



ACADIANA BROADBAND ASSESSMENT 2021

INFRASTRUCTURE FOR ECONOMIC AND COMMUNITY GROWTH AND SUSTAINABILITY



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THE STATE OF LOUISIANA AND THE BEL COMMISSION

For your leadership, commitment, and investment in closing the digital divide and revitalizing rural Louisiana.

The Honorable John Bel Edwards, Louisiana Governor

Veneeth Iyengar, Louisiana Executive Director for Broadband & Connectivity

Leslie Durham, Governor's Designee to the Delta Regional Authority

ACADIANA BROADBAND ASSESSMENT 2021

**INFRASTRUCTURE FOR ECONOMIC AND COMMUNITY
GROWTH AND SUSTAINABILITY**

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Downtown Abbeville

EXECUTIVE SUMMARY

Broadband access in Louisiana is a complex tale of “haves” and “have-nots.” Regionally, Acadiana is home to both the internationally known LUS Fiber in Lafayette and the 5th slowest Internet in the country in Ville Platte. According to HighSpeedInternet.com, Louisiana is the “38th most connected state” in reference to broadband with a total of 36 Internet providers in the state. These disparities necessarily indicate a wide variety of services that are available. However, according to the U.S. Census Bureau, about 22 percent of Louisiana households do not have access to the Internet and in six parishes about half of the households lack access to the Internet. As indicated by the broadband assessment results discussed in the full report to follow, significant efforts need to be made to provide more connectivity to broadband.

REPORT HIGHLIGHTS

- Internet access has become a critical service with large and growing impacts to education, job and population growth, and access to crucial services.
- As broadband technologies evolved gradually over time, patchwork investments have led to a hybrid network relying on a combination of modern and legacy technologies in many areas where the user experience is often limited by outdated components.
- Moreover, standard assessments of broadband access rely on generalized measures of coverage that overstate the true availability of broadband for residents and businesses when compared to other independent data sources.
- A modern standard for future broadband development in Acadiana should be based on fiberoptic networks with fiber-to-the-home offering a minimum speed of 100 Mbps download and 100 Mbps upload.
- The Acadiana Broadband Initiative recommends the creation of a fully integrated regional fiber optic network as a mechanism to connect workforces, higher education campuses, municipal governments, and enhance the area as a SMART region among other benefits.

THE PURPOSE

The Digital Divide is defined as the growing gap between an under-resourced portion of the population (e.g., lower-income, older adults, rural, etc.) who do not have access to broadband Internet and the wealthier, middle-class, and/or younger Americans living in urban and suburban areas who have access to broadband. The major factors that contribute to this divide include educational attainment, income, race, and other vulnerabilities.

INTERNET ACCESS IMPACTS EDUCATION

As the pandemic has highlighted, the ability to access high-speed Internet can determine whether a student is able to fully participate in virtual learning or complete homework assignments. During 2020, about 68% of Acadiana’s K-12 students had confirmed home Internet while about 32% lacked similar access. About 1 in 10 teachers did not have Internet or computer access to be able to teach virtually during the pandemic. Since much of learning was delivered either virtually or in

hybrid mode, there were gaps of students and teachers who were unable to fully participate due to their technological limitations. For postsecondary institutions, there are comparable concerns regarding high-speed Internet access for students, faculty, and staff. Due to the limitations on in-person classes, Internet access became a necessity.

INTERNET ACCESS IMPACTS JOB GROWTH

Access to broadband is linked to educational performance, workforce training, health outcomes, and employment . Between 2014 and 2018, about 31,000 jobs were lost as a result of poor access to broadband.

Further, analysis of Federal Communication Commission (FCC) broadband access data provides strong evidence that faster business download speeds were directly tied to greater job growth. As such, slower broadband speeds also lead to fewer jobs. When examining the seven parishes found in the Acadiana region during the 2014–2018 time frame, the estimated change in jobs from change in business download speeds ranged from an increase of 15,156 jobs in Lafayette Parish to a loss of 296 jobs in St. Landry Parish. Areas with faster business download speeds are expected to grow and flourish, while areas with slower speeds will likely stagnate.

OVERVIEW OF BROADBAND TECHNOLOGIES

Today’s broadband networks evolved from historical precursors including telegraph, telephone and cable TV networks. The copper-line technology deployed by telegraph and telephone carriers form the bulk of the support infrastructure for DSL service today. After World War II, cable TV providers began to build coaxial cable networks, which provided a slightly different type of wired connection. Starting in the 1970’s wireless cell towers were introduced and have expanded greatly over time. Other technologies, such as wireless wi-fi and satellite broadband, have also evolved but only serve a small portion of broadband customers. The modern standard for broadband is based on fiber optic cable, which transmits signals using modulated light over flexible hair-like threads of glass and plastic. In addition to providing greater transmission security and less interference, fiber optic cables provide the highest bandwidth available.

Because of the incremental development of technology over time, today’s broadband networks rely on a patchwork of these technologies with some rural areas continuing to rely almost entirely on legacy copper wires to transmit data. Deployments of fiber optic cable have tended to be more concentrated in urban areas where more customers can be connected for a given distance of cable laid. However, even in the most highly developed areas of the state, many of Louisiana’s Internet providers still rely on a combination of copper and fiber optic cable leaving broadband connections limited by the legacy technology still active in the system. True fiber-to-the-home (FTTH) infrastructure brings the fiber network directly to businesses and homes rather than limiting access to the network with a copper connection.

A more comprehensive review of broadband access types and technologies is provided in the **Appendix A**.

ASSESSMENT AND ANALYSIS

To measure the speed chasm that exists in Acadiana, certain standards must first be identified as a baseline for understanding where the region is and where it needs to be. The FCC defines broadband as service of a minimum of 25 Megabits (Mbps) download and 3 Mbps upload. However, this definition is becoming dated, as indicated by recent actors in Congress who have sought to move the broadband standard to 100 Mbps synchronous service, meaning both download and upload speeds.

DEFINING “SERVED” AND “UNSERVED”

FCC Form 477 requires broadband providers to biannually self-report where they offer Internet speeds greater than 200 kbps download or upload. Specifically, the provider must cite census blocks where it can or does provide service to at least one location. The problem with this is that even if only one location receives service, the entire census block is considered “served” at the highest advertised speed, regardless of affordability. This information can be misleading because the provider may not be able to offer those speeds or be able to offer them everywhere in the entire census block. These discrepancies can lead to larger impacts to an area or region. For example, generalized measure of coverage limit service improvements in underserved areas since the assumption is that the area is already appropriately served or serviced. In January of 2021, the FCC began work to resolve these concerns by developing new rules for the Digital Opportunity Data Collection to obtain more accurate broadband data. Simultaneously, APC was digging deeper into regional broadband data to help identify the current status of Acadiana’s needs.

ACADIANA BROADBAND ASSESSMENT

To gain a broader understanding of what needs are required in Acadiana, APC utilized several different datasets, including the FCC Form 477 data from 2019, the American Community Survey (ACS) 2015-2019 Five-Year Estimations of Broadband Access, and the results from APC’s own Broadband Speed Test.

When analyzing the Form 477 data, the majority of Acadiana would be considered unserved under the 100 Mbps download and 100 Mbps upload definitions. As it currently stands, using the 25 Mbps download and 3 Mbps upload definitions, a significant portion of the region is still considered to be unserved.

From a business standpoint, approximately one in six businesses in Acadiana does not have access to broadband. For each of the Acadiana parishes, **Table 1** indicates the proportion of business that are housed in unserved census blocks:

Table 1: Proportion of Business that are Housed in Unserved Census Blocks

PARISH	BUSINESS ADDRESS POINTS IN UNSERVED CENSUS BLOCKS	PROPORTION OF ALL BUSINESS IN PARISH LOCATED IN UNSERVED CENSUS BLOCKS (%)
Acadia	926	23.69%
Evangeline	261	15.97%
Iberia	1,008	21.08%
Lafayette	4,171	14.97%
St. Landry	1,000	18.48%
St. Martin	641	20.00%
Vermilion	376	10.28%
Acadiana Total	8,383	16.61%

When considered in concert with job growth generally, broadband can positively impact businesses in a number of ways, including the ability to increase telework and support access to broader markets via e-commerce solutions. From a financial standpoint, a 2009 report by the Internet Innovation Alliance estimated that the estimated net consumer benefit from broadband was about \$32 billion per year to U.S. households.

ACADIANA BROADBAND SPEED TEST

To determine the broadband status of residences in Acadiana, APC utilized a broadband speed test for respondents to directly submit. This speed test was conducted through M-Labs and reported the respondent's download and upload speeds, as well as their location, service provider, and any additional comments provided. Overall, about 700 surveys were completed for the region, with the outcomes indicated in **Table 2**.

Table 2: Acadiana Broadband Speed Test Survey Results

PARISH	NUMBER OF RESPONSES	MEDIAN DOWNLOAD SPEED (MBPS)	MEDIAN UPLOAD SPEED (MBPS)
Acadia	112	8.66	1.96
Evangeline	25	10.06	1.18
Iberia	66	26.70	7.00
Lafayette	120	47.87	10.74
St. Landry	209	17.68	5.44
St. Martin	91	45.60	9.88
Vermilion	32	27.95	3.32

More than 50% of respondents from Acadia, Evangeline, and St. Landry Parish fell below the FCC definition of broadband (25 Mbps download/3 Mbps upload), while speeds for Iberia, St. Martin, and Vermilion Parish were just above the FCC definition of broadband. Of those surveys, 98 of them could be traced back to census blocks that are considered "unserved," while 539 could be traced back to census blocks that are considered "served."

To more narrowly estimate the number of households which might be lacking service in Acadiana, APC analyzed ACS data from the U.S. Census Bureau. This data differs in that it is not submitted by the service providers but is instead gathered by the Census Bureau through Internet, mail, telephone, and in-person interviews. According to the ACS data, **Table 3** represents the percentage of households lacking broadband in Acadiana and Louisiana:

Table 3: Percentage of Households Lacking Broadband in Acadiana and Louisiana

GEOGRAPHY	TOTAL HOUSEHOLDS	% OF HOUSEHOLDS LACKING BROADBAND
Acadia Parish	22,236	20.59%
Evangeline Parish	12,172	33.69%
Iberia Parish	26,184	23.49%
Lafayette Parish	91,543	15.04%
St. Landry Parish	30,485	37.37%
St. Martin Parish	19,749	24.54%
Vermilion	22,086	20.05%
Acadiana Total	224,455	21.95%
Louisiana Total	1,739,497	24.52%

More urban areas such as Lafayette had a smaller proportion of households lacking broadband, while more rural areas such as St. Landry and Evangeline Parish had a more significant proportion of households lacking broadband. APC will continue to offer the broadband speed test in partnership with an initiative established by DRA and accessed at their website (broadbandsurvey.org). The full broadband report includes Parish Profile Prospectuses for each of the rural parishes that provide a deeper dive into the data for each area. These prospectuses are meant to function as standalone documents when needed and include information relating to broadband infrastructure, FCC data, speed test results, and residential and business cluster maps.

PUBLIC OUTREACH: ROUNDTABLES AND FOCUS GROUPS

In addition to the Broadband Speed Test, APC conducted a series of roundtables and focus groups to facilitate conversation around broadband access for critical stakeholder groups. **Table 4** shows the stakeholder meetings and number of attendees at each:

Table 4: Stakeholder Meetings and Number of Attendees

STAKEHOLDER	NUMBER OF ATTENDEES
Local Service Providers, Economic Developers, Elected Officials, Electric Coops, Healthcare Officials	75
Education Leaders	23
Economic Developers	8
Elected Officials, Business Leaders, Economic Developers, Higher Education Leaders	54
Healthcare Leaders	7

Specific outcomes from the roundtables and focus groups can be found in the full report, but examples include concerns about reliable broadband access by K-12 students at home and frustrations that credit card machines could not be run in certain business districts, even during regular business hours.

In addition to the above stakeholder meetings, a day-long regional roundtable event was hosted by APC and held on April 6, 2021. This meeting involved sessions with elected officials, business leaders and economic developers, and representatives from the Governor's office. Upon review of the data analysis and discussions referenced above, APC has identified the following as appropriate steps to expand broadband access.

MOVING FORWARD

Due to the changes in Internet usage, the COVID-19 pandemic and the likely increased demand for greater capacity in the future, adopting a new minimum broadband standard of 100 Mbps synchronous is the first step toward better broadband access. Further, all stakeholders need to be present to critically consider any barriers to access, which could result in strong public private partnerships. There are several successful business models ranging from full municipal broadband build-outs to full private broadband build-outs, with hybrids of each in between. The appropriate fit for Acadiana depends on the capital availability, existing infrastructure, partnership options, and other risks.

While many states have had success with robust public private partnerships as it relates to broadband, Louisiana has certain limitations in place that make that

it more difficult to achieve such as the Local Government Fair Competition Act. Though the recently passed House Bill 648 provides a workaround for American Rescue Plan Act funding, the possibility of complications from the Local Government Fair Competition Act still exist leaving many communities legally vulnerable should they choose to participate in broadband partnerships. However, state-wide coordination through the State Rural Revitalization Plan, the Delta Regional Authority's Delta Broadband Mapping Project, Louisiana Planning and Development District planning efforts, and the Granting Unserved Municipalities Broadband Opportunities (GUMBO) program, may offer new opportunities to resolve some of these concerns.

ACADIANA AS A SMART REGION

While continuing to work towards a better broadband future, the Acadiana Broadband Initiative recommends the creation of a fully integrated regional fiber optic network as a mechanism to connect workforces, higher education campuses, municipal governments, and more. This will allow Acadiana to develop as a 21st century broadband community that has the ability to tap into national and international job markets and enhance the area as a SMART region. "SMART" refers to "self-monitoring, analysis, and reporting technology" that requires the necessary broadband infrastructure to operate. Not having the ability to establish SMART Region will be a significant setback for Acadiana communities.

CONCLUSION

Broadband expansion within the Acadiana Region is vital to the regional economy and the future growth and prosperity of the Region's rural communities. Lack of access to broadband has far reaching implications for community viability, businesses, schools, and health care. Yet, there are challenges to addressing broadband expansion in Acadiana including a clear need for better data to identify underserved areas.

The analysis revealed several opportunities for the next steps to improve broadband in Acadiana. Evaluation of available broadband technologies reveal that future broadband expansion should be based on fiber optic networks with fiber-to-the-home as a regional priority. Broadband expansion is a necessary precursor to implementing SMART region strategies that will help Acadiana's rural communities become more competitive in the future.

By taking this regional approach to broadband expansion, there is the potential to work toward innovations for:

- Emergency Management and Disaster Response and Recovery
- Acadiana Regional Gauge Network
- Acadiana Regional GIS Program
- Improving the Flow of Goods and Services
- Facilitating Deployment of Next Generation Wireless Cellular Data – 5G and Beyond
- Supporting Local Business
- Strengthening Acadiana's Agricultural Economy

The Acadiana Planning Commission is currently working with regional stakeholders to identify partners for the coordinated expansion of broadband service throughout the Region. Concurrently, APC is working on planning efforts to integrate SMART Region concepts in the Acadiana Region to take advantage of broadband expansion for future regional economic growth.

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COVID-19 STATEMENT

While certain data and information for this Broadband Study was obtained prior to the COVID-19 pandemic, the pandemic has had an impact on certain aspects of the project. Specifically, COVID-19 has highlighted the inaccessibility to and lack of broadband infrastructure in the Acadiana region. Due to the sudden thrust into online schooling and teleworking formats, people who may not have so heavily relied on their Internet services suddenly became dependent on them. Further, this type of reliance has emphasized the clear divide between the availability of access for differing households. This can range from lack of hardware, like a computer, to lack of stable Internet and broadband. Due to the realization of such inequities, it may be difficult to determine precisely how the responsiveness of this study's data has been impacted by COVID-19; however, the possibility of impact must be noted.

COVID-19 has also had an impact on the project due to the Governor's stay at home order limiting public interaction, as well as affecting the work performance by the agency through having to pivot between in-person and virtual work. Meetings that would have normally been held in person were held virtually; learning curves abounded for many people who were not familiar with virtual platforms. When considered in concert with the above accessibility concerns, it is possible that public feedback has been limited or affected by the COVID-19 pandemic, as well.



INTRODUCTION/ORIENTATION OF PROJECT

PROJECT DESCRIPTION

The goal of the project is to establish a baseline for future economic development through long-term intergovernmental and public/private collaboration by leveraging the region's designated Opportunity Zones to catalyze the expansion and development of broadband resources within the region. This project provides a comprehensive assessment of existing broadband facilities and infrastructure to provide planning and support of future broadband expansion in the eligible rural communities within the seven-parish APC region. By identifying gaps in broadband service and infrastructure, the assessment will provide immediate and effective data to governmental, public, and private entities who will facilitate our rural communities' full participation in the digital economy.

