home and business addresses, and four Early Action projects. Additionally, several rounds of engagement work, including public events and Task Force meetings, concluded with a set of actionable goals to help guide and prioritize projects throughout the County.

This broadband expansion study advances strategies and actions of FOCUS Lawrence County, the 2016 Comprehensive Plan update that aims to establish our community as a seminal leader in broadband infrastructure and access. This effort will continue with strategic planning initiatives that bring affordable and reliable high-speed broadband access to all our unserved and underserved communities.

We appreciate your continued support in pursuing the broadband resources necessary to close the digital gaps in Lawrence County, elevating the quality of place and life for all.

Respectfully and dutifully,

Your Lawrence County Commissioners

Brian Burick

Loretta Spielvogel

Dan Vogler

"Thank you to Lawrence County Chamber of Commerce and the dedicated, attentive members of the Task Force who lent their time and expertise to guide this process on behalf of our wonderful County."

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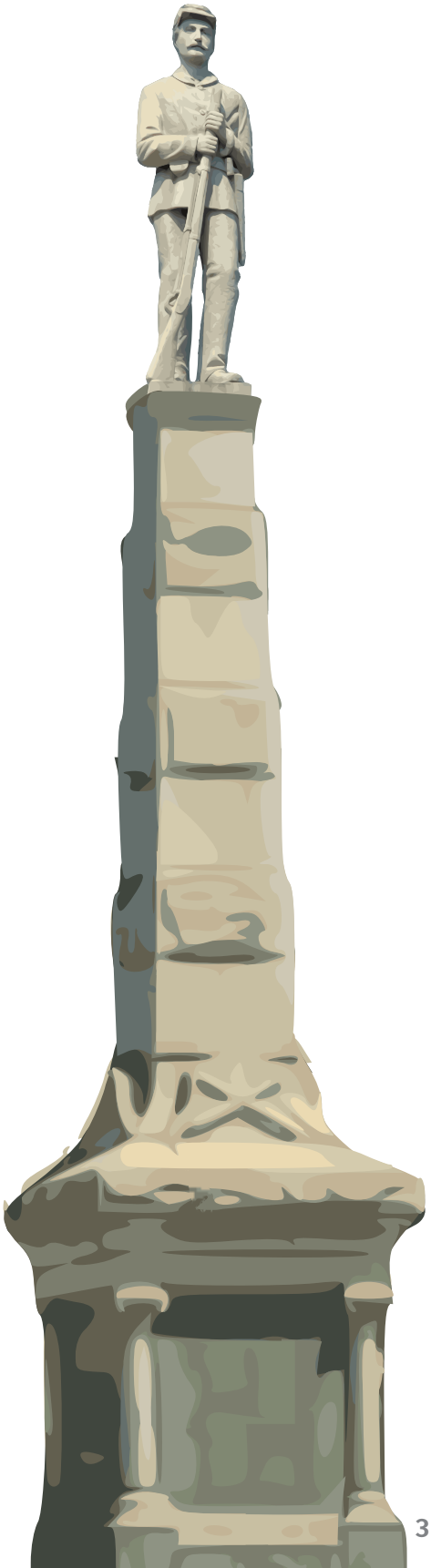
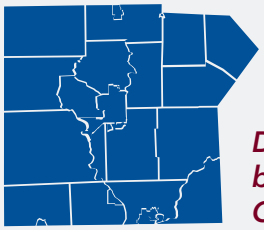


Lawrence County AT A GLANCE



Demographics are based on 2020 Census Bureau Data.

45 Average Age

42% Rural Residents

19.8% Households with children

65+ 23.4% Households with Elderly

20% Travel For WiFi

based on survey responses

111 Community Anchor Institutions (CAIs)

includes 3 libraries and 28 public schools

A Growing Need for Broadband Expansion in Lawrence County

With information technology's unyielding trek through the 21st century, connectivity becomes less a matter of preference and one of necessity. From employment and education to health and commerce, the global community has pivoted from the conventional in-person experience to a virtual setting, resulting in a massive paradigm shift for how, when, and where we are using the Internet.

Further complicating the matter are the impacts of COVID-19. Prior to 2020, high-quality connectivity was largely considered a pleasant but unnecessary luxury, needed only by those who work remotely, attend distance learning classes, or run a business. Those sentiments, along with the familiarity of our day-to-day lives, came to a halt as the scope and reach of the pandemic forced every corner of the world into virtual meeting rooms and online service hubs. This sudden and unprecedented change gleamed a bright light over the gaps in digital connectivity, making the unserved and underserved areas painfully visible.

Recognizing the nationwide chasm between communities with good service, bad service, and no service, the federal government made record investments in broadband under the Infrastructure Investment and Jobs Act (IIJA). With states receiving their IIJA grant packages, proactive planning is critical to leverage available funding both now and in the future. The Lawrence County Broadband Expansion Study establishes the groundwork to begin this effort.

Building upon the Southwestern Pennsylvania Commission's (SPC) regional planning effort, this study aims to advance connectivity solutions specifically applicable within Lawrence County. The SPC conducted a regional study for the ten counties that make up southwestern Pennsylvania, including Lawrence. Presented as a Connectivity Roadmap, the SPC study charted the most updated path toward bridging the digital divide for its included context of COVID-19 and the newly created IIJA funding sources.

Guided by several resources – Task Force and community input, identification of unserved and underserved areas via existing mapping, public survey responses, speed test results, and interviews with Internet Service Providers (ISPs) – the study includes estimated implementation costs to provide service at 100/100 Mbps download/upload with an estimated cost-per-home based on Early Action projects, data findings, engineering design samples, and Michael Baker's telecommunications experience in the region.

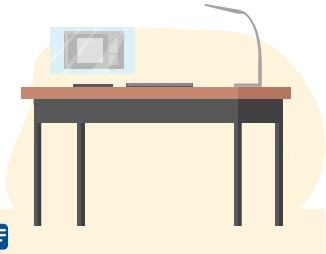
Collecting the Data

A Collaborative Planning Process

Lawrence County Planning and Community Development, along with community leaders and representatives, initiated the development of this study and provided the foundation for its contents. The planning process included a series of interactive Task Force and public meetings, all focused on gathering critical feedback from the Lawrence County community. The feedback served as a catalyst for developing clear broadband goals and strategies for expansion and to promote the Survey and Speed Test. The Survey and Speed Test was administered throughout the County to solicit feedback and verify broadband connection speeds, tallying more than 400 responses from residents and business owners. These efforts helped determine COAs, Early Action projects, and actionable goals for future broadband projects.

Task Force and Public Meetings

Between March and September 2023, to initiate the data collection process, a series of Task Force and public meetings were held at various locations within the County.



Task Force Meetings:

Consisting of leaders in government, technology, innovation, industry, economic development, education, human services, and telecommunications at local, regional and state levels, the Task Force is instrumental in the development of goals and strategies that respond to existing problems, meet documented needs, and build upon available funding sources.

Public Meetings:

Residents and business owners across Lawrence County were engaged to gather feedback regarding individual needs and gap areas, and to promote the Survey and Speed Test.

COAs: Identifying the Unserved and Underserved

The publication of this study is the definitive first step in Lawrence County's effort to ensure that all its residents can connect to high-speed affordable Internet. The creation of COAs was a culmination of all the data outputs herein (FCC National Broadband Data, Survey/Speed test results, and local engagement). COA addresses were identified using GIS desktop analysis, the County's Next Generation 911 database, household, and business locations (overlaid on unserved broadband areas from FCC data and refined by the Availability Atlas data), and Survey and Speed Test results. With these results, Lawrence County can make informed decisions to expand broadband based on known gap locations that are truly unserved.

Countywide Survey and Speed Test

A public survey was conducted from March 16 through May 26, 2023. The objective was to gather qualitative data from Lawrence County residents and businesses on their broadband availability, usage, and speed.

Early Action Projects

With so many unserved and underserved locations to cover, bringing fiber to all requires time to procure funding, plan, and construct. Using currently available funds, Lawrence County selected four areas deemed as strong Early Action project candidates. Site selection was based on various factors that included FCC Data, ISP Data, Task Force engagement, and survey and speed test results, collectively identifying the areas in the highest and most immediate need.

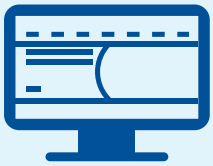
Spreading the Word About Link Up Lawrence

Early Action Project Engagement By The Numbers

412 Survey Responses

11 News Articles

3 County Email Blasts



1,500 Website Views

5,400+ Website Actions Taken

The public engagement strategy focused on raising awareness about the study and promoting the Survey and Speed Test. Project outreach was conducted through the County's traditional and social media communications channels to reach a diverse cross-section of Lawrence County and communicate about key aspects of the project. Task Force members and community stakeholders extended the County's reach and supported the collaborative approach by implementing project engagement tools and resources. The primary goals of the communications strategy for project information and survey participation included:

Engaging stakeholders in the outreach process and messaging

Partnering with local organizations to maximize public outreach efforts

Ensuring opportunities for both urban and rural communities to participate

Providing the public with ample time to complete the survey

Raising Awareness and Encouraging Participation

Lawrence County connected with local media outlets to frontload and sustain the engagement efforts. Using direct communications coupled with a press release, critical project information was disseminated throughout the County by both the New Castle News and Ellwood City Ledger. Follow-up pieces further communicated critical project information, including event details and the survey extension. Both outlets informed the public and supported participation through their respective coverage.

The Link Up Lawrence website (https://www.linkuplawrence.com) was developed to inform and communicate with the public and stakeholders about the initiative and related activities. The website, which launched in March 2023 on an ADA (Americans with Disabilities Act) accessible platform that offered a language translation option. The website outlined the Link Up Lawrence project and the significance of high-speed broadband in today's digital economy. Additionally, the website prominently featured the Internet Survey and Speed Test to support real-time data-gathering from throughout the County.