The project consists of three major deliverables:

1. Developing a broadband assessment and infrastructure mapping by:
 - Implementing stakeholder outreach and engagement;
 - Mapping existing service areas; and,
 - Identifying gaps in infrastructure.
2. Cataloging the existing support infrastructure and understanding ownership of utility poles, cell phone towers, and rights-of-way;
3. Assisting participating Opportunity Zone communities to develop a broadband service prospectus which will spur public/private partnerships to provide broadband service to both businesses and residents.

PROJECT PARTNERS (TEAM)

The project partners for this work consists of the Acadiana Planning Commission (APC) and the U.S. Department of Agriculture (USDA).



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Acadiana Planning Commission (APC) – APC is a public-sector organization focused on the planning and implementation of community, economic, and transportation development throughout South Louisiana's Acadiana Region.

University of Louisiana at Lafayette (UL) – UL is the second-largest university in Louisiana with over 19,000 students, and offers bachelor's, master's, and doctoral degrees. Its offerings range from the humanities to hard science, and it is among the nation's leaders in areas such as computer science, environmental biology, and nursing.

U.S. Department of Agriculture (USDA) – USDA's vision is to provide economic opportunity through innovation, helping rural America to thrive; to promote agriculture production that better nourishes Americans while also helping feed others throughout the world; and to preserve our Nation's natural resources through conservation, restored forests, improved watersheds, and healthy private working lands.

BROADBAND'S IMPACT TO ACADIANA PLANNING COMMISSION

The Acadiana Planning Commission (APC), Louisiana's Planning District 4, is made up of seven parishes in the heart of Louisiana's Cajun Country. The parishes in District 4 include: Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, and Vermilion Parishes. Regarding broadband access, communities within Acadiana stand in stark contrast to each other. The City of Lafayette is nationally and even internationally known for its Gigabit, affordable, municipal fiber service. However, numerous communities outside Lafayette Parish and within the Acadiana region are limited to slower DSL or even dial-up service.

Broadband access, when it is available, is fragmented among a host of service providers who often target only small niche markets or limited-service areas. These limitations artificially inflate the cost of the service and price many potential commercial and residential customers out of the market. Unlike other public utility services, the region lacks a comprehensive inventory of existing broadband infrastructure and broadband availability. This lack of access to broadband services has contributed to the economic decline of our rural communities. As the region's Planning District, APC has a vested interest in reversing these declines and turning them into successes.

BROADBAND AS A FEDERAL PRIORITY

Similarly, the federal government has emphasized broadband as one of its areas of focus. On March 11, 2021, the American Rescue Plan Act (ARPA) of 2021 was signed into law.¹ This law includes an allocation of \$7.17 billion for an Emergency Connectivity Fund focused on remote learning, as well as allocations of \$220 billion and \$130 billion to Coronavirus State and Local Fiscal Recovery Funds, respectively.² The permitted uses of the Coronavirus Recovery Funds include, in pertinent part: "(D) to make necessary investments in water, sewer, or broadband infrastructure."³

Federal funding for broadband deployment has never before been directly provided to state and local governments.⁴ Along with this new guidance comes the ability for these governments to identify their own target areas, as long as they do not have "reliable" access to 25 Mbps download and 3 Mbps upload speeds.⁵ In fact, the interim final rule of the United States Treasury requires that any broadband project "meets or exceeds symmetrical upload and download speeds" in the realm of 100 Mbps.⁶

Further, President Biden's American Jobs Plan specifically includes the purpose of: "[B]ring[ing] affordable, reliable high-speed broadband to every American, including the more than 35 percent of rural

Americans who lack access to broadband at minimally acceptable speeds."⁷ He also outlines the following goals for revitalizing America's digital infrastructure:

- Build high-speed broadband infrastructure to reach 100 percent coverage.
- Promote transparency and competition.
- Reduce the cost of broadband Internet service and promote more widespread adoption.⁸

In addition to the ARPA and the American Jobs Plan's goals, federal agencies have steadily been working toward broadband deployment. In June of 2020, the United States Department of Agriculture (USDA) released a Progress Report which indicated its role in providing broadband connections for 430,000 rural Americans.⁹ The funding for those connections was in the amount of more than \$744 million for more than 80 different projects.¹⁰ Similarly, the United States Economic Development Administration (EDA) helped to provide funding for broadband as a part of critical infrastructure¹¹ while the Federal Communications Commission (FCC) has been utilizing the Rural Digital Opportunity Fund as an alternative means for broadband build-out.¹² With these agency efforts and White House push for broadband, increased connectivity continues to be a priority.

THE PURPOSE

THE DIGITAL DIVIDE

The ability to access computers and the Internet has become increasingly important for individual access to economic, political, and social resources. However, not everyone has access to this technology. Digital Divide refers to the growing gap between the under-resourced that includes the poor, rural, elderly, and handicapped portion of the population who do not have access to broadband Internet; and the wealthy, middle-class, and young Americans living in urban and suburban areas who have broadband access.¹³

The definition of the digital divide has continued to evolve over the last 30 years. Initially, high costs of computers created a natural barrier between those who could and could not afford one.¹⁴ But as the cost of computers has dropped and more people are gaining basic access to technology devices, the digital divide has evolved to take on an added meaning. During the COVID-19 pandemic, this became more closely tied to broadband access and affordability.

FACTORS CONTRIBUTING TO THE DIGITAL DIVIDE

While the number of Americans with access to computers and broadband Internet continues to increase exponentially, the digital divide also continues to grow at an alarming rate. Areas with traditionally lower rates for broadband Internet and computer usage continue to lag far behind their wealthier urban and suburban counterparts. This disparity has been documented as early as the late 1990's and continues to expand through today. According to a study conducted by the National Telecommunications and Information Administration (NTIA), *Falling Through the Net: Defining the Digital Divide*,¹⁵ the gap initially fell along rural, economic, and racial lines. Factors that are known to contribute and even magnify the digital divide include poverty, membership in a vulnerable population, and residence in low-income communities that are often rural. Today, however, the digital divide has its most direct impact on K-12 students in rural, poor, and minority communities.

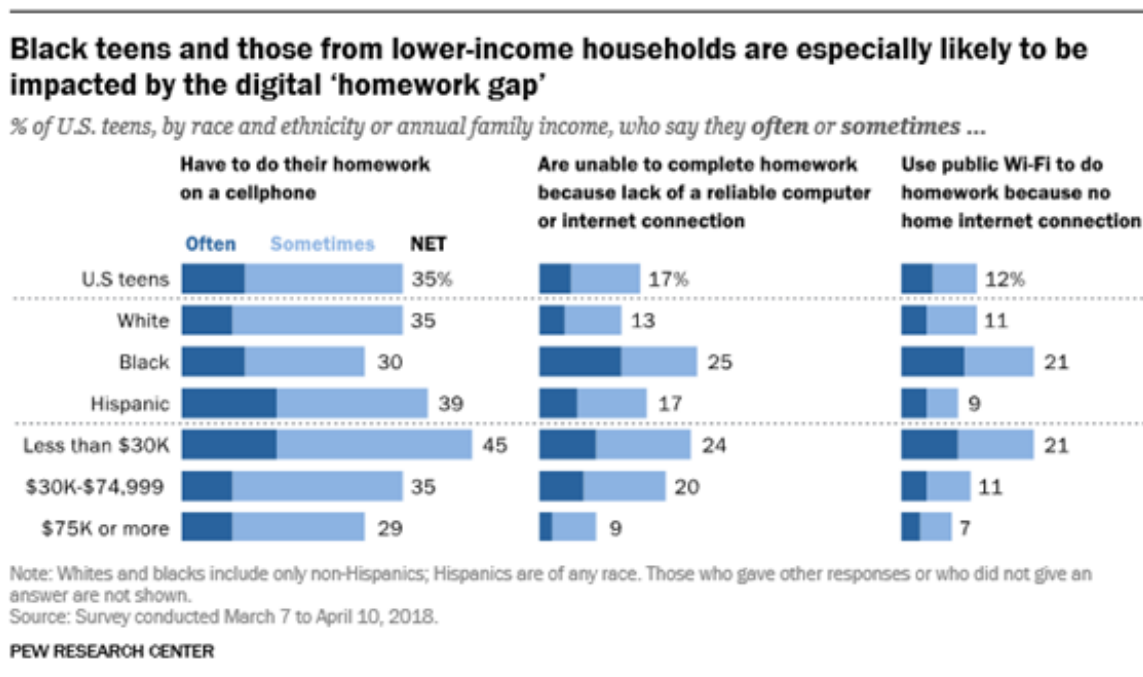


Figure 1: Factors contributing to the digital divide¹⁶

EDUCATIONAL ATTAINMENT

Widening gaps in educational attainment magnify the digital divide; households with higher levels of education are more likely to use computers and broadband Internet. Those with college degrees or higher are 10 times more likely to have Internet access at work than those with only a high school education. For example, an NTIA study of computer and Internet usage conducted from 1997 to 1998 determined that the gap in computer usage and Internet access widened 7.8% and 25% respectively, between those with the highest and the lowest educational attainment.¹⁷ The trend, and the subsequent digital divide, has continued to accelerate with the increased demand for bandwidth. Today, without access to high-speed Internet or adequate digital skills, remote students face major challenges in learning putting them even further behind their peers. In 2018 nearly one-in-five teens in the US could not reliably finish their homework because of the digital divide. According to Pew Research, 15 percent of U.S. households with school-age children lack high-speed Internet access; that number jumps to one-third among low-income households.¹⁸ This “homework gap” is an academic burden for teens who lack access to digital technologies at home. Black teens, as well as those from lower-income and rural households, are especially likely to face these school-related challenges and are far more likely to drop out of school.¹⁹ This gap has been compounded by the pandemic.

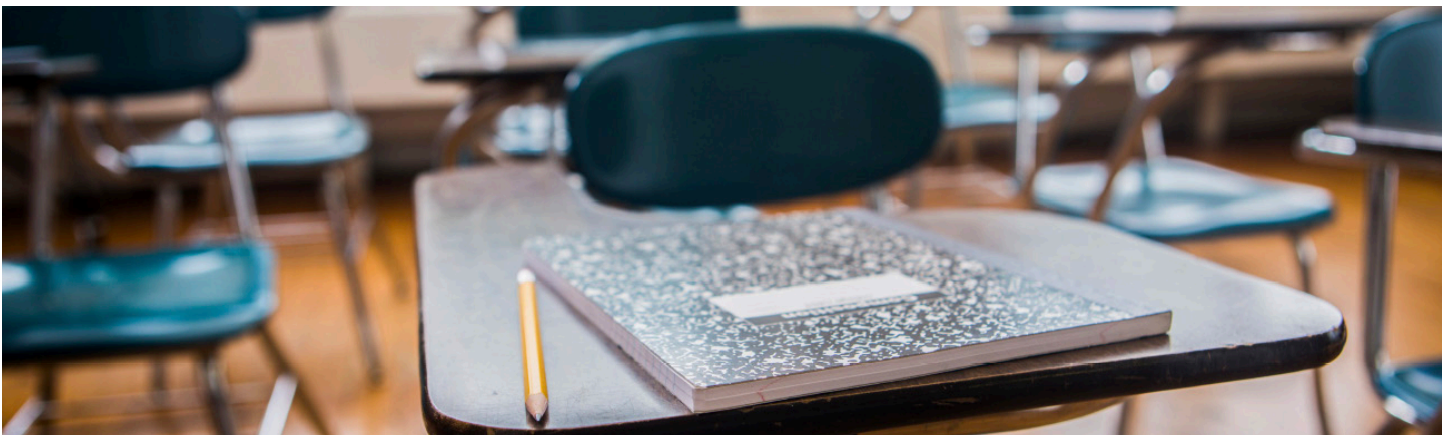
INCOME

Household income plays a significant role in the widening gap. The NTIA study found that, “In the last year, the divide between the highest and lowest income groups grew 29%.”²⁰ For example, households earning

incomes over \$75,000 are 20 times more likely to have home Internet access than those at lowest income levels and 10 times more likely to have a computer. Rural and poor neighborhoods lack the broadband infrastructure available in affluent urban and suburban areas. Telecommunication facilities are more readily available for wealthier communities and are more attractive for developing companies to establish themselves. Large service providers frequently bypass poor, rural, and minority communities when they expand their premium services – a practice that has been called “digital redlining” by the Robert Wood Johnson Foundation.²¹ As a result, poverty when combined with poor broadband access make these neighborhoods less appealing for investments by outside companies, further aggravating the divide. Even when reliable broadband is available, it remains unaffordable for low-income households. For example, during the COVID – 19 pandemic, 34% of lower-income home broadband users have had trouble paying for their broadband service.²²

RACE

The digital divide continues to widen along very specific racial lines. Between 1994 and 1998 the difference in computer usage nationally grew by 39.2% between White and Black households and by 42.6% between White and Hispanic households.²³ Historically, Hispanic households have been roughly half as likely to own computers as White households. More recently a 2020 Deutsche Bank Study found that 83% of White households own a personal computer, compared to 60% for Blacks households and 51% for Hispanic households.²⁴ For impoverished, rural, and minority communities, computers and broadband access are often viewed as a luxury, not a need.



Broadband and related technologies are playing an ever-greater role in work and the economy. Those who do not have access or lack digital skills will be under-prepared for the jobs of the future.²⁵ According to a recent study from Deutsche Bank, minority communities are disproportionately impacted by a lack of technology skills and access to broadband. As a result, workers from these communities risk being excluded from the job market. Given the exponential growth of the digital economy, 76% of the Black population and 62% of the Hispanic population could be shut out or be under-prepared for 86% of jobs in the US by 2045.²⁶ According to the Deutsche Bank study, the Black and Hispanic populations are 10 years behind the White population in levels of broadband access. Technology connectivity is four times worse for the Black population compared to the White population.²⁷

More widespread use of telemedicine and the ability to engage in new patient evaluations can help reduce geographic barriers and allow hospital systems to create capacity for patients with more severe illness to be seen in person, while patients who are stable and healthier can engage from home.²⁸ The impact of poor or limited access to broadband services, however, has directly compounded the impact of the COVID-19 pandemic on minority communities. During the pandemic, as healthcare services transitioned onto a virtual platform, providers saw increasing disparities

among marginalized populations who were already at risk for poor health outcomes due to lack of access to care.²⁹ A recent study cited three reasons that contributed to telehealth disparities: access to broadband Internet and related technology, reimbursement of telemedicine services, and lack of institutional commitment to equity in telemedicine.³⁰

IDENTIFYING VULNERABLE POPULATIONS

As part of this study, APC used the U.S. Census and American Community Survey (ACS) data to identify the number of vulnerable households in each parish within Acadiana. Vulnerable populations include the economically disadvantaged, racial and ethnic minorities, the uninsured, low-income children, the elderly, the homeless, and those with chronic health conditions, including severe mental illness.³¹ Vulnerable populations also include rural residents, who often encounter barriers to accessing healthcare and education services.³² The vulnerability of these individuals is enhanced by race, ethnicity, age, sex, and factors such as income, insurance coverage (or lack thereof), and absence of a usual source of care. Their health and healthcare problems intersect with social factors, including housing, poverty, and inadequate education.³³ Data on potentially vulnerable populations are reflected in the demographic profiles for each parish in the following section, and are indicators of the digital divide present in Acadiana.



CHARACTERISTICS OF BROADBAND IN ACADIANA

INTERNET ACCESS AND POVERTY

Poverty plays a large role in the ability to afford high speed Internet services in the home. According to the U.S. Census Bureau, almost 1 in 5 people in Louisiana live in poverty (19.2%) and Acadiana has a higher rate of people living below the poverty level (20.5%) than the rest of Louisiana (**Table 5**).³⁴ Louisiana ranks 49, ahead of only Mississippi, in the percent of the population living below the poverty level. Children are more likely to live in poverty than adults in Acadiana; in some parishes close to 40% of the children live below the poverty level.

Table 5: Population Living Below the Poverty Level

LOCALITY	POPULATION LIVING BELOW POVERTY LEVEL	CHILDREN UNDER 18 LIVING BELOW POVERTY LEVEL
Acadiana	20.5%	28.4%
Acadia Parish	24.2%	35.6%
Evangeline Parish	28.7%	38.1%
Iberia Parish	22.1%	32.9%
Lafayette Parish	17.3%	22.7%
St. Landry Parish	26.2%	37.8%
St. Martin Parish	18.9%	28.4%
St. Mary Parish	19.7%	24.0%
Vermilion Parish	17.6%	21.3%
Louisiana	19.2%	27.2%
United States	13.4%	18.5%

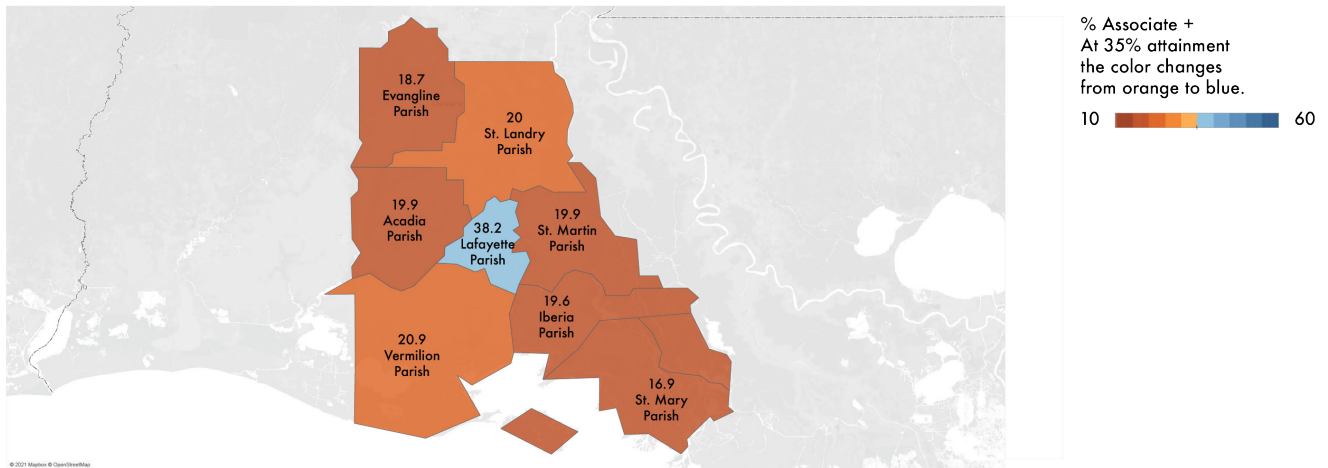
Source: U.S. Census of Population (2019) American Community Survey 5-year estimates

Access to the Internet provides students from kindergarten through postsecondary with the opportunity to complete homework and fully engage in learning. The ability to access an education is important to Louisiana's future. Louisiana ranks 48th among states in educational attainment and Acadiana ranks in the lower half of the regions of the state.³⁵ In Louisiana, 30.3% of adults age 25 or older have obtained an associate degree or higher and 24.1% have obtained a Bachelor's degree or higher. The eight-parish Acadiana area* has a slightly lower attainment rate. Just over 1 in 5 adults (20.7%) in Acadiana has obtained a bachelor's degree and just over a quarter (26.5%) have obtained an associate degree or higher.³⁶ Individual parishes in Acadiana have much lower attainment rates (**Figure 2**). Lafayette Parish has the highest attainment rate with 38.2% of adults holding an associate degree or higher and Evangeline Parish has the lowest attainment rate (18.7%).

* While the Broadband Assessment area includes only 7 parishes, St. Mary as been included in this particular analysis.

Educational Attainment for Adults Age 25+

Percent of adults with an associate degree or higher in Acadiana

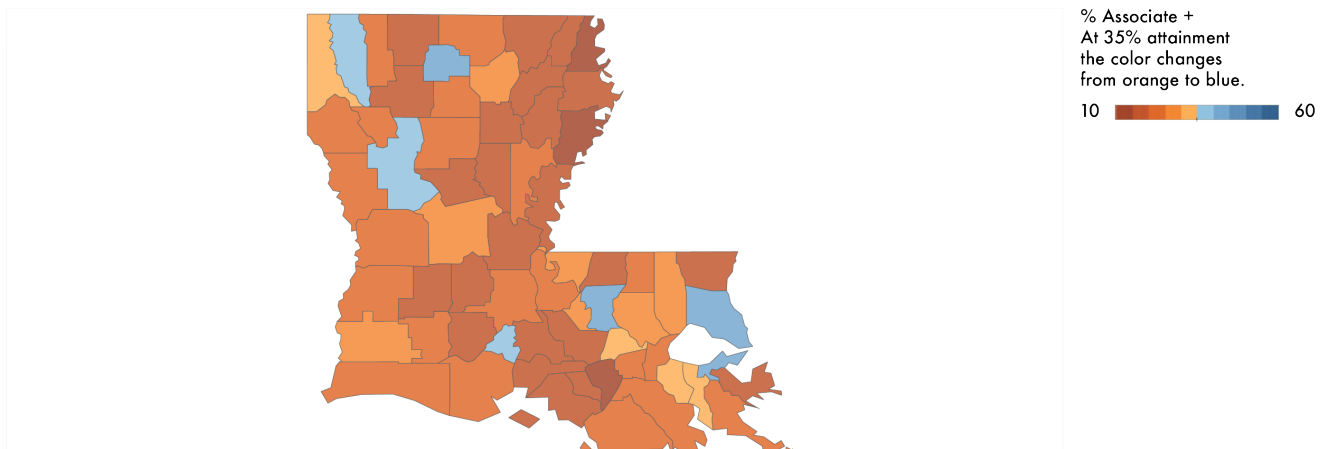


Source: U.S. Census Bureau (2019), American Community Survey, 5-year estimates, population age 25+

Figure 2: Educational Attainment in Acadiana

Educational Attainment for Adults Age 25+

Percent of adults with an associate degree or higher in Louisiana parishes



Source: U.S. Census Bureau (2019), American Community Survey, 5-year estimates, population age 25+

Figure 3: Educational Attainment in Louisiana

The opportunity for remote work has the potential to change how employers view work and worker's locations. During the COVID-19 pandemic, states with higher levels of younger workers and those with management, professional, or similar types of jobs were more likely to see their workforce shift to remote work.³⁷ Access to high-speed Internet enabled this shift to happen. Communities without high-speed Internet put

remote workers and virtual students at a disadvantage. In Acadiana a recent oil and gas downturn has also played a role in a need for opportunities for displaced workers to retool and add new skills. The growing tech sector may be a place where displaced workers could find high paying jobs. However, those jobs will require significant training and re-skilling.

INTERNET ACCESS AND EDUCATION

Lack of access to high-speed Internet adds an additional barrier for students seeking to access a quality education. High-speed home Internet allows students to fully participate in learning during a pandemic or complete homework assignments during a traditional school year. Opportunities for digital learning changed during the COVID-19 pandemic and, while most learning will likely return to a traditional in-person format in 2021, virtual learning will remain part of the learning equation and homework will continue to require Internet access.

A survey conducted by the Louisiana Department of Education (LDOE) illustrates the challenges of reaching students during the pandemic. In Acadiana, the parish school systems indicated only 68% of students had home Internet, lower than the statewide average of 72.9% (**Table 6**)³⁸ and the national average of 91%.³⁹ Moreover, the Acadiana number is likely a low estimate since data were not available for Evangeline Parish, the most impoverished parish in Acadiana.

Table 6: Home Internet connectivity by parish

	STUDENTS WITH CONFIRMED HOME INTERNET		STUDENTS WITHOUT CONFIRMED HOME INTERNET	
	#	%	#	%
Acadiana	61,458	68.0%	28,914	32.0%
Acadia Parish	4,178	43.2%	5,486	56.8%
Evangeline Parish*				
Iberia Parish	9,601	79.5%	2,479	20.5%
Lafayette Parish	24,217	78.5%	6,646	21.5%
St. Landry Parish	7,218	56.9%	5,474	43.1%
St. Martin Parish	4,932	65.3%	2,620	34.7%
St. Mary Parish	7,498	94.1%	470	5.9%
Vermilion Parish	3,814	39.9%	5,739	60.1%
Louisiana	495,923	72.9%	181,178	26.7%
United States		91%		9%

*no data available

Sources: Louisiana Department of Education. (2020). Learning Environment and Connectivity Tool; Dorn (2020) "COVID-19 and Learning Loss—Disparities Grow and Students Need Help."

The information collected on home Internet connectivity did not distinguish the speed of Internet at home, yet the quality of a student's Internet connection may impact the quality of a student's virtual learning opportunities. Neither the LDOE Learning Environment and Connectivity Tool, which provided updated information to the April 2020 school system survey, nor the connectivity section of the LDOE School Reopening Dashboard provide information on the speed or quality of the Internet service.⁴⁰

According to Dorn et al (2020), Hispanic and Black students across the United States were less likely to "always or usually have access to the Internet" and more than two times as likely as white students to have no live access to a teacher during the pandemic.⁴¹ While the Louisiana Department of Education and the school districts in Acadiana did not disaggregate home Internet connectivity status by race, almost 40% of Acadiana's public school students are Black and 6% are Latinx/Hispanic. Low-income, Black, and Latinx/Hispanic students across the United States were more likely to experience learning loss due to schooling changes resulting from COVID-19 than their white peers.⁴²

Lack of access to quality home Internet impacted teachers as well as students. In the April 2020 technology survey of all 192 districts, LDOE found that nearly 1 in 10 teachers in Louisiana did not have the technology at home, including either access to the Internet or a computer, to teach virtually.⁴³ These challenges may be one reason that LDOE estimated about 173,000 students (25% of total Louisiana K-12 students) did not receive feedback on their learning during the early stages of the pandemic.⁴⁴

INTERNET ACCESS AND LEARNING MODES

The COVID-19 pandemic highlighted the importance of access to broadband Internet as many school districts provided virtual and hybrid in-person/remote learning to students. A survey of K-12 school systems by the Louisiana Department of Education illustrates that almost half of students in Acadiana relied on virtual learning some or all the time and at a higher level than the statewide average (**Figure 4**).⁴⁵ This snapshot of pandemic learning from December 2020 illustrates the importance of broadband to children and families in Acadiana.

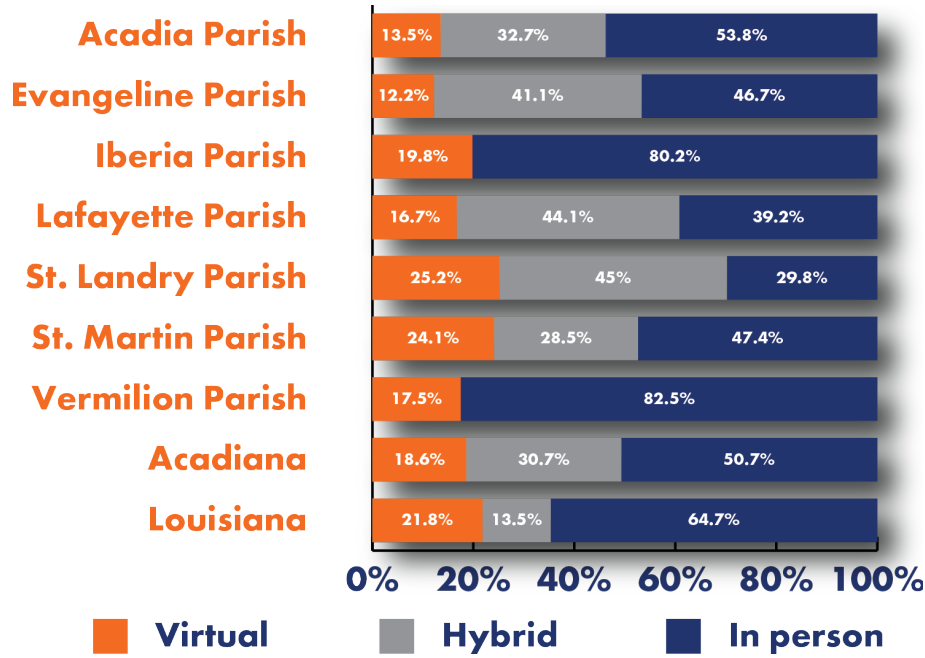


Figure 4: Learning modes during the COVID-19 pandemic in Acadiana (December 2020)
Source: Louisiana Department of Education. (2020). Learning Environment and Connectivity Tool.

Virtual learning presents huge challenges for teachers in terms of providing quality learning opportunities and for a student's ability to access learning.⁴⁶ High poverty schools are more likely to face additional burdens helping students succeed since the traditional challenges faced by students in high-poverty schools are compounded by lack of home Internet or lack of quality Internet. Warschauer et al. (2014) noted that technology itself does not solve the learning barriers faced by high poverty schools. A school system also needs the ability to manage the technology, with low-socioeconomic status school systems facing additional obstacles to technology implementation.⁴⁷

At the postsecondary level Internet access has long been a source for more than homework. Postsecondary students use the Internet for advising, flipped-classrooms, and more. These activities frequently require the use of wireless Internet when away from campus.⁴⁸ Even before the pandemic, community colleges used technology to improve retention rates, including fostering workplace readiness, increasing self-directed learning, and cultivating "professional personas."⁴⁹ While universities provide access on campus, those students who returned to their homes as a result of COVID-19 closures likely experienced similar challenges accessing the Internet as K-12 students and teachers.

Similar to postsecondary institutions across the country, the postsecondary schools in Acadiana reduced the number of in-person classes, increased the number of virtual learning courses, and expanded hybrid learning during the pandemic.⁵⁰ These options for learning meant that most students required some kind of Internet beyond what was available on campus. Continuing to improve access to academic coursework will help reach the goal of increasing the proportion of working-age adults in Acadiana with a postsecondary degree, certificate, or other high-value credential to 55 percent by 2025.

55 BY 25 PROJECT HIGHLIGHT

55 by 25 is an initiative by One Acadiana with a vision of an equitable education system that meets the region's need for talent and offers all Acadiana residents the chance for a better life through increased educational attainment, a goal of increasing the proportion of working-age adults in Acadiana with postsecondary degrees, certificates, or other high-value credentials to 55 percent by 2025, and a common purpose to galvanize business, education, faith, civic and community leaders and organizations in support of a shared agenda to increase educational attainment, prosperity, and quality of life.

55by25acadiana.org



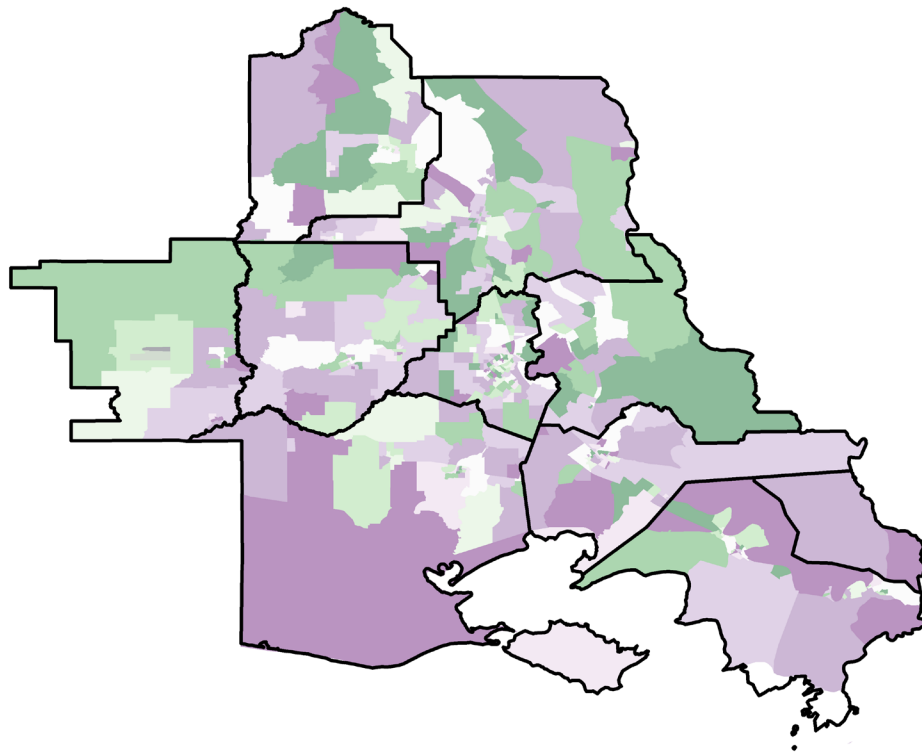
INTERNET ACCESS AND JOB GROWTH

The narrative surrounding broadband, or Internet access more generally, has historically been framed in terms of economic opportunities along an urban-rural divide. The shift to online education and work in early 2020 because of the COVID-19 pandemic demonstrated that the digital divide extends beyond a simple urban-rural comparison. High-quality broadband access, which is often lacking in urban areas in Louisiana, now seems to be an almost necessity to ensure that regions remain economically viable and desirable places for current and future generations.

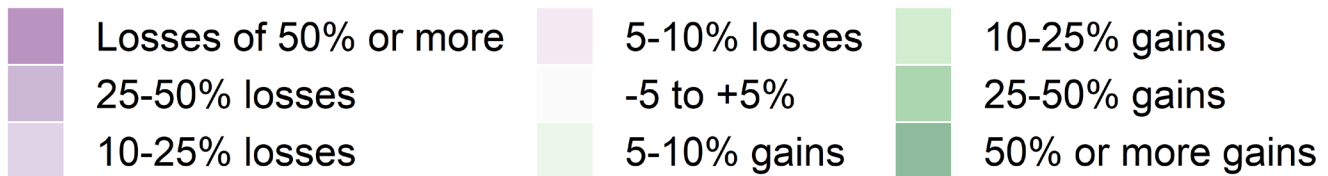
This section explores the relationship between broadband access and employment growth in Acadiana. Employment is known to be a major factor in relocation decisions, and it is also a metric that is tracked very closely and at a very fine level of geography, making it ideal for exploring the economic linkage between broadband and local economic outcomes. In addition, many other studies and reports have credibly linked broadband access to a wealth of economic indicators such as education performance, workforce training, and even health outcomes. These studies are not replicated in this analysis.