Taking the Survey and Speed Test online permitted the County to assess actual speeds while gathering additional data and information about availability and service. However, not all residents, businesses, and organizations have access to a stable Internet connection. In an effort to reach all Lawrence County communities, the County made paper copies of the survey available. Printed copies of the survey were available by calling a contact number that was

published in outreach materials. Local stakeholders and community anchor institutions were also essential to making paper surveys available as they supported the distribution of surveys and accompanying informational resources. Additionally, a designated email address and phone number were established to further encourage Lawrence County residents to ask questions about the project or reach out for assistance.

To provide ample response opportunities for all Lawrence County residents, the Survey and Speed Test was available online and the paper survey was available throughout the County from mid-March through the end of May.

Communications Toolkit

A communications toolkit was developed to increase project awareness and identify engagement opportunities, such as the Survey and Speed Test and public events. The toolkit was shared with Task Force members and community stakeholders in order to extend public outreach with their networks through different communication channels. Key messages within the communications toolkit were related to project and event information, announcements, and reminders. The toolkit components were presented in the form of text and graphics, such as social media posts and hashtags, downloadable logos and graphics, an ad and flyer, a newsletter article, a press release, and email blast content. The communications toolkit supplemented the County's efforts, encouraging implementation by providing guidance and enabling consistent project messaging.

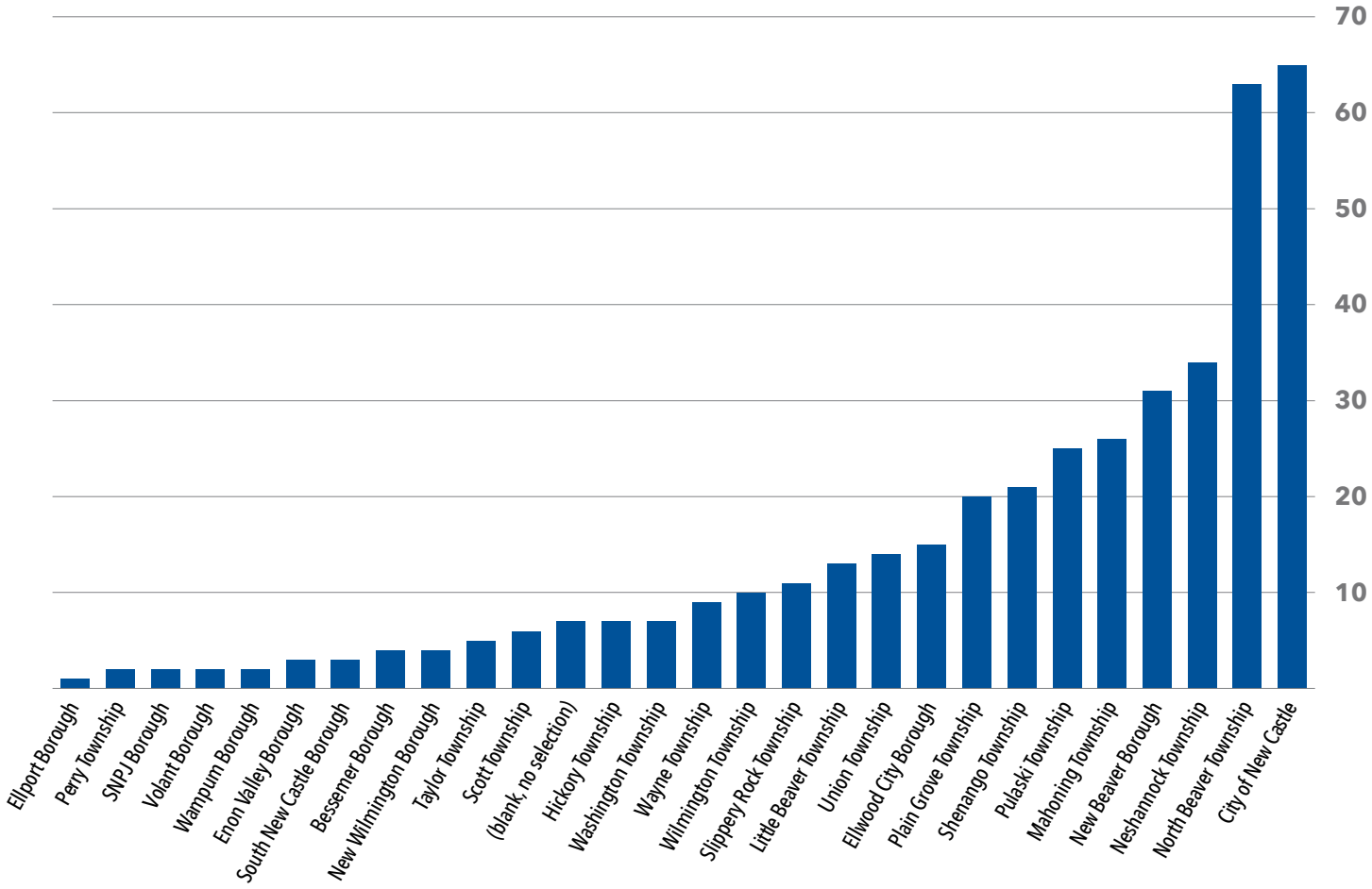
Engagement Events

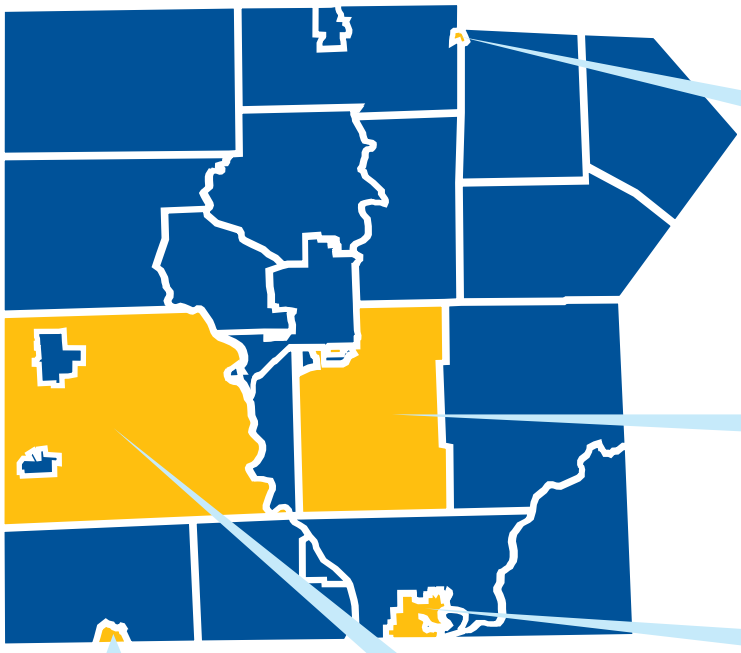
An event series was developed so the County could effectively communicate with multiple audiences about the project, including government, the public, businesses, organizations, and the economic development community. Key events that occurred included:

- Meeting with the League of Municipalities allowed the County to reach local decision-makers who have direct connections with the residents of their respective communities, to outline the full scope of the project and associated work and priorities, and to discuss the project's long-range potential.
- Hosting an open house for several hours provided the opportunity to reach a diverse audience at their leisure by setting up a series of stations that provided project insights and encouraged Survey and Speed Test participation.
- The County offered a virtual workshop as a follow-up to the in-person open house to connect with those interested in learning more.
- A meeting with the Forward Lawrence Board of Directors gave the members a chance to hear about the project details, progress, and next steps as the County analyzed the data and survey responses.

Ultimately, the public events were an effective way to reach interested individuals and were also an opportunity for the County to hear from participants about their experiences and knowledge of broadband throughout Lawrence County.

Survey Responses by Municipality





"We do not have much selection for Internet services in my area. Since there aren't many options there isn't any competition, so the prices are ridiculous."
– Volant Borough resident