Figure 5 shows the percentage change in job growth, by census block group, for Acadiana between 2014 and 2018. Data used from the Census Bureau's Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) database, which reports job location based on the physical address of one's employer. Census block groups are the smallest geography at which employment data are tabulated.

Areas shaded in green are block groups that experienced job growth over this period, while areas shaded in purple are block groups that experienced job losses. Overall, the Acadiana region lost more than 31,000 jobs in this five-year period. Iberia and St. Mary Parishes experienced the largest losses in percentage terms, with the number of jobs located in their parishes shrinking by 21 and 18 percent, respectively.



Percentage Change in Jobs: 2014 to 2018



Source: Calculations based on the Census Bureau's Longitudinal Employer-Household Dynamics database.

Figure 5: Percentage Change in Acadiana Jobs, by Census Block Group: 2014-2018

For this study employment data from the Census Bureau was combined with broadband access data from the Federal Communication Commission to further investigate the relationship between broadband and employment. Using regression analysis, which is explained in detail in the **Appendix B**, the relationship between employment growth and the maximum advertised business download speeds at the census block group level between 2014 and 2018 (a five-year period) was estimated.⁵¹

The results of the regression analysis showed very strong evidence that faster business download speeds lead directly to greater job growth. In terms of the magnitude, our most conservative estimates indicate that a 10% increase in advertised business download speeds increases growth job in a census block group by 0.6 percentage points. In short, faster broadband will lead to more jobs, while slower broadband will lead to fewer jobs.

What exactly does this mean for Acadiana? **Table 7** shows the total number of jobs located in each parish in 2018. Overall, there were 252,006 jobs located in the region. The table also reports the estimated change in jobs, by parish, resulting from a change in business download speeds. These estimates are the right-most column in the table.

Table 7: Estimated Job Gains or Losses Due to Business Download Speeds

PARISH	EMPLOYMENT 2018	ESTIMATED CHANGE IN JOBS FROM CHANGE IN BUSINESS DOWNLOAD SPEEDS FROM 2014 TO 2018
Acadia	15,043	983
Evangeline	7,798	-53
Iberia	26,407	2,140
Jefferson Davis	8,404	-196
Lafayette	123,928	15,156
St. Landry	22,854	-296
St. Martin	13,561	1,089
St. Mary	21,194	149
Vermilion	12,817	838
Total	252,006	19,810

Jobs are classified based on the physical address of the employer and are derived from the Census Bureau’s Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) database. The estimated change in jobs, by parish, was constructed from a regression model that explored the relationship between the percentage change in employment and the percentage change in the maximum advertised business download speeds between 2014 and 2018. The regression model was applied to 3,443 census block groups in Louisiana. Complete technical details are provided in the **Appendix B**.

For instance, the estimated change in jobs in Acadia Parish is 983. This means that if broadband access in every census block in Acadia Parish remained unchanged between 2014 and 2018, the parish would have 983 fewer jobs. Another way to say this is that

Acadia Parish has 983 more jobs in 2018 than it had in 2014 because of faster business download speeds. Faster broadband = more jobs.

Unfortunately, there are some parishes – Evangeline, Jefferson Davis, and St. Landry – where the estimated change in jobs is negative. This means that enough census block groups in these parishes experienced slower business download speeds between 2014 and 2018, ultimately leading to job losses in the parish.

On net, the expansion of broadband, as proxied by maximum business download speeds, is estimated to have directly resulted in almost 20,000 additional jobs in Acadiana between 2014 and 2018. Said differently, Acadiana would have 8% fewer jobs in 2018 if broadband access had remained stagnant between 2014 and 2018.

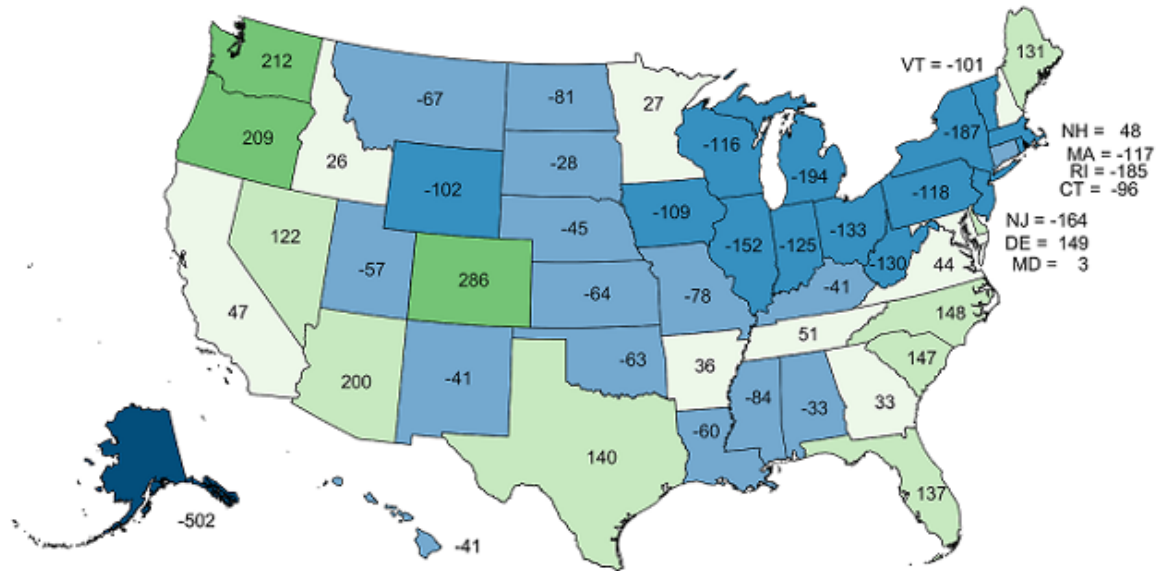
INTERNET ACCESS AND OUTMIGRATION

Because of the increasingly important role of broadband in education and the economy, location decisions may become more strongly tied to Internet connectivity. Migration flows are one useful way to assess the health and economic vitality of a state or region. While individuals often move voluntarily to another location for any number of reasons, proximity to family and better employment opportunities are two of the most frequently cited reasons individuals and families move to another location.

In general, economists and demographers have identified numerous “push” and “pull” factors that shape migration decisions. For instance, “push” factors are undesirable characteristics that might lead one to

leave a particular area. Examples may include poor job prospects, high taxes, poor access to health care, corruption, crime, and the like. In contrast, “pull” factors are desirable traits such as low crime, quality schools, low cost of living, strong employment prospects, and stronger social networks.

Given that both push and pull factors likely play a role in any migration decision, one way to assess the net effect is to examine the net rate of migration over a long period of time. If, for instance, push factors are stronger than pull factors, then one would expect net migration rates to be negative. Conversely, when pull factors play a larger role than push factors, the opposite will be true and net migration rates will be positive.



Net Migration of College-Educated Per 10,000 Residents: 2007-2017

400 or more person loss 200-400 person loss 100-200 person loss 0-100 person loss 0 to 100 person gain 100 to 200 person gain More than 200 person gain

Source: Calculations using Census Bureau ACS 1-year sample Public Use Microdata, IPUMS-USA.

Figure 6: Net Migration Rate of College-educated Individuals: 2007-2017

Migration data at the local or regional level within the state are more limited, but analyzing broader migration patterns can help illustrate how specific factors can ultimately lead to population changes. **Figure 6** shows the net migration rate, by state, for college-educated individuals over the period from 2007 to 2017 using the underlying micro-data from the American Community Survey. States that are shaded in green are states that experienced a net increase in college-educated individuals over this 10-year period, while states that are shaded in blue experienced a net decrease.⁵² Darker shades indicate a more intense increase or decrease.

Excluding Alaska, the historically industrial states of the Midwest and Northeast witnessed the largest net outflow of college-educated individuals over the period. Most states in the South, particularly in the Southeast, have been the net recipients of these educated migrants. Florida, Texas, and the Carolinas experienced net migration of roughly 140 college-educated individuals per 10,000 residents.

Louisiana, Mississippi, and Alabama stand out relative to their contiguous neighbors because these states all were “net exporters” of college-educated individuals. This suggests that the “pull” factors for these states were not strong enough to offset the “push” factors for most of the college-educated individuals. In the case of Louisiana, the total net loss in college-educated individuals is estimated to be almost 28,000, and the net rate of migration is almost 50% larger than

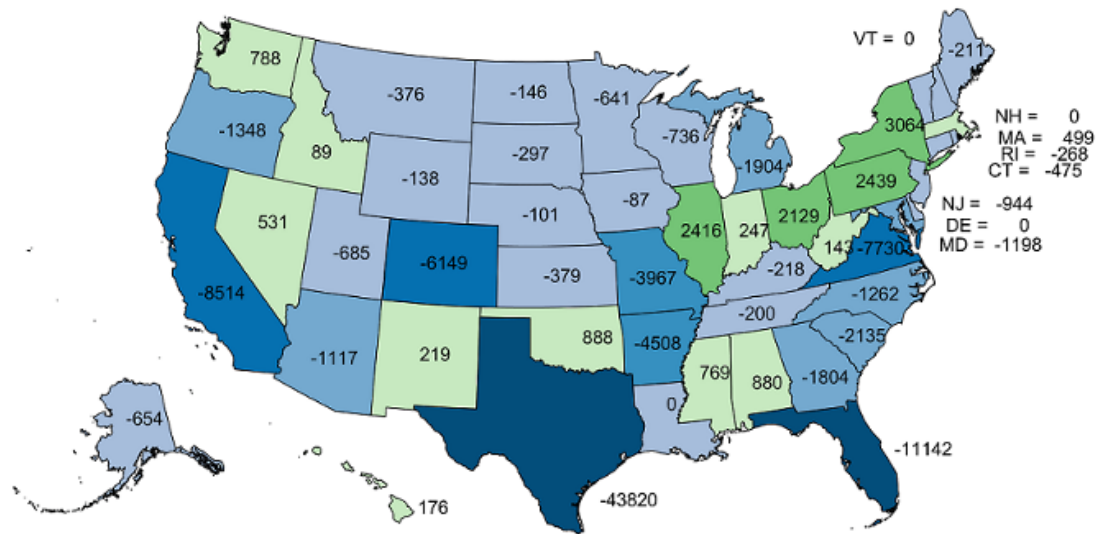
neighboring Mississippi and double that of Alabama. Given the importance of education in driving innovation and economic growth, these net migration figures suggest that Louisiana is significantly less economically competitive today than it was in 2007.⁵³

The trend in net out-migration among the educated extends earlier than 2007 as well. **Figure 7** shows the net number of college-educated individuals who have migrated either to or from Louisiana from 2000 to 2017. States that are displayed in green are states that have been net importers of educated individuals to Louisiana, whereas states shown in blue are states that have been net recipients of Louisiana’s educated (former) residents.

In terms of net importers, most of Louisiana’s new, college-educated residents moved from New York (3,064 people), Pennsylvania (2,439), Illinois (2,416), and Ohio (2,129). The state also gained a modest number of new residents from southern states such as Oklahoma, Alabama, and neighboring Mississippi.

Despite gaining more than 15,000 new college-educated residents from 15 different states, more than 103,000 college-educated individuals moved away from Louisiana to 32 different states. This represents a net loss of nearly 89,000 college-educated individuals. As **Figure 7** shows, roughly 40% of the individuals who left Louisiana moved to Texas (43,820 people). More than 33,000 former Louisiana residents moved to states such as Florida, California, Virginia, and Colorado.





Louisiana: Net Migration of College-Educated, 2000-2017
(Total net change: -88,370)



Source: Calculations using Census Bureau ACS 1-year sample Public Use Microdata, IPUMS-USA.

Figure 7: Louisiana’s Net Migration of College-educated Individuals: 2000-2017

Interestingly, Texas, Florida, and Colorado ranked among the top 10 states from 2000 to 2017 in terms of overall job growth and annual average job growth. Utah, North Dakota, and Idaho also ranked in the top 10 for job growth during this period, and these are also states where Louisiana’s educated residents moved, albeit in much smaller numbers. Employment in Utah, which was the top state, expanded by 36.5% between 2000 and 2017. Texas had the fourth highest rate of employment growth at 29.3%.⁵⁴

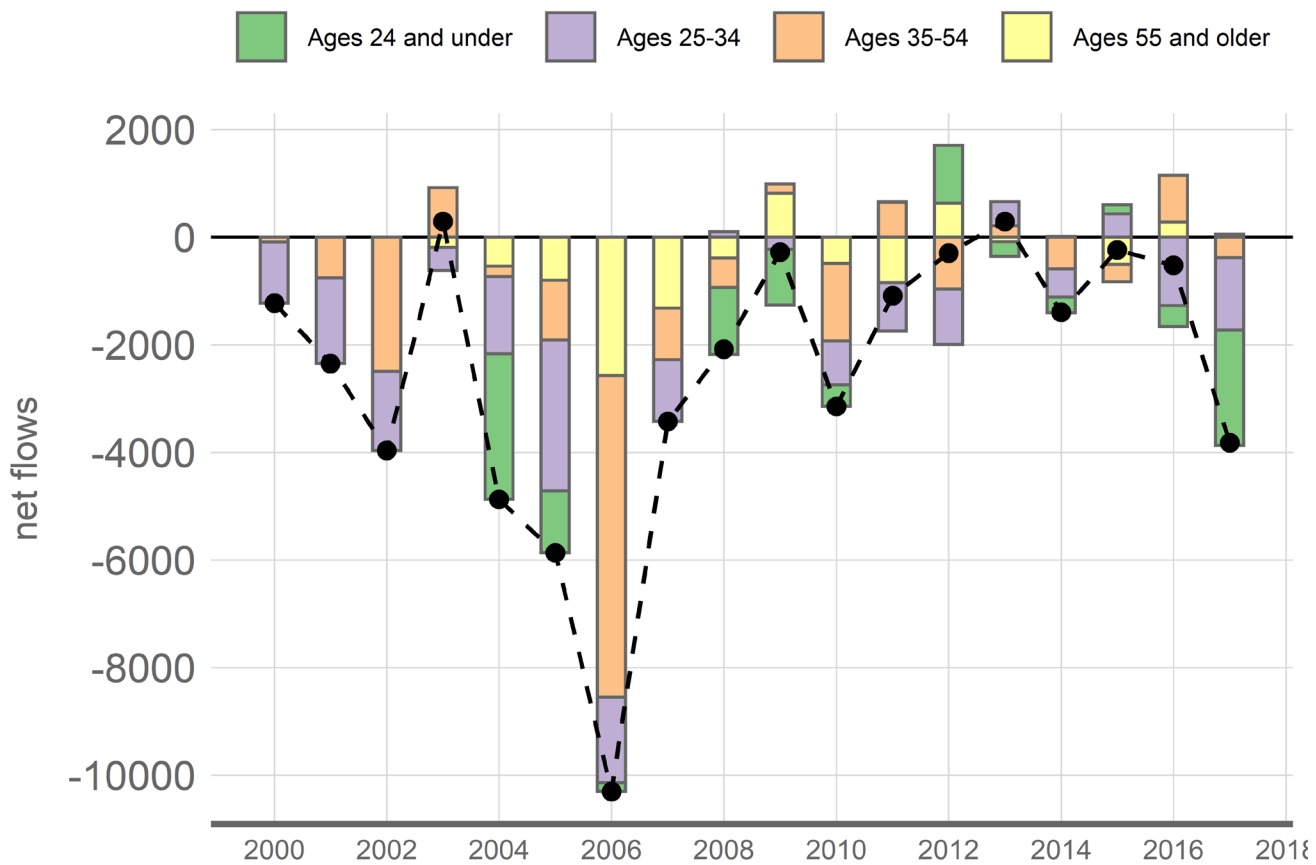
Louisiana’s employment growth ranked 43rd fastest from 2000 to 2017, expanding only 2.8%. Ohio, Illinois, Mississippi, and West Virginia, all of which were net exporters of college-educated individuals to Louisiana, are four of the six states that had slower job growth than Louisiana (the other two states are Michigan and Connecticut).

Given the large fraction of Louisiana residents who migrated to Texas, it is worthwhile to examine the net flow of individuals more closely between the states. **Figure 8** shows the annual net flow of people, by age category, between Louisiana and Texas.

The black dot overlaying the stacked bar in **Figure 8** represents the total net flow of people between Louisiana and Texas each year. For instance, in 2003 this black dot is above zero, indicating that Louisiana experienced a net gain of college-educated individuals with Texas. If the black dot is below zero, like it is in 2000, then it means that Louisiana experienced a net loss of college-educated individuals with Texas.

The different colored bars show the gain to Louisiana (if positive) or loss to Texas (if negative) for four different age categories. Using 2003 as the example, 918 individuals ages 35-54 lived in Texas and moved to Louisiana over the previous year. This age category is represented by the color peach. Similarly, 432 individuals ages 25-34 and 195 individuals ages 55 and older moved from Louisiana to Texas. Ages 25-34 are represented by green, while ages 55 and older are represented by yellow. The net gain or loss in this case is +291 people for Louisiana (291 = 918 – 432 – 195).

Louisiana Net Educated Migration Flows with TX By age, 2000-2017



Source: Calculations using Census Bureau ACS 1-year sample Public Use Microdata, IPUMS-USA.
Black indicates total net flow.

Figure 8: Louisiana's Net Migration with Texas, by Age: 2000-2017

There are at least a few notable points to take away from **Figure 8**. First, more than 10,000 (college-educated) people moved from Louisiana to Texas between 2005 and 2006. This is likely due, in large part, to Hurricane Katrina. Even if one excludes this year as an outlier, Louisiana was a less attractive state for college-educated individuals than Texas in every year except 2003 and 2013. In most years, the relative attractiveness has been heavily lopsided in Texas's favor.

Secondly, the loss of college-educated individuals to Texas is not limited to a single age group. It is pervasive among the prime age working cohorts (ages 25-54). Given that proximity to family is known to be one of the primary reasons individuals relocate, it is reasonable to assume that some portion of individuals ages 55 and older who moved did so because they retired and were interested in locating closer to family, friends, or

other amenities. For individuals younger than 55, who presumably have many more years to participate in the labor market, economic prospects are likely to play a much larger role in their decisions to relocate.

While socio-economic factors contribute significantly to the digital divide, the disparities will continue to grow as population shifts occur in areas lacking access to the digital world. For Acadiana, this translates to economic survival. As evidenced in the analysis of job growth and high-speed Internet, communities that do not invest today in this critical infrastructure will continue to lag behind. To further one's understanding of the fundamental concepts of broadband, it is critical to understand the variations existing within the broadband technologies, the definition of served and unserved, and the significance of the federal definition of broadband.

BROADBAND FUNDAMENTALS

OVERVIEW OF BROADBAND TECHNOLOGIES

Beginning in 2019, APC took significant time and effort to dissect the specific jargon and rudiments of the broadband industry. Prior to performing the Acadiana assessment, it became critical to develop a baseline understanding and to impart this understanding to key decision makers and local government.

Louisiana, broadband coverage is provided through both public and private Internet service providers via four primary delivery methods: DSL, Cable, Satellite, and Fiber. One reason for the major limitation on download and upload speeds is related to the transmission line material/architecture. For example, cable and DSL networks are unable to increase their speed due to real-world limits; copper wires are only able to transmit data at a maximum amount that decreases over distance. Additionally, due to satellite's wireless delivery, possible interference factors such as weather and the location of satellites must be taken into consideration during its usage. Fiber optic cables overcome slowdowns related to speed and distance due to their delivery through fiber strands and light signals that do not diminish over distance.

Other major differences between technologies are the cost of deployment and time-frame for maintenance. While many cable lines have already been deployed,

their maintenance or upgrade requires the cost-prohibitive replacement of the cable lines themselves. Fixed wireless or satellite is a cheaper network to build, but its equipment must be replaced every few years. When fiber is deployed, its upgradability is primarily reliant on the transmitters and receivers at either end of the fiber strands. As such, its initial deployment costs are typically offset by minimal maintenance costs.

Thirdly, when looking at the download and upload speeds side by side, the massive capacity differences highlight the possibility of speed chasms between DSL, cable, satellite, and fiber. One example of a speed chasm is found in Chattanooga, where cable and fiber were at odds with one another. EPB, the local government Internet service provider, was able to provide 10 gigabit download and upload networks. Simultaneously, the cable system made moves towards gigabit download speeds but was still severely limited by its upload speeds. Between the two Internet service providers, the cable provider was only able to offer 1/10th of the speeds that EPB was offering. Similar to that of Chattanooga, Acadiana's current speed chasm is widening as existing broadband technologies do not meet the needs and demands of the residences and businesses that are present.

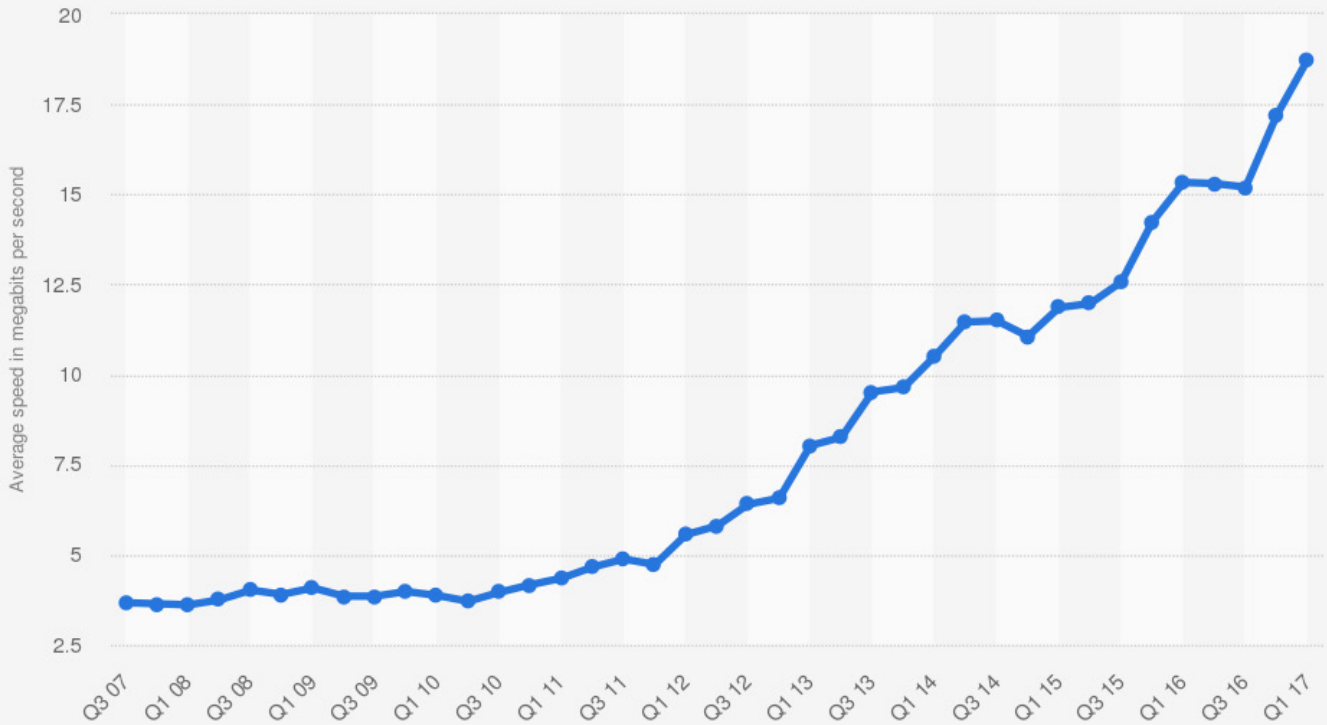
FEDERAL BROADBAND DEFINITION

The FCC broadband standard for service requires a minimum of 25 Megabits per second (Mbps) download and 3 Mbps upload. However, this standard is over five years old. Recent data show increasing demand for broadband speed. **Table 8** illustrates the changing minimum requirements. These requirements can be compared to the rising connection speeds in **Figure 9**. The current broadband standard was introduced in 2015, but there are ongoing federal efforts to increase the minimum requirements.⁵⁵

Table 8: FCC Broadband Definition Over Time

DATE ADOPTED	MINIMUM DOWNLOAD	MINIMUM UPLOAD	FCC COMMISSIONER
2015	25 Mbps	3 Mbps	Tom Wheeler, D
2010	4 Mbps	1 Mbps	Julius Genachowski, D
1996	200 Kbps	200 Kbps	William Kennard, D

Average internet connection speed in the United States from 2007 to 2017 (in Mbps), by quarter



Source
Akamai Technologies
© Statista 2020

Additional Information:
United States; Akamai Technologies; 2007 to 2017

Figure 9: Average Internet Download Connection Speed from 2007 to 2017

"SERVED" VS "UNSERVED" AREAS

Understanding the served and unserved areas requires looking into the data about Internet options and speeds. The primary data source is FCC Form 477. While in theory this form will allow communities and broadband providers to gauge the Internet needs of an area, there are many challenges with using FCC Form 477 data to assess broadband deficiencies (see **Appendix C** for full explanation). The major challenges include self-reporting by broadband companies, inaccuracies when attempting to match Form 477 and Census data, lack of verification of the accuracy of Form 477 data, and limited opportunities for using the data to improve service for unserved communities due to inaccuracies in the data. While the limitations of Form 477 data are many, the available data illustrate that low income and minority communities are often most hard-hit by lack of service and lack of opportunity to gain new service. The federal government is attempting to improve

broadband data to supplement Form 477 through crowd-sourced data, but inaccuracies remain.

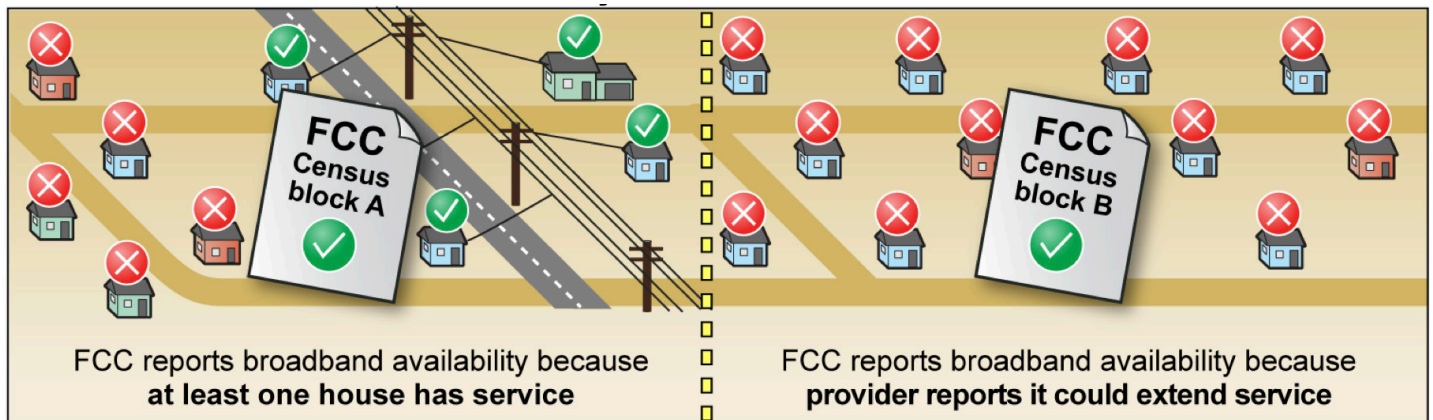
Whether by design or through want-of-skill, inaccurate Form 477 data has blocked the flow of federal dollars into otherwise unserved census blocks that would have been eligible. If a provider "can" serve at least one location in a census block within 10 days, the entire block is considered served at the highest advertised speed, regardless of affordability. A service provider advertising certain speeds in an area does not necessarily translate into that same provided level of service in the real world. Even when a provider accurately reports deployment of a particular technology and bandwidth in a particular census block, they may not necessarily offer that particular service everywhere in the census block. Therefore, a

list of providers deployed in a census block does not necessarily reflect the number of choices available to any particular household or business location in that block, and the number of such providers in the census block does not accurately reflect competition.

Data deficiencies can lead to digital redlining, harming minority and low-income communities. For example, using a variety of data and analytic techniques, the National Digital Inclusion Alliance (NDIA) has found that inaccurate Form 477 data has been used to obscure incidents of “digital redlining” in several major metropolitan areas that show a high correlation between neighborhoods where service providers have chosen not to deploy newer fiber technology to neighborhoods with poverty rates of 35% or more. However, questionable Form 477 data makes these incidents more difficult to detect.

To improve Form 477 data, on January 19, 2021, the FCC adopted additional rules for the Digital Opportunity Data Collection. These rules will help

ensure that the FCC is collecting precise and accurate broadband deployment data as part of their mission to close the digital divide. The new rules specify which fixed and mobile broadband Internet access service providers are required to report availability and/or coverage data and adopt requirements for reporting speed and latency for fixed technologies. The order also requires fixed broadband Internet access providers to report whether broadband services are offered to residential and/or business customers. With these new rules, FCC has taken the first step in implementing their Digital Opportunity Data Collection to improve the quality and accuracy of the Form 477 data. The rule-making process is slow and it is likely to take two to three years before the first accurate datasets become available. Given these limitations and timeline, the following analysis of FCC form 477 data will be limited to identifying census block groups that completely lack fixed broadband service and that are outside the known coverage areas for existing service providers.



Source: GAO analysis of Federal Communications Commission (FCC) documents. | GAO-18-630

Figure 10: GAO Analysis of Federal Communications Commission (FCC) Documents | GAO-18-630

ACADIANA BROADBAND ASSESSMENT

Several methods were used to evaluate broadband accessibility in Acadiana. APC first evaluated the number of people who lack service or have limited bandwidth using data available from the U.S. Census of Population, the Federal Communications Commission, and the American Community Survey. Using this data, APC looked at estimates of coverage using spatial data to create a regional broadband coverage map and

looked at the ability of businesses to access broadband. Second, APC conducted a speed test survey to provide on-the-ground data about actual Internet speeds in Acadiana. Using multiple methods to evaluate broadband speeds and service availability allowed APC to better estimate the need for broadband service and overcome data deficiencies in current reporting.

Table 9: Housing units lacking broadband access by served and unserved census block groups

PARISH	UNSERVED CENSUS BLOCK GROUPS	HOUSING UNITS IN UNSERVED BLOCK GROUPS	HOUSING UNITS LACKING BROADBAND IN PARISH	ESTIMATED HOUSING UNITS LACKING BROADBAND INSIDE "SERVED" BLOCK GROUPS
Acadia Parish	584	7,691	8,777	1,086
Evangeline Parish	289	5,539	6,948	1,445
Iberia parish	333	6,525	10,562	4,037
Lafayette Parish	700	21,306	24,714	3,408
St. Landry Parish	498	7,221	17,833	10,612
St. Martin Parish	197	4,453	8,482	4,029
Vermilion Parish	292	3,799	8,928	5,129
Acadiana Total	2,893	56,534	86,244	27,215



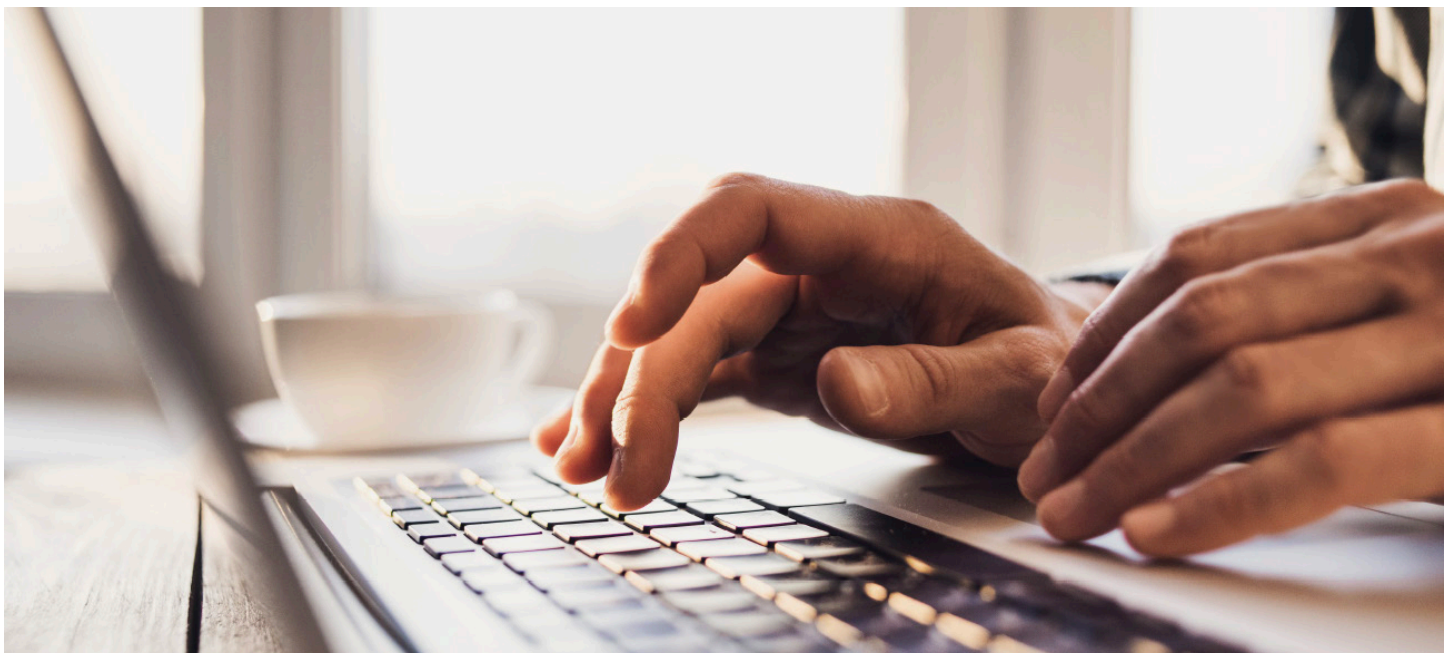
EVALUATING "SERVED" VS "UNDERSERVED" AREAS

To estimate the approximate number of households lacking broadband access, an approach that combines multiple datasets must be taken. **Table 9** illustrates the challenges of estimating broadband access by demonstrating how the access estimates vary with different data sets. Federal Communications Commission (FCC) Form 477, American Community Survey, and U.S. Census of Population data were combined to obtain an estimate of the number of people served by broadband. However, even when using multiple data sets, the limitations in the data mean that the number of people underserved by broadband are likely much higher than estimated in **Table 9**. **Appendix C** explains the limitations of the data in detail.