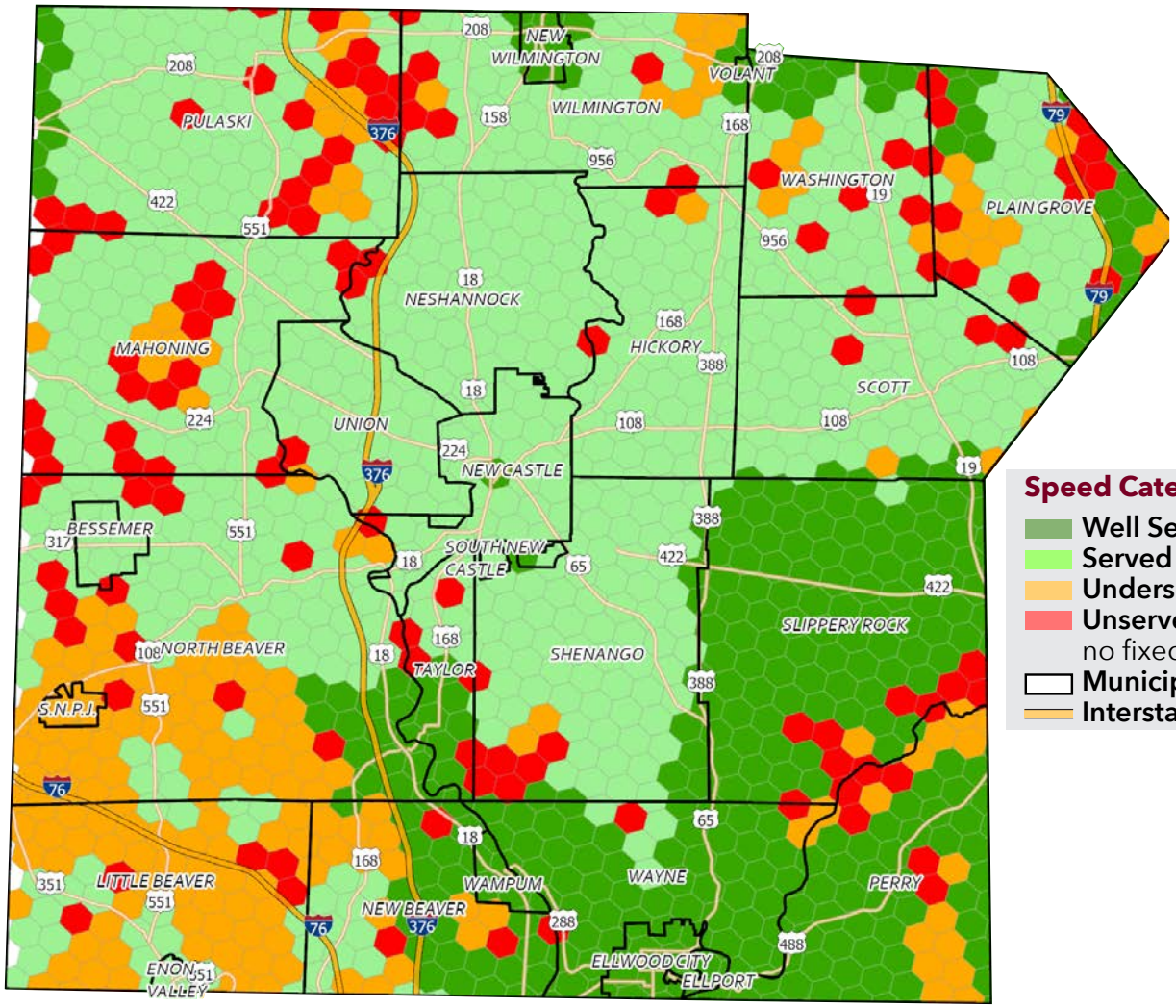
"We have been paying over $100 for Internet it keeps going up each year, and we cannot use the Internet in our house. It's terrible, but we can only get Xfinity at our home. This needs to change. I am becoming very frustrated that this issue affects my work."
– Shenango Township resident

"I am still working full time so the price of Internet service RIGHT now is not an immediate issue, however once I retire and collect social security it will become an, if not my primary, issue."
– Ellwood City Borough resident

"Our Internet is not reliable and is very slow especially when 2 devices are using Internet at one time. We often have connection issues with DSL. We also have to pay for a landline phone that we do not use so we can have the slow DSL service."
– Enon Valley Borough resident

"It is incredibly frustrating when I'm working from home and the kids are either off or having a virtual day and the Internet is slow. We have trouble at times using more than one device at a time."
– North Beaver Township resident

The State of Existing Broadband in Lawrence County



Speed Categories (Mbps)

- **Well Served** (≥ 1000/1000)
- **Served** (< 1000/1000)
- **Underserved** (<100/20)
- **Unserved** (<25/3, or no fixed Connection)
- **Municipality Boundary**
- **Interstate/State Route**

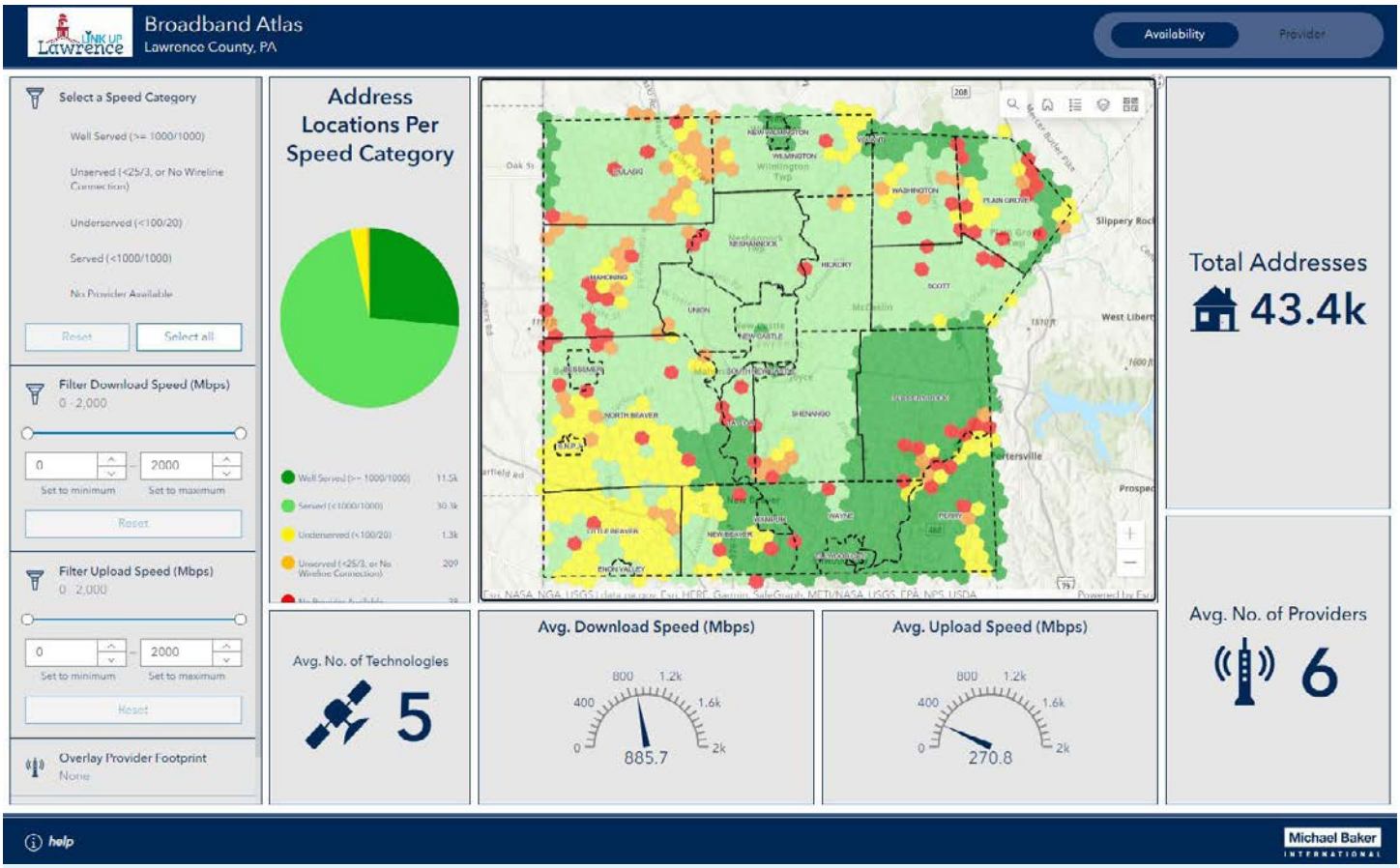
The FCC National Broadband Map collects information captured at the location level about Internet connections and services, such as provider, speed, and technology, that ISPs are required to provide to the FCC biannually. Currently, the FCC is undergoing a revamp of the National Broadband Map data because there are challenges with its accuracy. ISPs must self-report twice a year, but they might do so erroneously, based on outdated data or a lack of time to pull necessary data together. By documenting broadband access by address instead of by census block, we can better understand how broadband is being deployed across the County and where competition allows residents a choice in ISP.

Using the FCC National Broadband Data as a baseline, Lawrence County Planning and Community Development needed to research the true nature of the unserved areas of the County. Unserved areas have broadband speeds less than 25/3 megabits per second (Mbps) download/upload, respectively. Unserved areas do not have access to high-speed Internet and may be only relying on satellite or Digital Subscriber Line (DSL) technology. Households and businesses cannot function in their day-to-day activities if speeds are below 25/3 Mbps.

Lawrence County Broadband Atlas

The County utilized recent SPC data to develop a living broadband atlas called the Lawrence County Broadband Atlas (Broadband Atlas). Through this effort, Lawrence County created an updated broadband map for this expansion study that shows where investment is most needed to close connectivity gaps.

This is an interactive map to visualize existing broadband activity within the County. The Broadband Atlas contains two tabbed dashboards that allow for quick analysis of providers' footprints, and the fastest speed and available technology (i.e., fiber, cable, DSL) available in an area. Mapping the current availability displays broadband thresholds of well-served, served, underserved, and unserved areas along with the number of current broadband providers in an area, and what technologies are currently available in an area. This dashboard expands to include additional data layers, such as vertical assets and other broadband data sourced directly from ISP interviews, giving the County a clearer view of the true state of connectivity, including the assessment of over 43,000 local addresses categorized by speed, the number of types of technology being used to connect to the Internet, and average download and upload speeds.



Broadband data assets: Most recent FCC census block data (formerly FCC Form 477) is broken down by speed, provider, technology, and provider density. A custom processing tool was used to ensure satellite providers are removed from the dataset and domain values are properly translated to easily understandable definitions. It also includes FCC Rural Digital Opportunity Fund (RDOF) awarded areas, and previously designated Federal Opportunity Zones.

Additional asset inventory cultivated from three sources:

- Data sharing agreements via non-disclosure agreements (NDAs) with ISPs and middle mile providers
- Open-source vertical assets available via download from the FCC
- County-owned datasets

Opportunity areas for adoption and broadband access via the previous SPC study.