As part of the analysis of broadband availability, a regional coverage map was constructed by combining data from FCC Form 477 with geospatial data for census block groups to identify the location and geospatial relationships between census blocks that the FCC considers unserved. Service providers identified from Form 477 were contacted in an effort to obtain geospatial data for the location of their existing service and trunk lines. Only one service provider responded to this request for information, making the task of

generating a comprehensive map of the region's existing service areas almost impossible. Most service providers consider this information a protected trade secret and public dissemination of this information could pose a potential security threat. For these reasons, this report relies heavily upon FCC Form 477 data, data from the American Community Survey, and crowd sourced data from the Acadiana Regional Broadband Survey that was conducted as part of this project. Reported regional broadband coverage is reflected in **Figure 9** and the number of unserved census block groups are reflected in **Table 9**.

Based on the most recent release of Form 477 data, the majority of the Acadiana region lacks access to broadband that would support the suggested new definition of 100 Mbps download/100 Mbps upload. Even using the outdated current 25 Mbps/3 Mbps definition of broadband, a significant portion of the region would be classified as unserved. Since FCC Form 477 data are known to over-report actual broadband coverage, the proportion of the region that lacks broadband access is likely much greater than is reflected by this coverage map.



FCC FORM 477 REPORTED DOWNLOAD/UPLOAD SPEEDS

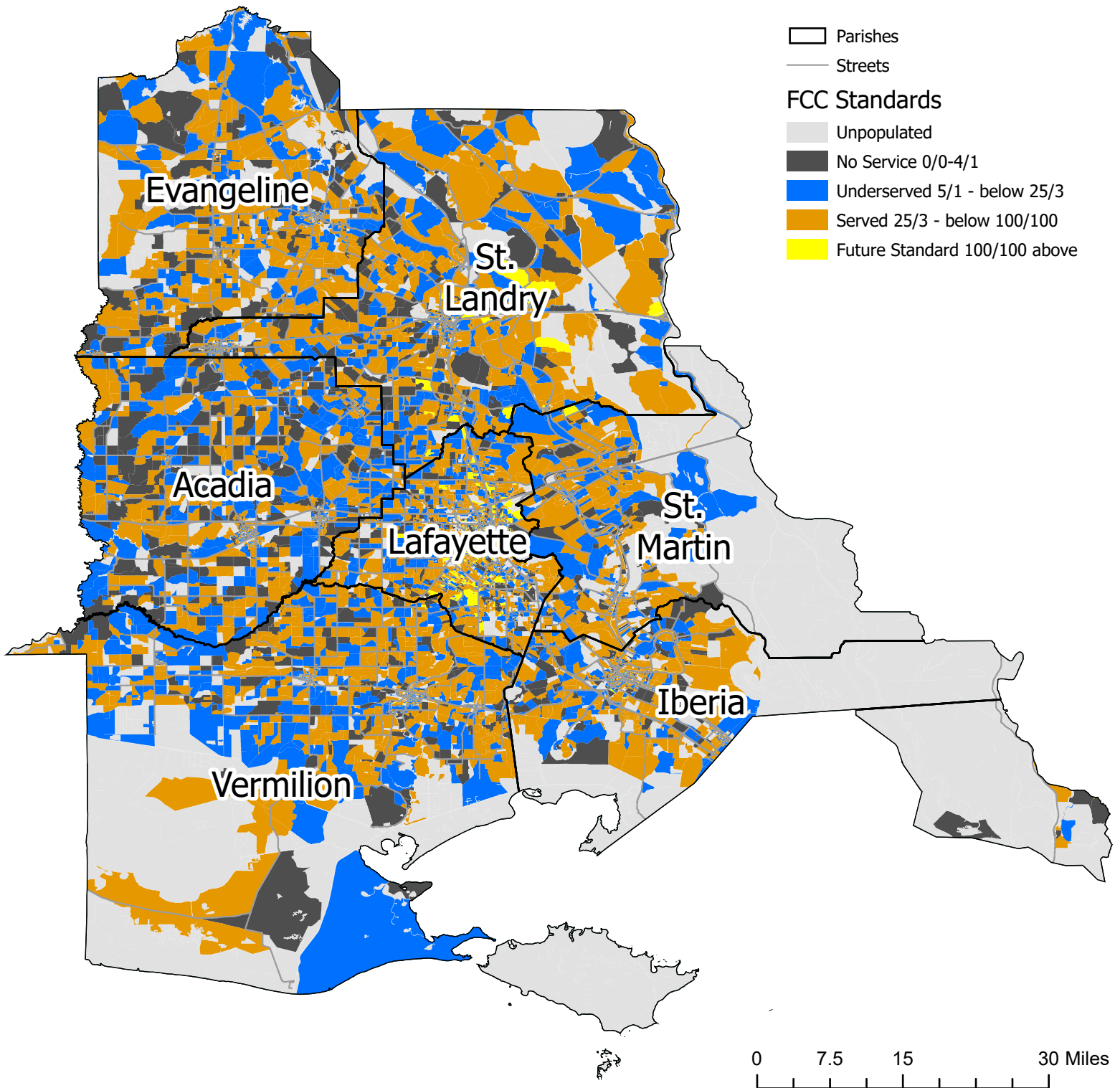


Figure 11: Map of FCC Standard Upload/Download Speeds

When analyzing FCC data by census block, at least one in six businesses in the Acadiana region lacks access to broadband (**Table 10**). Within the seven-parish region, rural parishes such as Acadia(23.69%), Iberia(21.08%), and St. Martin (20.0%) have the largest number of businesses that are in census blocks and considered to be unserved by the FCC; while urban parishes like Lafayette (14.97%) and parishes that contain affluent bedroom communities like Vermilion (10.28%) have much lower rates of businesses in unserved census blocks.

It is further estimated that 6,119 businesses in served census blocks also lack access to affordable high-capacity broadband. This number is calculated by assuming the proportion of businesses lacking broadband access in “served” census blocks occurs at similar proportions of households in the same block (12.12%). This method was used because FCC Form 477 data or data from Infogroup does not provide sufficient information to calculate unserved businesses in served blocks. Providing reliable and affordable broadband is essential for Acadiana’s businesses to thrive and for future regional economic growth and resiliency.

Table 10: Businesses Located in Unserved Census Blocks

PARISH	UNSERVED CENSUS BLOCK GROUPS	TOTAL BUSINESS ADDRESS POINTS	BUSINESSES ADDRESS POINTS IN UNSERVED CENSUS BLOCKS	PROPORTION OF ALL BUSINESSES IN PARISH LOCATED IN UNSERVED CENSUS BLOCKS (%)
Acadia Parish	584	3,909	926	24%
Evangeline Parish	289	1,634	261	16%
Iberia Parish	333	4,782	1,008	21%
Lafayette Parish	700	27,871	4,171	15%
St. Landry Parish	498	5,411	1,000	18%
St. Martin Parish	197	3,205	641	20%
Vermilion Parish	292	3,657	376	10%
Acadiana Total	2,893	50,469	8,383	17%

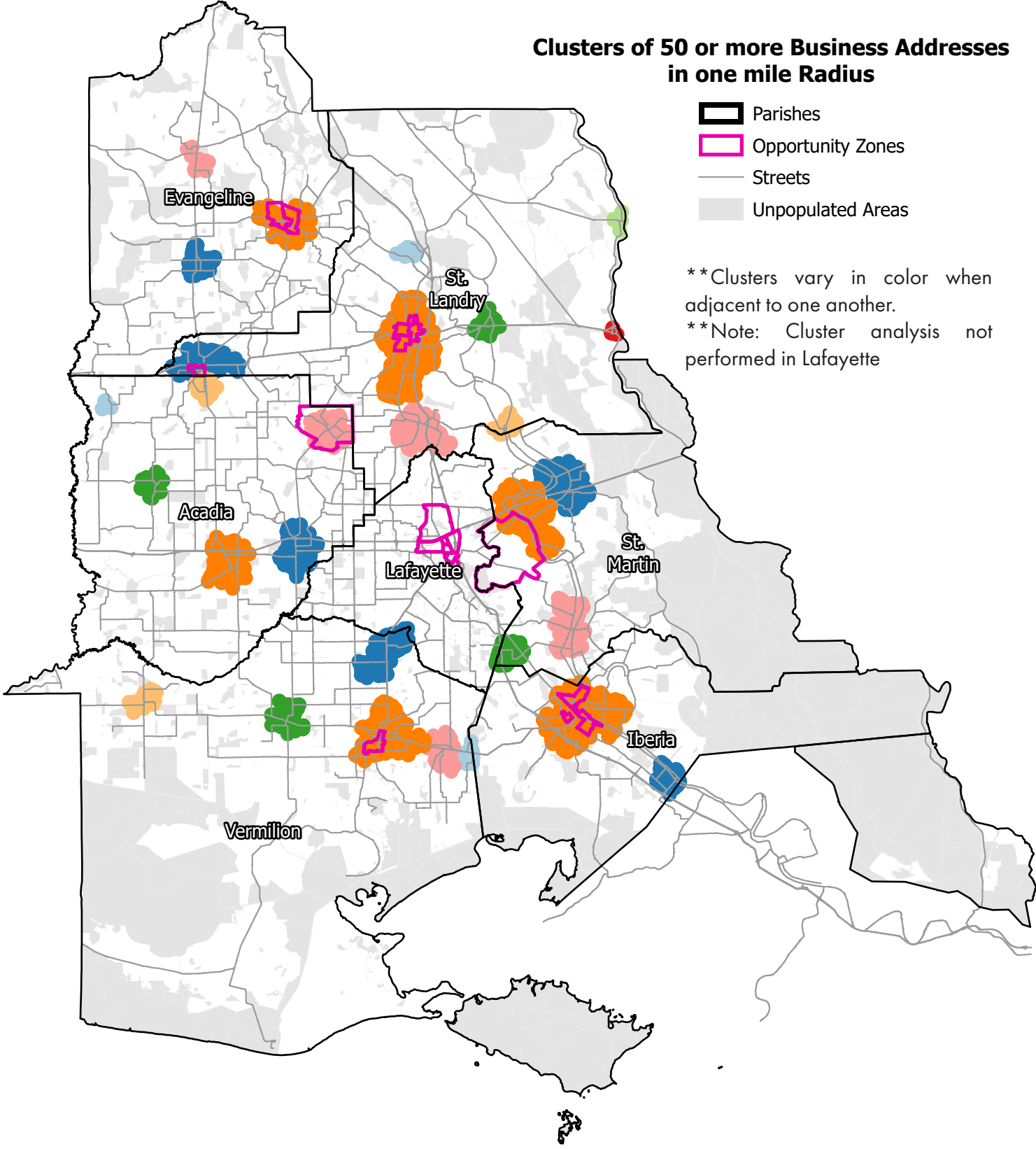
*Information is based on FCC Form 477 Fixed Broadband and Business Data

RURAL BUSINESS CLUSTER ANALYSIS

Benefits of broadband extend well beyond profits. Increased availability and affordability of broadband can encourage increased telework, promote resiliency and post-disaster recovery through cloud-based solutions, and support access to broader markets through e-commerce solutions. Many businesses within

areas that are in census blocks considered “served” by FCC standards lack adequate, reliable broadband access and can neither benefit from advances in technology nor participate in an increasingly global economy upon which it is heavily dependent.

Clusters of 50 or more Business Addresses in one mile Radius



**Clusters vary in color when adjacent to one another.
 **Note: Cluster analysis not performed in Lafayette

Figure 12: Map of Rural Business Cluster Analysis

ACADIANA BROADBAND SPEED TEST SURVEYS

APC undertook a crowd-sourced speed test and survey to generate more granular and accurate broadband service data for the Region. Crowd-sourcing conducted by APC is very similar to the crowd-sourcing currently being proposed by the FCC as part of their Digital Opportunity Data Collection program. Staff built a dedicated app for the survey and APC purchased a dedicated domain, BROADBANDSURVEY.ORG, to easily direct respondents. Survey questions included: physical address where the survey was being completed, type of device on which the survey was taken, name of broadband service provider at the location where the survey was completed, cost of broadband service where the survey was completed, and general comments. Respondents were asked to identify the location from which they were taking the survey on a digital map.

As part of the survey, respondents were directed to take a speed test through M-Labs and report their measured upload and download speeds. M-Lab's speed test provides advanced diagnostics of the performance of broadband connections through quick measurements and is a source of aggregated data.⁵⁶

The Acadiana Broadband Survey was publicized through multiple platforms. It was first publicized through a press release to local media encouraging local residents to take the speed test and complete the survey. Second, APC worked with parish-level economic development organizations and chambers of commerce to distribute a link to the survey through their distribution lists and newsletters. Finally, social media advertisements were used to target residents in the rural parishes of the region. The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 700 surveys were completed representing 665 unique address points from the seven parishes within Louisiana Planning District 4 (Acadiana). Rural parishes covered by the survey include: Acadia, Evangeline, Iberia, St. Landry, St. Martin, and Vermilion. Lafayette Parish, which is home to LUSFiber, a municipally-owned broadband service provider and which is covered by an additional 20+ service providers was used as a regional reference population.

ACADIANA, HOW FAST IS YOUR INTERNET? GO TO broadbandsurvey.org

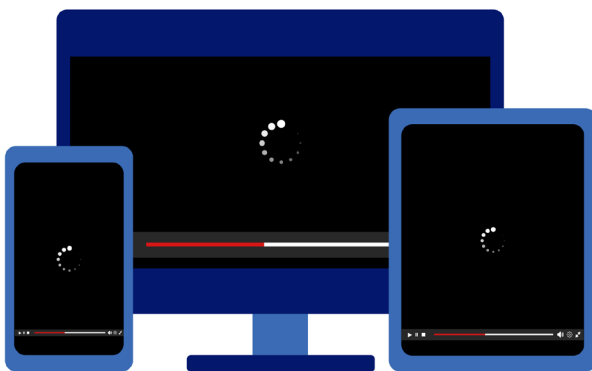


Figure 13: Promotional Graphics for the Acadiana Broadband Speed Test Survey

Results

☰	Test Server	Dallas, US
↓	Download	152.17 Mb/s
↑	Upload	23.05 Mb/s
⌚	Latency	17 ms
📶	Retransmission	0.04%

Figure 14: Sample of Connectivity Results from the Acadiana Broadband Speed Test Survey

As part of the Acadiana Broadband Survey, respondents were asked to complete an Internet speed test that used an embedded M-Labs web-based computer application (app). The Measurement Lab (M-Lab) speed test was selected because their platform provides the largest collection of open Internet performance data available and because they host a consortium of research, industry, and public-interest partners, that are dedicated to providing an ecosystem for the open, verifiable measurement of global network performance. Responses were received from both business and residential locations and were not differentiated for this study.

Data collected from the survey was segregated by parish and mean, median, and quartiles were calculated for upload and download speeds for each parish. Mean, median, and quartiles were evaluated for skewness and to identify potential outlier points that pull the calculated mean away from the observed median resulting in a skewed data distribution. This analysis confirmed that for most parishes there was at least one observation that resulted in a skewed distribution in every parish. Consequently, medians will be used to compare and represent the data that has been collected from the survey.⁵⁷

BROADBAND SPEED FINDINGS

Based on survey responses, more than 50% of respondents from three parishes fell below the FCC definition of broadband (25 Mbps Download and 3 Mbps upload): Acadia Parish, Evangeline Parish, and St. Landry Parish (see **Table 11**). Median upload and download speeds were marginal for both Iberia and Vermilion with median responses just slightly above the current FCC definition of broadband. Median upload and download speeds for the seven-parish region are all well below the 100 Mbps recommended by the U.S. Treasury guidance for expenditure of American Rescue Plan Act (ARPA) funds to state and local governments.

Table 11: Acadiana Broadband Speed Test Survey Results by Parish

PARISH	NUMBER OF RESPONSES (N)	MEDIAN DOWNLOAD SPEED (MBPS)	MEDIAN UPLOAD SPEED (MBPS)
Acadia Parish	112	8.66	1.96
Evangeline parish	25	10.06	1.18
Iberia Parish	66	26.70	7.00
Lafayette Parish	120	47.87	10.74
St. Landry Parish	209	17.68	5.44
St. Martin Parish	91	45.60	9.88
Vermilion Parish	32	27.95	3.32

ACADIANA BROADBAND SURVEY RESULTS

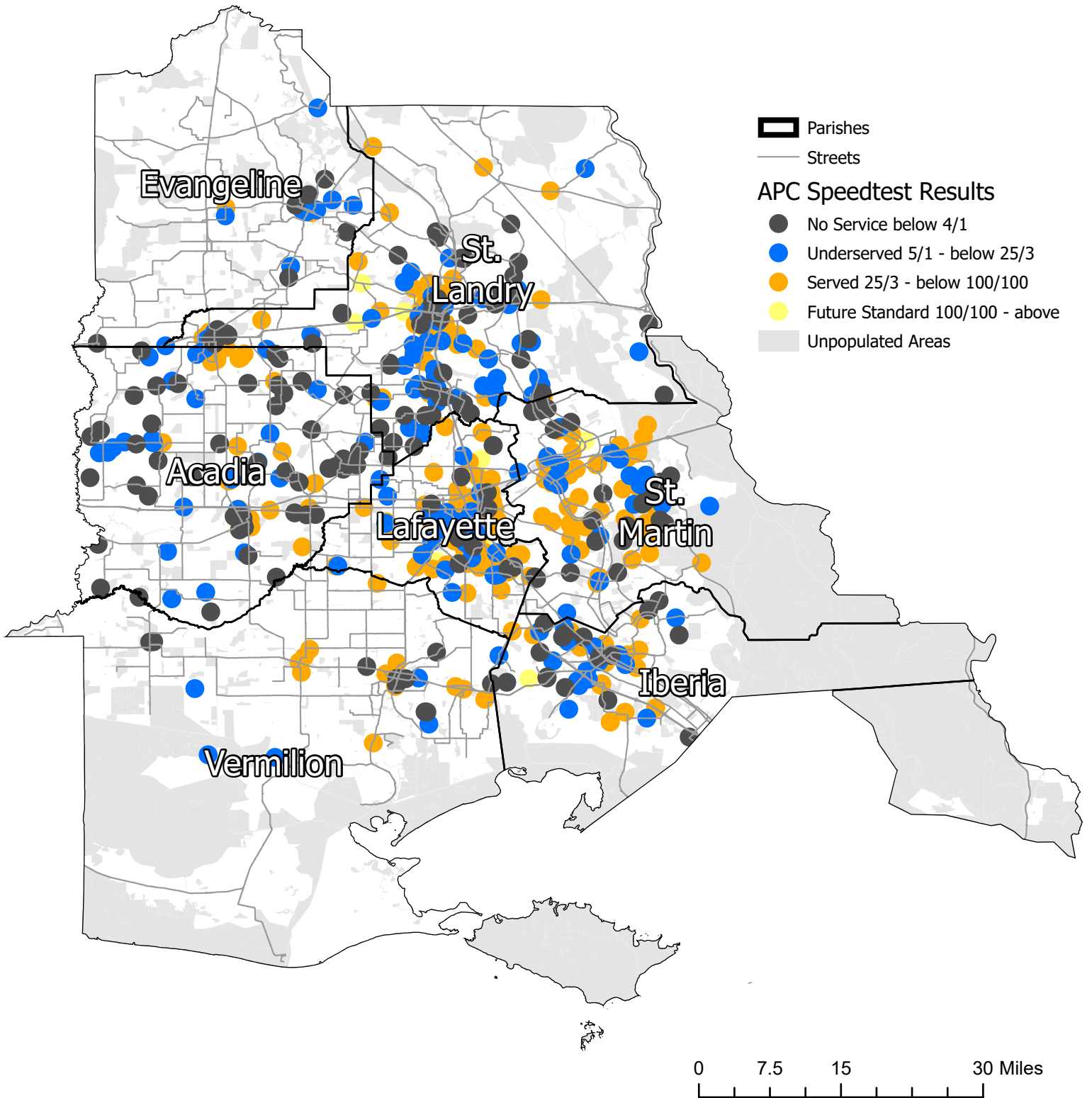


Figure 15: Map of Acadiana Broadband Speed Test Survey Results

Of the 665 survey responses received; 113 were received from Acadia Parish, 25 from Evangeline Parish, 66 from Iberia Parish, 210 from St. Landry Parish, 92 from St. Martin Parish, 33 from Vermilion parish, and 121 from Lafayette Parish. Five responses were submitted from outside of the study area. Of the 660 responses from within the study area received, 98 could be traced back to census blocks that are considered

“unserved” by the FCC, 539 could be traced to census blocks that are considered “served” by the FCC, and 23 were lacking sufficient information to attribute them to a census block. An additional 28 responses from locations in St. Landry are attributed to school-based sites all of which have excellent broadband access that has been supported by the E-Rate Program.

Table 12: Classification of Survey Responses Based on Location in Served Vs Unserved Census Blocks

PARISH	TOTAL RESPONSES	RESPONSES IN UNSERVED CENSUS BLOCKS	RESPONSES IN SERVED CENSUS BLOCKS	UNABLE TO DETERMINE CENSUS BLOCK
Acadia	113	20	93	0
Evangeline	25	5	16	4
Iberia	66	11	54	1
Lafayette	121	16	105	0
St. Landry	210	25	169	16
St. Martin	92	19	73	0
Vermilion	33	2	29	2

ESTIMATING THE NUMBER OF HOUSEHOLDS LACKING SERVICE

To estimate the number of potentially unserved households in Acadiana’s rural parishes that are included in this study, APC has elected to use data from the U.S. Census Bureau’s American Community Survey (ACS). ACS data are a quantitative measure of broadband accessibility for fixed broadband deployment that is similar to data from FCC Form 477. ACS data are based on scientifically valid, sample-based surveys of actual service as reported by consumers.

ACS data used in this analysis are based on the FCC broadband definition that was the standard as of the 2010 census or 4 Mbps download, 1 Mbps upload.

To maintain consistency and comparability in their statistical models, ACS has not adjusted their definition to match changes in the FCC definition. In 2015 the official FCC broadband definition was changed to a minimum of 25 Mbps download and 3 Mbps upload. Under the current definition of broadband, most of the ACS households that are reporting broadband service would no longer be considered served under the 2015 revision of the FCC Broadband definition. The 2015 benchmark increase was justified as necessary due to advances in technology, market offerings by broadband providers, and consumer demand. It is therefore likely that the ACS significantly underestimates the number of unserved households within an area of geography.

It is important to note that FCC data doesn't give exactly the same kind of information as the ACS. The FCC data comes directly from Internet providers and doesn't say how many people in an area have a subscription, only that access is available. Areas where the FCC shows broadband available, but ACS shows a low rate of subscription (or vice versa), have several explanations:

- Broadband Internet is available, but unaffordable for residents
- Broadband Internet is available, but other barriers exist
- Broadband Internet is only available in part of the area
- The data provided by the ISP is inaccurate or their service coverage is over-reported

Within the Acadiana region, the proportion of households varies greatly. Urban areas like Lafayette Parish (15.04%) have a much smaller proportion of households lacking a broadband connection in comparison with their rural neighbors and the state of Louisiana as a whole (24.52%). More rural parishes, such as St. Landry (37.37%) and Evangeline Parish (33.69%) have much higher proportions of their households lacking broadband connections. Parishes such as Acadia (20.59%) and Vermilion (20.05%) both have local service providers such as REACH4 Communications in Acadia Parish and Delcambre Communications in Vermilion Parish who offer fiber-to-the-home service to portions of their respective parishes where the proportion of households with reliable, high-capacity broadband increases.

Table 13: Households lacking Broadband Access in Acadiana based on 2019 ACS Data

GEOGRAPHY	TOTAL HOUSEHOLDS	HOUSEHOLDS WITH BROADBAND	HOUSEHOLDS LACKING BROADBAND	% OF HOUSEHOLDS LACKING BROADBAND
Louisiana	1,739,497	1,312,922	426,575	24.52
Acadia Parish	22,236	17,658	4,578	20.59
Evangeline Parish	12,172	8,071	4,101	33.69
Iberia Parish	26,184	20,033	6,151	23.49
Lafayette Parish	91,543	77,777	13,766	15.04
St. Landry Parish	30,485	19,092	11,393	37.37
St. Martin Parish	19,749	14,902	4,847	24.54
Vermilion Parish	22,086	17,658	4,428	20.05
Acadiana Total	224,455	175,191	49,264	21.95

ACADIANA PARISH PROFILES

To further assess the digital divide in Acadiana, APC conducted an analysis on each of the rural parishes. Factors that are known to contribute and even magnify the digital divide include poverty, membership in a vulnerable population, and residence in low-income communities that are often rural. As part of this Parish Profile, US Census and American Community Survey (ACS) data was used to identify vulnerable households in the parish. Vulnerable populations include the economically disadvantaged, racial and ethnic minorities, the uninsured, low-income children, the elderly, the homeless, and those with chronic health conditions. These populations can be identified through demographic information that is broadly broken into four focus areas: Access Metrics, Education Metrics, Workforce Metrics, and Affordability Metrics. Access Metrics include demographic data on economic factors that are known to limit access to broadband access and

include households that fall below the poverty line, are housing cost-burdened, and include households that participate in public assistance programs like SNAP. These households struggle to maintain food on the table and a roof over their heads. Education Metrics are those such as educational attainment that impact the ability to use technology. Workforce Metrics include factors such as workforce participation rate, unemployment, and underemployment. Affordability Metrics, such as household income, measure the household's ability to pay for adequate broadband service even when the household exists above the poverty rate.

In addition to the socio-economic characteristics in each parish, APC considered the supporting infrastructure, reported speeds, and business and residential densities. These characteristics comprise the parish profiles which are intended to serve as stand alone documents.



Arnaudville, LA



Downtown Ville Platte

ACADIA PARISH



ABOUT ACADIA PARISH

Perfectly located along the I-10 corridor with major US Highways, railways, waterways, a port and airports, Acadia Parish offers the transportation resources needed for productive commerce. Cost of living and sites for business are affordable. This humble community is home to a culturally diverse and devoted population whose work ethic is as strong now as it was when their Cajun forefathers first settled here. Acadia Parish's quaint charm makes it a great place to live, work and retire.

DIGITAL DIVIDE METRICS

ACCESS METRICS

In 2019, the estimated overall poverty rate in Acadia Parish was 24.2%.⁵⁸ Over 35.6% of children under 18 live below the poverty level, compared with 19.0% of people age 65 or older and 20.4% for individuals 18 to 64.⁵⁹

Almost 19% of households received SNAP (the Supplemental Nutrition Assistance Program).⁶⁰ Of these households, 53.7% had children under 18, and 27.0% included one or more people age 60 or older.⁶¹ Over 41% of all households receiving SNAP were families with a female householder and no husband present.⁶² About 18% of households receiving SNAP included two or more workers.⁶³

Renters were most likely to be cost-burdened in Acadia Parish than owners. Cost-burdened households accounted for 20.5% of homeowners with a mortgage, 7.4% of homeowners without a mortgage, and 58.0% of renters.⁶⁴ Households that pay thirty percent or more of their income on housing costs are considered cost burdened.

EDUCATION METRICS

According to 2019 ACS data, 79.0% of people 25 years and over have graduated from high school and 13.3% have a bachelor's degree or higher.⁶⁵ About 21% of adults have not completed high school.⁶⁶ The total K-12 school enrollment was 14,863.⁶⁷ Nursery

school enrollment was 712 and kindergarten through 12th grade enrollment was 12,014.⁶⁸ College or graduate school enrollment was 2,137.⁶⁹

WORKFORCE METRICS

Over 52% of the population age 16 and older were employed; 42.7% were not currently in the labor force.⁷⁰ An estimated 80.6% of the people employed were private wage and salary workers; 13.8% were federal, state, or local government workers; and 5.2% were self-employed in their own (not incorporated) business.⁷¹

AFFORDABILITY METRICS

The median household income was \$43,396.⁷² An estimated 10.8% of households had income below \$10,000 a year and 2.8% had income over \$200,000 or more.⁷³

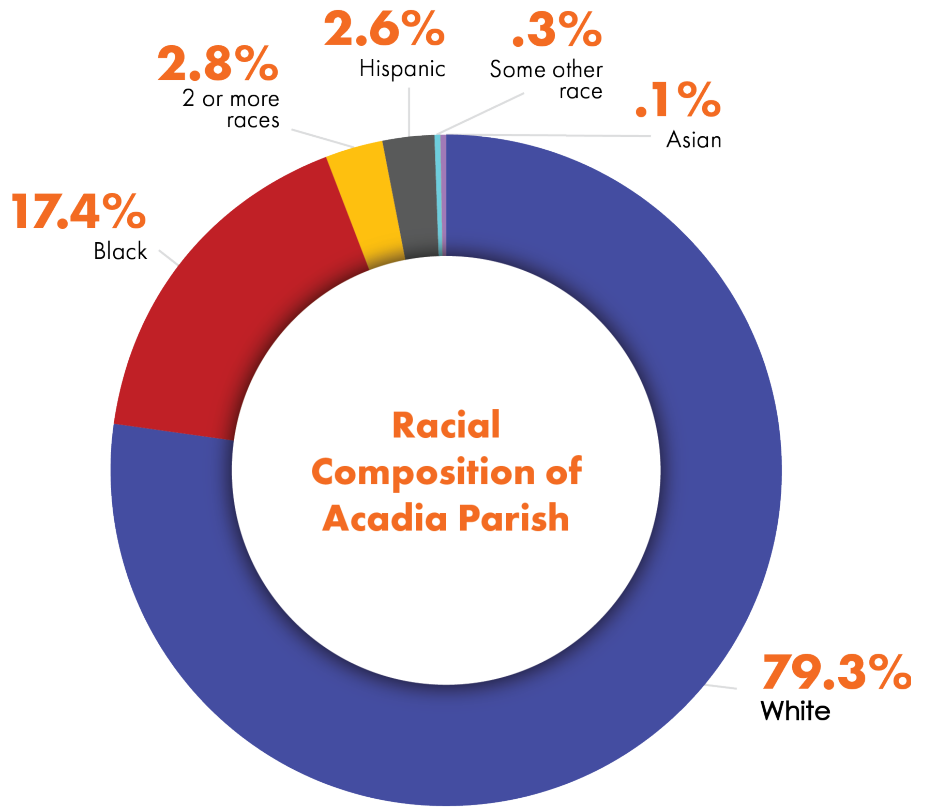


Downtown Crowley, LA

ACADIA PARISH BY THE NUMBERS

62,457
Population

36.7	Median Age
24.2%	Poverty Rate
22,236	Number of Households
\$43,396	Median Household Income
\$118,000	Median Home Value



TOTAL BUSINESSES
3,909



TOTAL EMPLOYED
52.6%

ACADIA PARISH
AGE DISTRIBUTION

26.2%	UNDER 18
59%	18-64
14.9%	OVER 65

Figure 16: Demographic Information for Acadia Parish74

INFRASTRUCTURE IN ACADIA PARISH

As part of this assessment geospatial data for Acadia Parish was catalogued and compiled into a mapping product, represented in **Figure 17**. Critical infrastructure included in this assessment included identification of utility and road rights-of-way that could support future broadband expansion. Major highways and their associated right of way are indicated in Red. Electric Transmission lines are indicated in green. Acadia Parish falls predominantly within the service area of the electric power companies CLECO and Entergy. Electric utility poles serve as a primary distribution for future broadband service or “last mile” installations. Under recent enabling legislation, electric cooperatives are required to “grant permission to a broadband affiliate or a broadband service provider to use the electric delivery system of the cooperative to provide broadband services...” when there is sufficient capacity, is safe to do so, does not reduce reliability of the electric service, or generally applicable engineering purposes make it unfeasible.⁷⁵ Map layers for these electric delivery lines are not currently available, but are generally presumed to serve all of the address points within the parish and are otherwise available for future broadband expansion.

Place-based economic development incentives, such as Opportunity Zones represent another form of critical infrastructure. Opportunity Zones are an economic development tool that allows people to invest in distressed communities.⁷⁶ Their purpose is to spur economic growth and job creation in low-income, high poverty rate communities while providing tax benefits to investors. Opportunity Zones were created under the Tax Cuts and Jobs Act of 2017.⁷⁷ Within Acadia Parish, an Opportunity Zone is located in the Town of Church Point. To help attract outside investment APC has developed an Opportunity Zone Prospectus.⁷⁸ Improvement of broadband services within the Church Point Opportunity Zone is critical to maximize the potential impact of this economic development tool. Opportunity Zones are shaded pink and represent areas for future targeted investment.