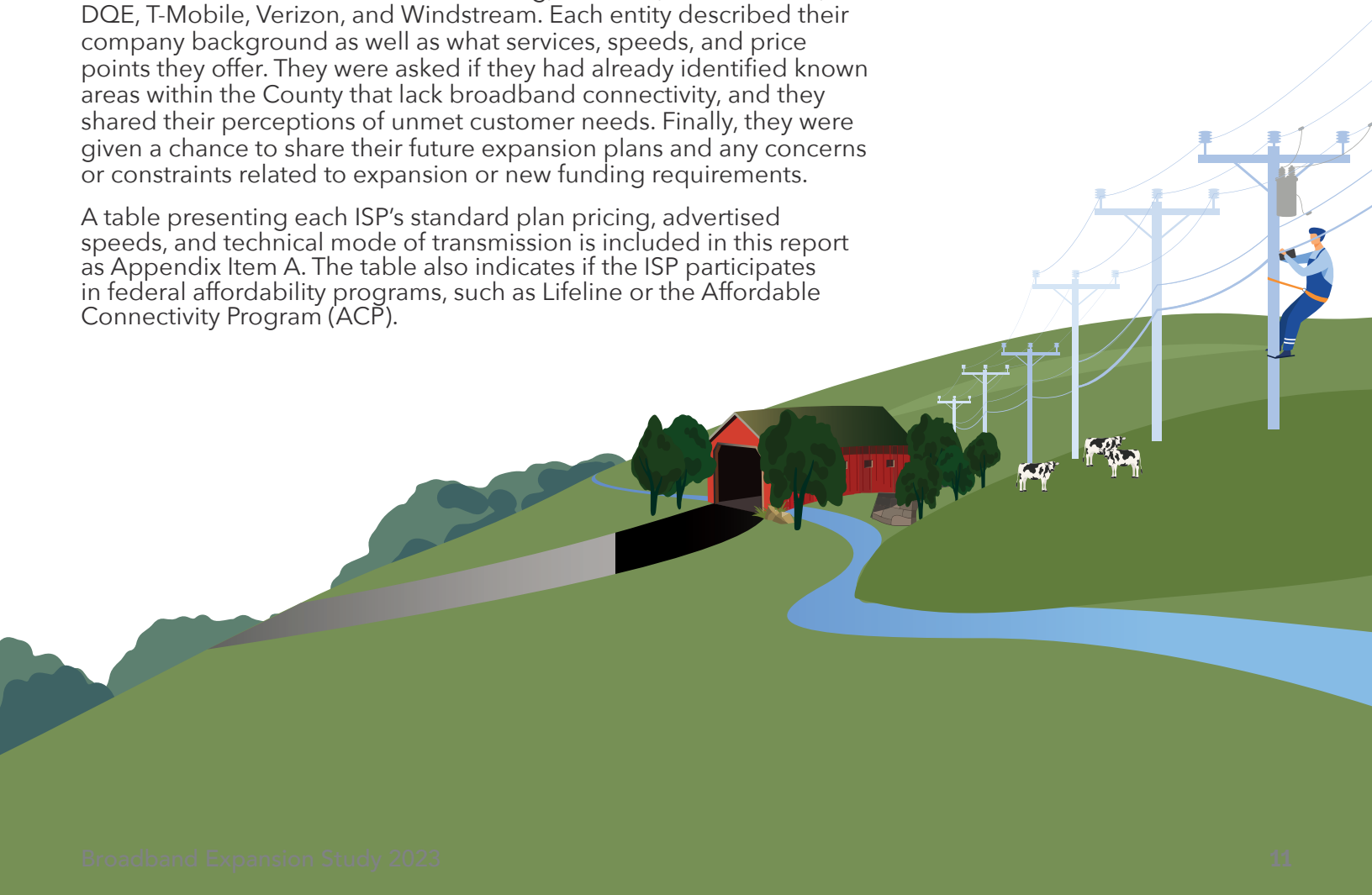
The Broadband Atlas accounts for existing conditions so that it informs future-proofing decision-making. It utilizes external geospatial datasets, such as RDOF areas, to understand which rural areas are already projected to undergo broadband enhancements. RDOF is a separate program in which the FCC auctioned off unserved rural regions of America to ISPs.. For the purposes of the Link Up Lawrence broadband program, it is particularly useful to see where future expansion plans might align. Aligning and coordinating expansion plans will help prevent overbuilding and redundant use of funds, and may lead to resource sharing where possible.

Market Overview: Internet Service Provider Interviews

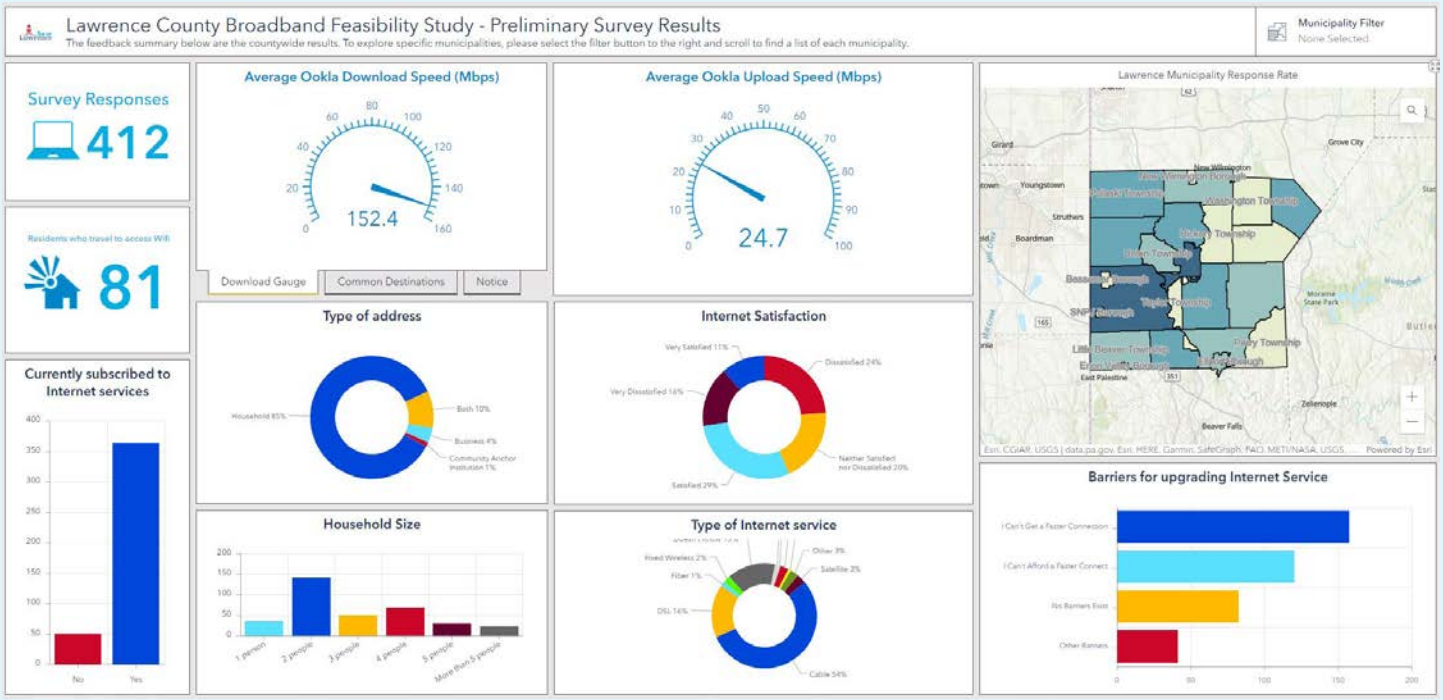
The project plans generated by the Link Up Lawrence broadband program must benefit those who are living in unserved and underserved communities with services that are affordable to households with low- to moderate-income. However, it is equally important that newly designed project plans also speak to the priorities and motivations of the ISPs who will compete to win the construction contracts that come from this program. By incorporating ISP feedback at the planning stage, the County can define project areas and prepare bid processes that are more likely to meet both resident needs and garner ISP participation. To ensure this plan is informed by a wider industry context, the County conducted detailed interviews with seven ISPs currently operating in the County. Qualitative and quantitative data were collected during these interviews to inform this planning effort.

The ISP interviews were conducted between February and March 2023. The ISPs interviewed are Armstrong, Comcast, Crown Castle, DQE, T-Mobile, Verizon, and Windstream. Each entity described their company background as well as what services, speeds, and price points they offer. They were asked if they had already identified known areas within the County that lack broadband connectivity, and they shared their perceptions of unmet customer needs. Finally, they were given a chance to share their future expansion plans and any concerns or constraints related to expansion or new funding requirements.

A table presenting each ISP's standard plan pricing, advertised speeds, and technical mode of transmission is included in this report as Appendix Item A. The table also indicates if the ISP participates in federal affordability programs, such as Lifeline or the Affordable Connectivity Program (ACP).



The Survey and Speed Test



Survey

Two data points, user experience and primary location, were collected for the Link Up Lawrence broadband program. The survey ran from March 16 through May 26, 2023 online via the Lawrence Broadband website. Hard copy versions of the survey were also available.

Residents and businesses that took the survey online also took a speed test, which was imbedded in the survey, automatically capturing the user's download and upload speeds without any further interaction from the user. Residents of Lawrence County ran speed tests 166 times during the survey to determine what the download and upload speeds were at their location.

15%

of Lawrence County survey respondents still use DSL Internet.

Speed Test

Speed tests were collected during the online survey utilizing Speed Test by Ookla (https://www.speedtest.net/). The Speed Test can capture the user's ISP, download and upload speeds, jitter, and ping. In conjunction with the survey responses, these metrics can paint a valuable picture of a user's Internet experience.

57%

of surveys recorded unserved or underserved broadband connectivity.

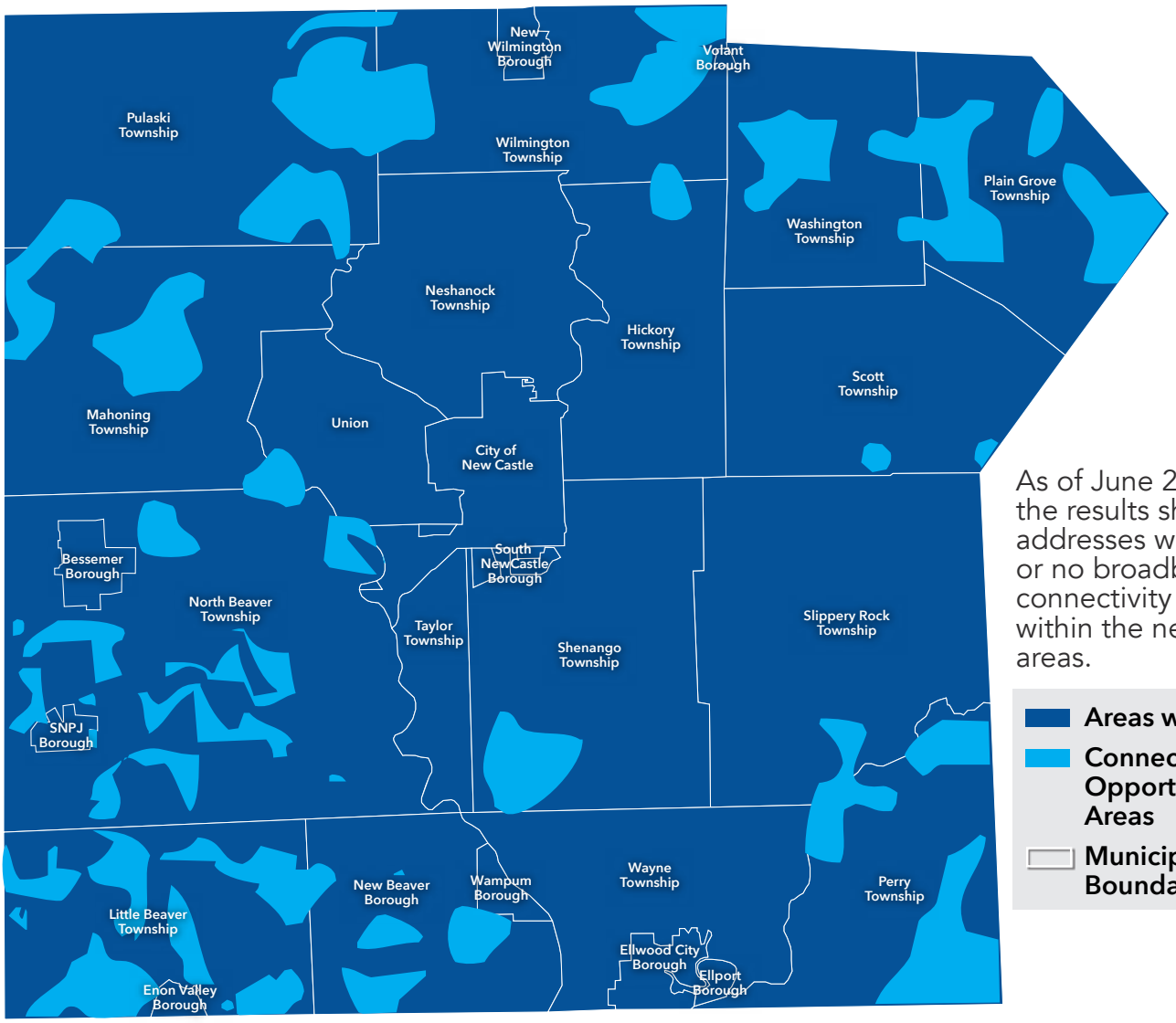
Average Speeds

SPEED	UPLOAD	DOWNLOAD
RURAL	14 MBPS	149 MBPS
URBAN	39 MBPS	156 MBPS

*Based on limited Speed Test results. Rural areas have significantly slower Internet access, with 39% lacking speeds of 25/4 Mbps, compared to only 4% for urban areas." **FCC***

Source: https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report

A Deeper Look at COAs



As of June 20, 2023, the results show 1,206 addresses with poor or no broadband connectivity that are within the new service areas.

Areas with Service

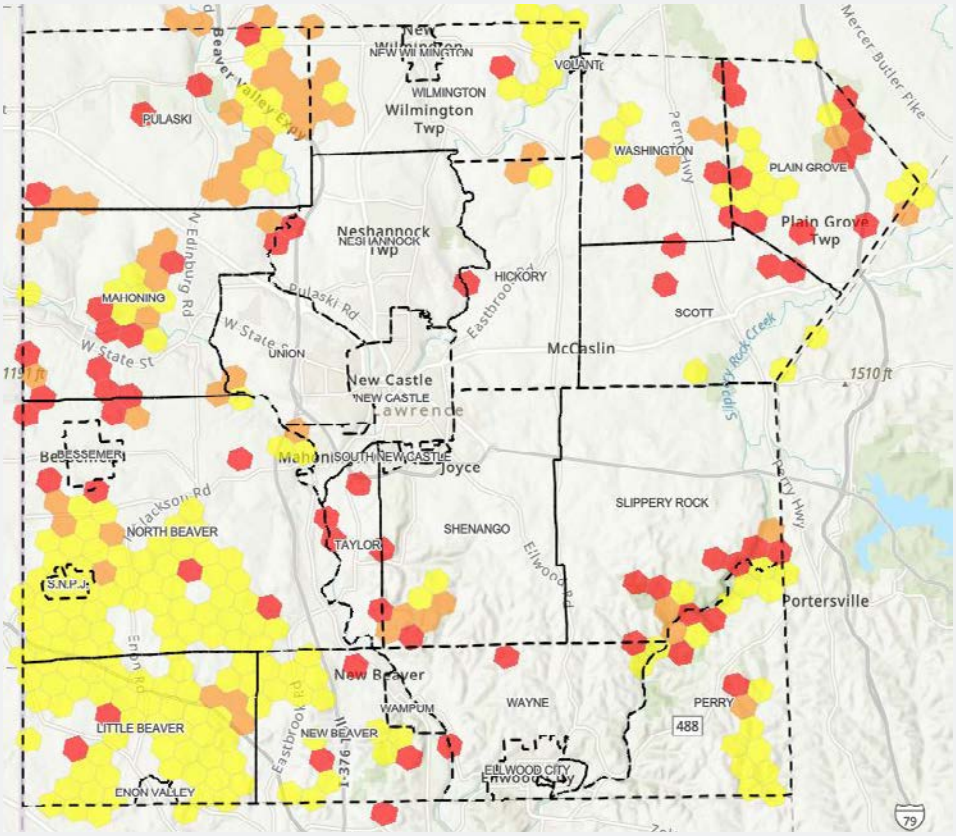
Connectivity Opportunity Areas

Municipality Boundary

Connectivity Opportunity Area Data

This map is a result of the data gathering efforts to refine the FCC National Broadband data. The COAs identified during the survey process revealed that, at the development of this report, 1,206 addresses in Lawrence County do not have adequate access to the Internet; more than 65 additional addresses from the FCC's assessment of 1,137. The total number of locations that need service may increase if more information is submitted from the public identifying previously unknown unserved areas. It is also possible that the number of COAs is reduced by local ISPs challenging this map to correct locations that may have been erroneously marked as unserved or underserved. Similarly, the FCC will conduct their own national Broadband Serviceable Location Fabric bulk challenge process, which may change the number of Lawrence County COAs. Some gaps will be closed via private sector market growth, which will be tracked and incorporated into planning. Ultimately, the County will continue to refine and finalize the map of COAs in accordance with these variables.

FCC National Broadband Data



This map depicts areas in Lawrence County where the FCC National Broadband data states that the areas are unserved or underserved. Relying on this data alone indicated 1,137 addresses in Lawrence County do not have reliable Internet. However, recognizing the possibilities of flaws in data, the FCC is currently conducting a national Broadband Serviceable Location Fabric bulk challenge process. This effort is intended to refine and correct previously inaccurate FCC Broadband Data. The result should be a nationally recognized and verified account of which areas are affected by the digital divide.

The Challenge Process

Broadband challenge processes, both at the local and national level, were established to ensure that unserved and underserved locations are verified by outside data sourced from the public, researchers, and from ISPs. This is a major shift from past Form 477 ISP reporting requirements, wherein the ISPs simply submitted the data to the FCC without much oversight or verification. Also, the reporting system itself was flawed because it was measured at the census block level, so if an ISP served only a single location in a census block, the entire census block would be falsely marked as served.

These national challenge processes, including the Broadband Serviceable Location Fabric Challenge, Fixed Availability Challenge, and Mobile Availability Challenge, intend to refine this data, which will more than likely reveal more unserved or underserved locations than previously understood. ISPs currently providing broadband service of 100 Mbps download and 20 Mbps upload or faster to an unserved location(s) can submit a challenge to have the location(s) removed from the unserved repository. Conversely, members of the public and broadband researchers can also contribute by identifying where areas marked as served in fact do not have access.

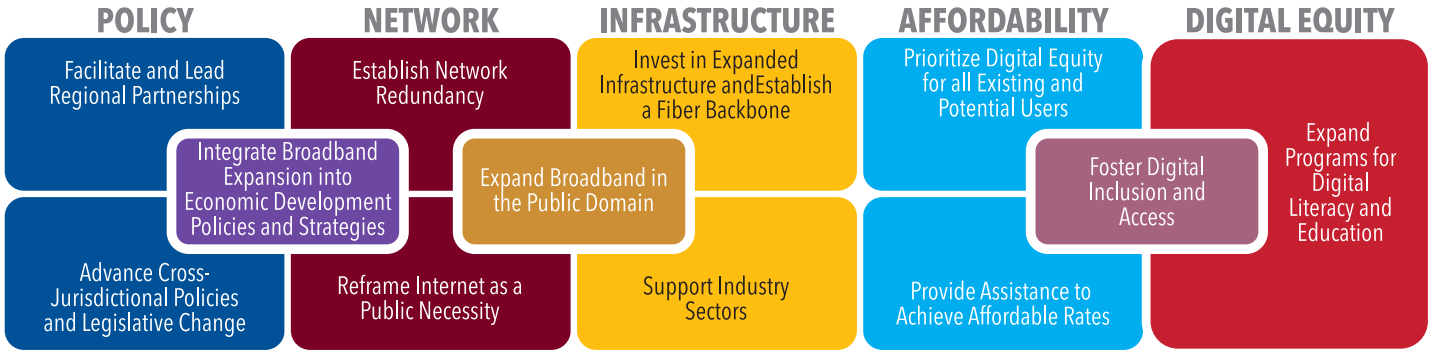
How Connectivity Opportunity Areas Get Served

Once the challenge process is completed, the County will have enough data to organize COAs into groups, or "polygons," of new service areas. Polygons are grouped usually based on geographic proximity between COAs and proximity to nearby fiber infrastructure. These polygons will be made public through a formal Request for Proposal(s) (RFP) from the County to ISPs so they can bid on the opportunity to build to the area. For management and economies of scale, an ISP bid may propose to serve multiple polygons wrapped into one project. Once the County awards the ISP(s), their proposed polygon(s) will become infrastructure expansion projects overseen by the County. The Early Action projects are examples of COAs that were grouped into polygons based on COA proximity. The Early Action RFP process pilots the overall bid process that will occur with the remaining COAs in the County.

Actionable Goals: Task Force Findings

Using the 12 Regional Goals noted in the SPC as a starting point, Task Force members evaluated broadband objectives as they specifically relate to Lawrence County. The work resulted in five (5) definitive goals for broadband-related improvements. The following goals were selected as top priorities and are accompanied by strategies that can be implemented at the local level to advance progress. In pursuing these strategies, Lawrence County may play the role of lead, partner, or advocate. As reflected by the collaborative process that created this report, the goals are intended to guide Lawrence County as it prioritizes broadband needs.

SPC 12 Regional Goals for Connectivity

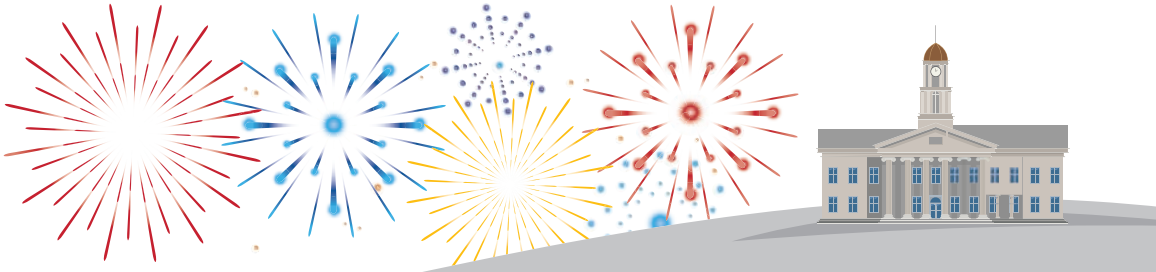


Reframe Internet as Public Necessity

The past century has seen a massive expansion of infrastructure, accompanied by an evolution of ownership and management approaches. Transportation networks have evolved into a fully public system of roads and highways, owned and managed at local, state, and federal levels with departments created to oversee them. Water, electricity, and heat are viewed as public health issues and access to them is protected through various laws and assistance programs. High-speed Internet has not yet been elevated to the same status, and although subsidies do exist, it is not treated as a public necessity. Landlords do not have to guarantee access to Internet, public buildings do not have to provide it, and there is no governmental entity to oversee and enforce its accessibility. The Task Force concluded that there is a clear desire for broadband to be expanded into the public domain through public policy and public funding.

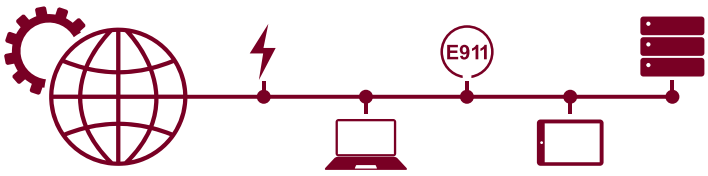
Strategies at the local level:

- Conduct a public service campaign with targeted messaging to increase awareness and build advocacy for broadband as a public necessity
- Identify available sites that are ready to accommodate fiber expansion in unserved areas, focusing on opportunity sites and areas with the highest rates of no service per square mile
- Establish local standards and definitions of broadband with future applicability, e.g., 100 Mbps download and 20 Mbps upload (100/20)



Establish Network Redundancy

As technology continues to advance and smart devices allow more efficient and connected workflows and lifestyles, Internet reliance will become even more embedded in our daily lives. A connected lifestyle requires an energy source to power the increasing number and type of devices we use. A smart phone that is not charged cannot look up a bus schedule or place an order for food. Of even greater concern, a short Internet outage can be catastrophic as our daily activities are conducted online. For example: during an outage, contacts and online documents will be inaccessible, smart vehicles and emergency services will lose access to their navigation systems, and calls will not be able to be placed to 911 or elsewhere. Network redundancy signifies digital resiliency and strengthens our energy grid, allowing redundancy to be built into every level of our communications system.

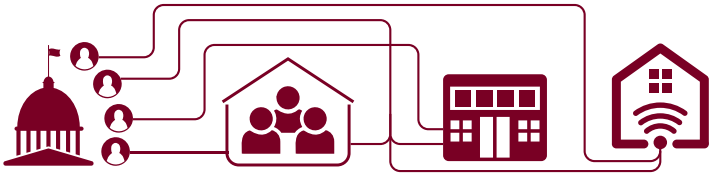


Strategies at the local level:

- Pair investments in fiber that will provide long-term efficiency and capacity in urbanized areas with cell towers in low density areas that will fill gaps and provide complete coverage to advance the fiber network
- Collaborate with schools, libraries, and community organizations to make hotspots available on loan as a short-term option to expand access to low-income areas
- Assess areas where County emergency apparatuses experience poor connectivity and identify opportunities where equipping vehicles with hot spots will support more continuous emergency response

Facilitate and Lead Regional Partnerships

The expansion of broadband infrastructure and services involves many entities who must coordinate and work together to build out the network completely and efficiently. Pairing broadband projects with existing infrastructure requires strong partnerships between different owners, systems, and service providers. If broadband is to be treated as a public utility and government assists in ensuring service, there are further partnerships to build between public and private entities. It is not currently profitable for private companies to expand broadband in areas with few households or challenging and expensive site conditions. Comprehensive coverage across the region will require strong and clear partnerships that bring multiple sectors together to collaborate and share resources.



Strategies at the local level:

- Explore ways to generate competition, such as incentives for providers to expand in areas with single-provider service
- Facilitate collaboration between fiber, cable, Wireless Internet Service Providers (WISPs), and middle-mile backbone providers by hosting regular working group sessions
- Utilize a shared master contact list that enables communication and mutual familiarity among providers

Prioritize Digital Equity for All

At the core of inclusion and literacy goals is the desired outcome of digital equity. Broadband access directly impacts economic mobility: resources available online connect users to greater job markets, permit flexibility to work from home, support the freedom to make individual choices about personal health and safety, and open the door to a variety of training and educational opportunities. Increasing dependence on technology and online systems drives the growth of a new workforce sector to manage, monitor, and maintain everything from websites and devices to the innovative software and data tracking tools they may employ. Lawrence County must connect marginalized communities to these opportunities and ensure that workforce education and development are created and implemented equitably. Every resident who wants a better future for themselves should be able to benefit from the digital economy.

Strategies at the local level:

- Invest in programs for workforce development and training that include digital skills that position workers to qualify for virtual jobs
- Assess household Internet usage and needs by incorporating questions into public surveys on number of users and their anticipated needs, e.g., school, work, gaming, medical visits, streaming, etc.
- Work with community and immigrant organizations to translate documents on existing and new broadband programs and resources into multiple languages

Provide Assistance to Achieve Affordable Rates

Costs for high-speed Internet vary across Pennsylvania, despite little connection between the rates charged and the speed or reliability of service. In fact, there is a correlation between higher rates and less reliable service in rural areas. In some of the least densely populated parts of the County, users pay for cell service that they can only use in some parts of their town and home service with slow speeds and frequent outages. Across Southwestern Pennsylvania, users struggle to afford all the costs associated with accessing the Internet, from service plans and devices to installation fees and unexpected data fees. If Lawrence County truly wants to ensure that all residents have access to the tools, benefits, and opportunities available online, affordability must be prioritized.

Strategies at the local level:

- Support initiatives and policies that would provide housing authorities with free Wi-Fi in and around their properties, focusing first on properties with the highest rates of poverty
- Work with community organizations and social services to promote and assist with existing programs such as the FCC Affordable Connectivity Program
- Advocate for housing authorities to reclassify Internet service as part of basic services and include it within the utility allowance

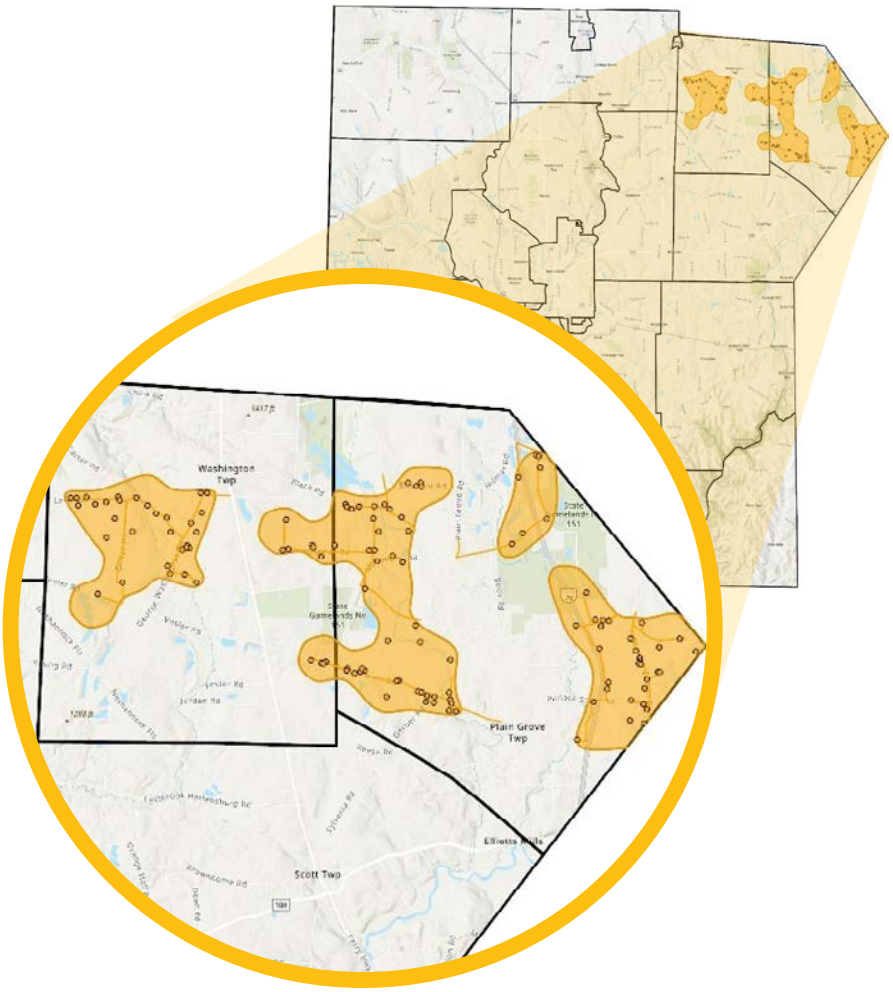
Early Action Projects

Several key reasons exist for implementing four Early Action broadband projects in Lawrence County as the first direct implementation step.

The first is to offer immediate intervention in the highest need communities and create some relief in areas where connectivity is scarce or nonexistent. The second is to start integrating the planned investment of ARPA dollars into Link Up Lawrence before for new funds, which will come later in the project. Finally, to pilot project processes through these Early Action projects to adequately prepare for the full implementation of all COAs in Lawrence County over the course of this program. The Early Action process allows the County, select ISPs, and associated contractor staff to quickly initiate the process of rolling out broadband and to demonstrate to the public that Lawrence County is intent on moving forward with the broadband program.

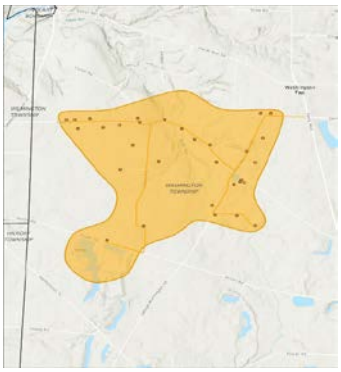
A detailed scoring methodology was developed to assess which of the pre-identified unserved areas of the County (meaning areas with less than 25/3 Mbps), would be prioritized as an Early Action Project. Much of this criterion directly reflects requirements per the larger IIJA and other funding structures. For example, to ensure compliance with ARPA speed requirements of 100/100 Mbps, the projects will utilize optical fiber deployments. In addition to speed requirements, it is critical to assess population density as well as structure types within the area to ensure residential and CAIs get priority before other commercial locations. Other considerations include homes per linear mile, which is an important metric for ISPs to assess feasibility. Lastly, background history on the community and key demographic information were integrated into the scoring methodology to create a contextualized justification for broadband interventions.

Areas Identified



Selection Methodology

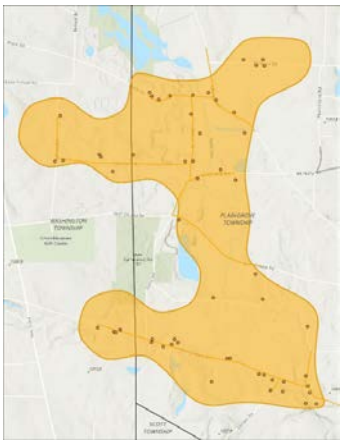
The Early Action project areas were identified by mapping data and validating survey responses. Beginning in January 2023, areas in Lawrence were analyzed for broadband infrastructure. Looking closely at urban and rural areas with historically poor connectivity, school districts, and a concentrated population as key targets, nearly 34% of the homes surveyed had outdated infrastructure (DSL, copper wire, or satellite), or no Internet at all. These are key areas to target with Early Action. Similarly, as of May 26, 2023, residents of Lawrence County took 412 surveys regarding their Internet experience. Over 56% of the surveys recorded comments and speed test results below 100 Mbps, or outdated broadband infrastructure, both considered insufficient by the PA Broadband Development Authority and the FCC. Finally, a GIS analysis on density, income, population, age, and many other factors went into the Early Action analysis. Combined with the data and speed tests, the Task Force analyzed and recommended four Early Action areas within Washington and Plain Grove Townships. On August 24, 2023, the Board of Commissioners approved the Task Force's recommendation for implementation.



Early Action Area #1: Washington Township

Located in western/central Washington Twp, west of Perry Highway. Speed tests record unserved speeds.

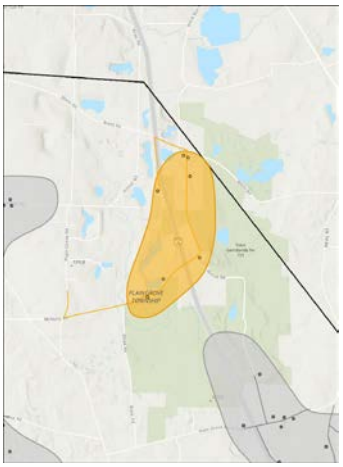
Number of Unserved Locations: 31



Early Action Area #2: Washington & Plain Grove Townships

Located in western Plain Grove township and eastern Washington township, and to the east of Perry Highway. Several speed tests taken with a combination of unserved and underserved results.

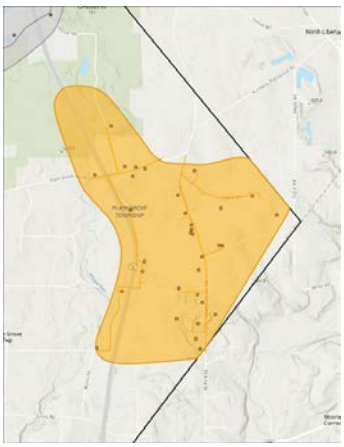
Number of Unserved Locations: 56



Early Action Area #3: Northeastern Plain Grove Township

Located in northeastern Plain Grove Township and along the northern stretch of I-79. Speed tests record unserved speeds.

Number of Unserved Locations: 7



Early Action Area #4: Eastern Plain Grove Township

Located in eastern Plain Grove Township along, and to the east, of I-79. Several speed tests taken with a combination of unserved and underserved results.

Number of Unserved Locations: 33

*The Plain Grove area was studied extensively by the municipality for broadband connectivity.

Next Steps

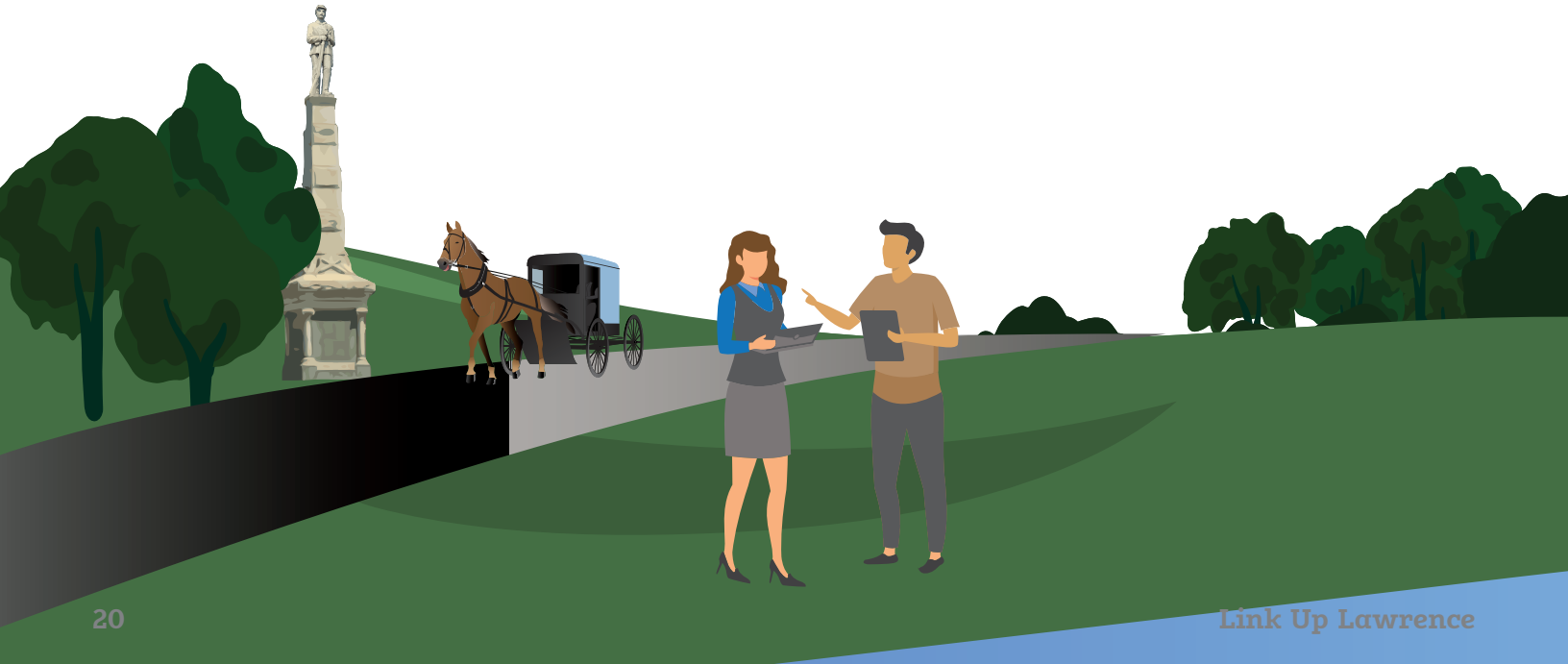
To ensure a fully connected Lawrence County within the next three to five years, the following steps to further the next phase of the Link Up Lawrence broadband program:

Issue Request for Proposal for Lawrence County

After conducting the Local ISP Challenge, the County will rely on its updated map results to guide the next steps toward broadband infrastructure deployments in COAs. Implementation steps for the Link Up Lawrence broadband program include RFPs to engage service providers in County broadband work. The first RFP will be issued at a date to be determined and offers service providers the chance to propose plans for connecting unserved locations within the four Early Action areas, of which providers can propose to connect one, a few, or all four of the areas. While the Early Action projects are underway and awardee(s) are implementing their planning and construction activities for those four areas, a second RFP will be issued by the County that will include the remaining unserved locations in the previously identified COAs that were not a part of the Early Action projects. This subsequent RFP will rely on the most updated mapping data available, which will continually be refined over the next several years to include any missed locations, newly constructed locations, and newly deployed infrastructure not administered through the Link Up Lawrence Broadband Program.

Continually Update the Grant Funding Strategy

The County should continue to track existing funding opportunities and identify potential new grants which align with the County's funding needs, partnerships, timing, and eligibility requirements. As explained in the Funding Strategy section of this report, the County is anticipating forthcoming changes to broadband funding mechanisms, which could include changes to requirements, deadlines, and award amounts. These changes, perhaps at the federal and state levels, may alter the funding strategy presented in this report. For grants where the County has identified a partnership opportunity, the County requires the project to go out for RFP. Potential partners should be notified of the RFP process via email.



Launch Community Outreach

The publication of this broadband expansion study is a first step for Lawrence County in identifying broadband needs and developing projects to address them. However, continued public engagement and awareness will be instrumental in promoting these findings, securing local support in implementation steps, informing residents of the County's efforts and investment in broadband expansion, and benefitting from other ongoing programs and resources that can impact Lawrence County. Specific recommendations include:

- Maintaining the website to continue educating the community on the importance of broadband expansion within Lawrence County
- Continue to inform residents about available resources, such as the ACP. Include a description of the program on the County's website, include links to guidelines and tutorials provided by the FCC and others, and continue to educate local government representatives on this program so they can promote it within communities
- Follow and participate in the statewide BEAD and digital equity planning efforts. At the time of this report, PBDA is conducting listening sessions, workshops, and a public survey. As these become available, Lawrence County should promote these on its website and encourage local municipal leaders and other stakeholders to share them with their communities to ensure that Lawrence County's needs and concerns are represented in the state plan

Appendix

Appendix A: ISP Pricing Plans

ISP	Technology	Current/Active Projects	Lowest Price Plan	Speed	ACP	ETC (Lifeline)
Armstrong	HFC (hybrid fiber)*	None	34.95/mo (Zoom)	25/3	Yes	ND
Comcast	HFC*	Working on three (3)-line extensions, Pulaski Township (ARPA funding)	9.95/mo (Internet Essentials)	50/10	Yes	No
Crown Castle	WISP, fiber to business, healthcare, CAIs	None	N/A (residential service not offered)	N/A (residential service not offered)	No**	No
DQE Communications	Internet/ethernet	None***	49.99/mo	250 Mbps	No****	No
T-Mobile	5G*****	None	60.00/mo	600 symmetrical******	Yes	Yes
Verizon	DSL*******	None	25.00/mo	300 symmetrical	Yes	ND
Windstream	Fiber to the home	RDOF projects; to be completed by 2025	64.99/mo********	100 Mbps	Yes	Yes

* All new builds in Lawrence County would be fiber
** Internal program call WISP GO (reduces upfront capital, expedites regulatory process)
*** Just entered residential side of business
**** Matches rates to accommodate ACP participants
***** Only areas Ultra-Capacity qualify for home Internet
****** Availability of 5G determined by location
******* No FIOS in Lawrence County
******** Speed was determined by utilizing an arbitrary address in ISP's service area
ND Could not find or access data

Appendix B: Glossary of Common Terms and Acronyms

Affordable Connectivity Program (ACP)	Is a United States government-sponsored program that aims to provide wireless Internet for low-income households.
Bandwidth	The volume of information that can be sent over a connection in a measured amount of time.
Broadband	Refers to high-speed Internet access. Delivered through fiber optic, fixed antenna wireless, satellite, mobile and cable modem technology.
Connectivity	Ability to link to and communicate with other computer systems, electronic devices, software, or the Internet.
Connectivity Opportunity Areas (COAs)	Locations that are unserved with poor mobile and fixed broadband service speeds.

Community Anchor Institutions (CAIs)	Organizations that play a vital role in their local communities and economies, e.g., libraries, schools, government buildings.
Dark Fiber	Unused optical fiber that has been laid out or strung but is not currently being used. Represents additional capacity for bandwidth to be made available.
Digital Equity	A goal to ensure that everyone has equal access to technology tools, devices, and the Internet, and has the knowledge and skills to use them effectively.
Digital Literacy	Refers to the ability to use information and communication technologies to find, evaluate, create, and communicate information.
Digital Navigator	Trained staff who work with residents on digital literacy, including home connectivity and how to search and apply for jobs and critical services.
Digital Subscriber Line (DSL)	Is a communication medium that is used to transfer Internet through copper wire telecommunications line,
Upload Speed	Rate that data is transferred from a user's computer or device to the Internet (sending information).
Download Speed	Rate that data can be received by a user's computer or device from the Internet (receiving information).
Hotspot	A physical location where people may obtain Internet access, typically using Wi-Fi technology. Public hotspots may be created by a business for use by customers, whereas personal or mobile hotspots lets users connect their smartphones to other devices for Internet access.
Lifeline	The predecessor to the Affordable Connectivity Program.
Last Mile	Refers to the connection between your ISP and your physical location. The last link in the chain of connectivity.
Mbps	Megabits per second are units of measurement that refer to upload and download speeds to measure the file size of data transferred per second over a channel and are used to show how fast a network connection is.
Mesh Network	Technology to provide seamless wireless via multiple mesh nodes, or Wi-Fi extenders, that work together to route date to and from users.
Middle Mile	Refers to the connection between core network to the local network plant.
Network	A system that connects two or more computing devices for transmitting or sharing information.
Optical Fiber	Is a thin flexible fiber with a glass core through which signals can be sent with very little loss of strength.
Served	Locations that have access to high-speed Internet as it is currently defined by the FCC: 25 Mbps download / 3 Mbps upload.
Small Cell Technology	Wireless transmitters and receivers designed to provide network coverage to smaller areas. It strengthens coverage and data transfer speeds where devices might otherwise compete for bandwidth. 5G is built on small cell technology.
Symmetrical	Having the same upload and download speeds.
Underserved	Locations where Internet service is at or above the FCC threshold but with no access to broadband service at speeds of 100 Mbps download / 20 Mbps upload.
Unserved	Locations where there is no current Internet service provided.
Wi-Fi	Wi-Fi (short for Wireless Fidelity) is the radio signal sent from a wireless router to a nearby device, which translates the signal into data you can see and use. The device transmits a radio signal back to the router, which connects to the Internet by wire or cable.

Appendix C: Acronyms

ACP	Affordable Connectivity Program
ARPA	American Rescue Plan Act
BEAD	Broadband, Equity, Access, and Deployment Program
BSL	Broadband Serviceable Location
CAI	Community Anchor Institutions
CDBG	Community Development Block Grant
CARES Act	Coronavirus Aid, Relief, & Economic Security Act
CFA	Commonwealth Financing Authority
COA	Connectivity Opportunity Area
CRF	Coronavirus Relief Fund
DCED	Department of Community and Economic Development
DSL	Digital Subscriber Line
EMS	Emergency Medical Services
FCC	Federal Communications Commission
HUD	Department of Housing and Urban Development
IIJA	Infrastructure Investment and Jobs Act
IoT	Internet of Things
ISP	Internet Service Provider
IT	Information Technology
LMI	Low to Moderate Income
MPO	Metropolitan Planning Organization
NTIA	National Telecommunications and Information Administration
P3	Public-Private Partnerships
PBDA	Pennsylvania Broadband Development Authority
RDOF	Rural Digital Opportunity Fund
RFP	Request for Proposal
RPO	Rural Planning Organization
SAP&DC	Southern Alleghenies Planning and Development Commission
SLFRF	Coronavirus State and Local Fiscal Recovery Funds
SPC	Southwestern Pennsylvania Commission
SWPA	Southwestern Pennsylvania
USDA	United States Department of Agriculture
WISP	Wireless Internet Service Provider

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