Anchor institutions typically require high levels of broadband connectivity and reliability. Because of their role in providing essential public services, anchor institutions lacking reliable broadband Internet will be prioritized in future broadband expansion plans. Point data for anchor institutions such as: colleges and universities, private and public elementary and secondary schools, police stations, hospitals and nursing homes, fire stations, state government buildings, courthouses, and emergency operations centers are identified with institution-specific icons in **Figure 17**. Also included for Acadia Parish in **Figure 17**, are the locations of existing cell towers and electric substations which are both dependent upon broadband.



INFRASTRUCTURE MAP

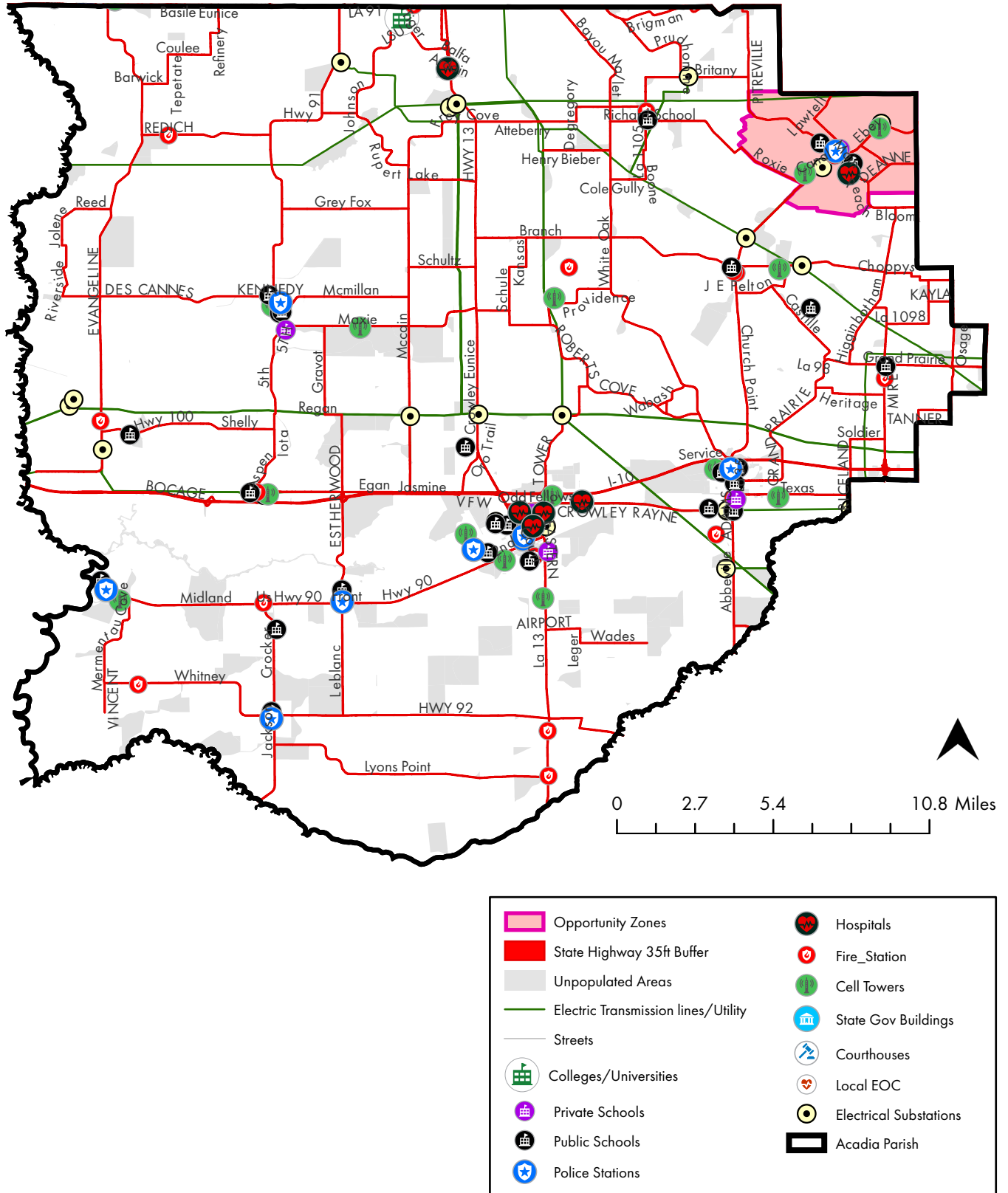


Figure 17: Infrastructure Map of Acadia Parish

FCC DATA MAP

FCC Form 477 is derived from broadband industry self-reporting of advertised availability. Under FCC Form 477, a census block and addresses within it are considered served at the reported service level if a single location within that block can receive the advertised service regardless of cost or service-in-fact. It is important to note that while FCC Form 477 would indicate that more than a large portion of Acadia Parish is considered served, speed test results indicate that more than three quarters of respondents are reporting actual speed test results below FCC's standard.

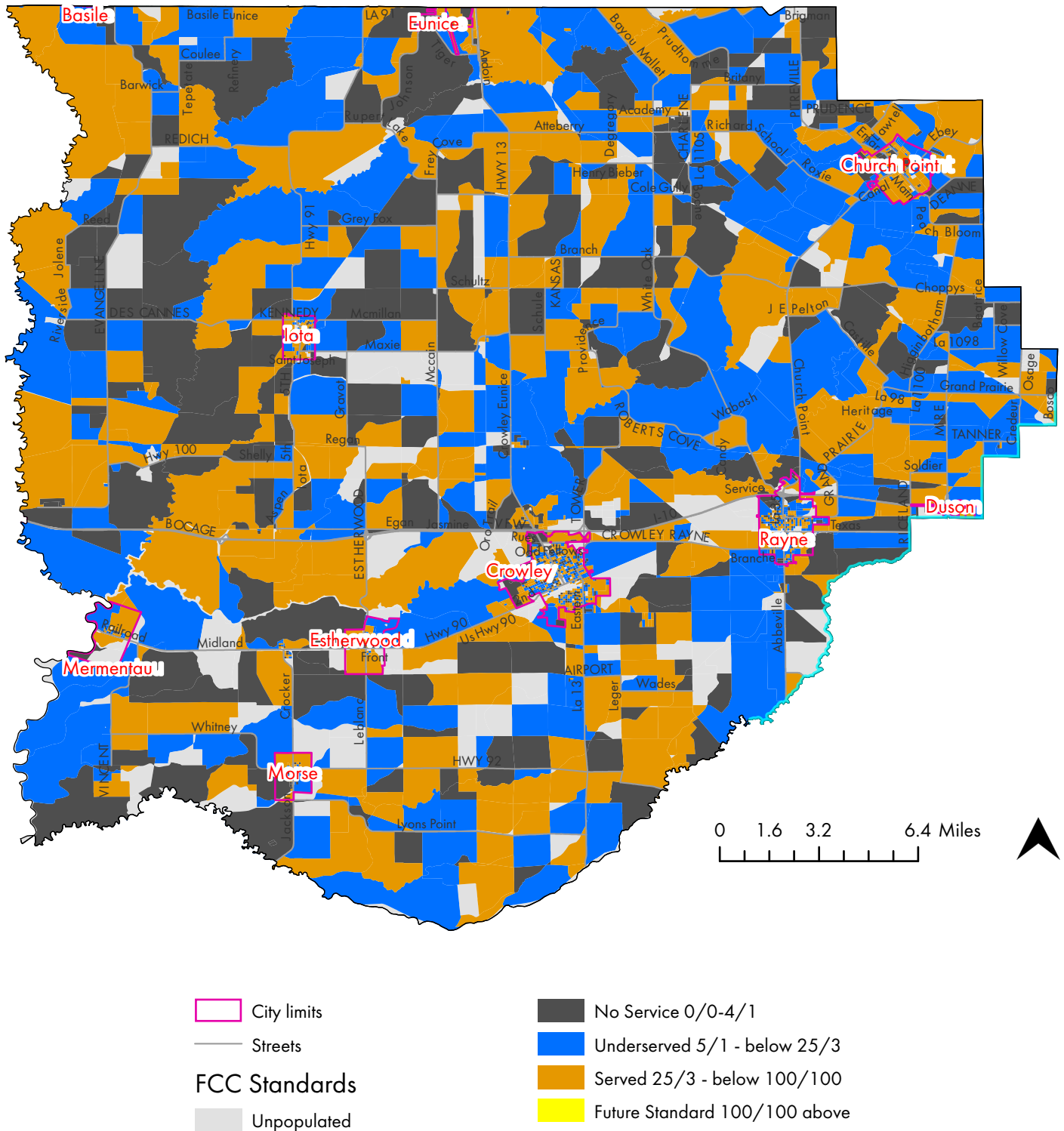


Figure 18: FCC Data Map of Acadia Parish

ACADIA PARISH SPEED TEST RESULTS

The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 112 surveys were submitted from Acadia Parish, of these 20 reported broadband speeds from census blocks that the FCC considers unserved and 93 were from census blocks that are considered served based on the December 2019 FCC Form 477 data.⁷⁹ Survey speed test data from Acadia Parish and FCC Form 477 were mapped for comparison and can be seen in **Figures 18 and 19** respectively.

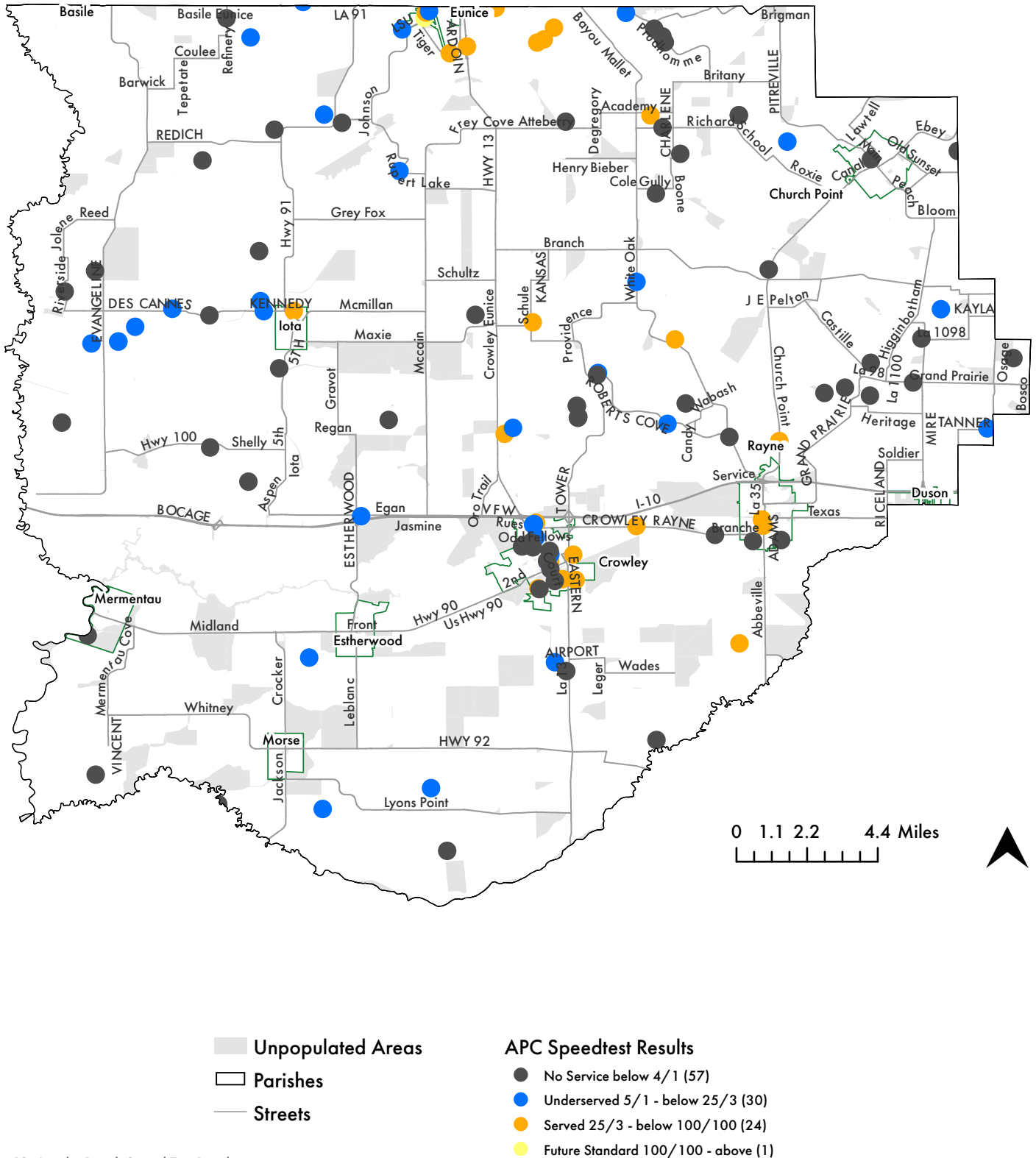


Figure 19: Acadia Parish Speed Test Results

ACADIA PARISH SPEED TEST RESULTS CONTINUED

The median reported broadband speeds in Acadia Parish were 8.66 Mbps download and 1.96 Mbps upload. Both are well below the FCC current definition of broadband of 25 Mbps download and 3 Mbps upload. The top three reported broadband service providers in Acadia Parish were AT&T (30%), Reach4 Communications (23%), and Cox Communications (16%). The majority of respondents (60.7%) in Acadia Parish reported spending between \$50.00 and \$100.00 per month for broadband service.

Table 14: Reported Internet Providers in Acadia Parish

REPORTED INTERNET PROVIDERS IN ACADIA PARISH:	
Provider	Percentage
Acadiana Broadband	4%
AT&T	27%
Boot State	2%
CenturyLink	13%
Charter	2%
Cox	14%
HughesNet	2%
Reach4	21%
Spectrum	4%
Sprint Cellular	1%
Verizon	2%
Viasat	4%
Wi-Net	2%
Not Reported	4%

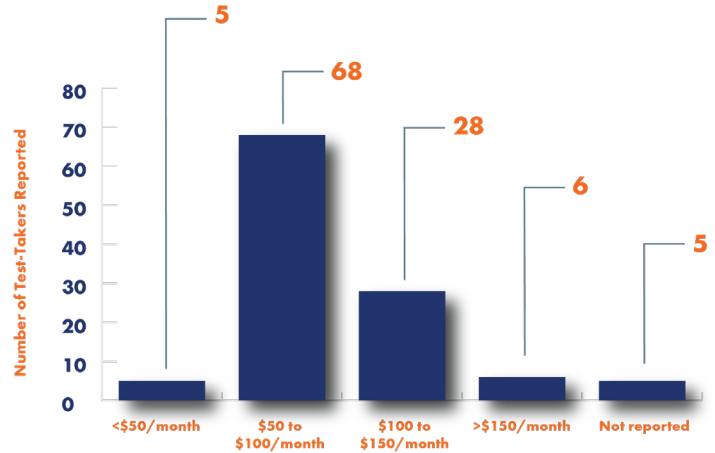


Figure 20: Reported broadband costs in Acadia Parish

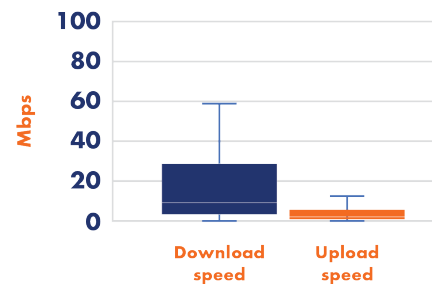


Figure 21: Reported broadband speed in Acadia Parish

ADOPTION METRICS

In 2015-2019, Acadia Parish had a total of 26,435 housing units.⁸⁰ Average household size was 2.76 people.⁸¹ 75.3% of existing housing units were single-family houses either not attached to any other structure or attached to one or more structures (commonly referred to as “townhouses” or “row houses”).⁸² 7.4% of the housing units were in multi-unit structures, or those buildings that contained two or more apartments.⁸³ 17.3% were mobile homes, while any remaining housing units were classified as “other,” which included boats, recreational vehicles, vans, etc.⁸⁴ 6.9% of the housing inventory was comprised of houses built since 2010, while 7.6% of the houses were first built

in 1939 or earlier.⁸⁵ In 2015-2019, 22,236 housing units were occupied or had people living in them, while the remaining 4,199 were vacant.⁸⁶ Of the occupied housing units, the percentage of these houses occupied by owners (also known as the homeownership rate) was 71.1% while renters occupied 28.9%.⁸⁷ The median property value for owner-occupied houses was \$118,000.⁸⁸ For renter-occupied houses, the median gross rent was \$662.⁸⁹ Gross rent includes the monthly contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

BUSINESS AND RESIDENTIAL CLUSTERS

As part of this assessment, address point data were analyzed to identify high-density clusters of housing and businesses in Acadia Parish. Through a side-by-side comparison with FCC Form 477 Data and speed test data, cluster data will be used to define areas for broadband expansion under future funding opportunities. Identified clusters represent both incorporated and unincorporated areas throughout the region.

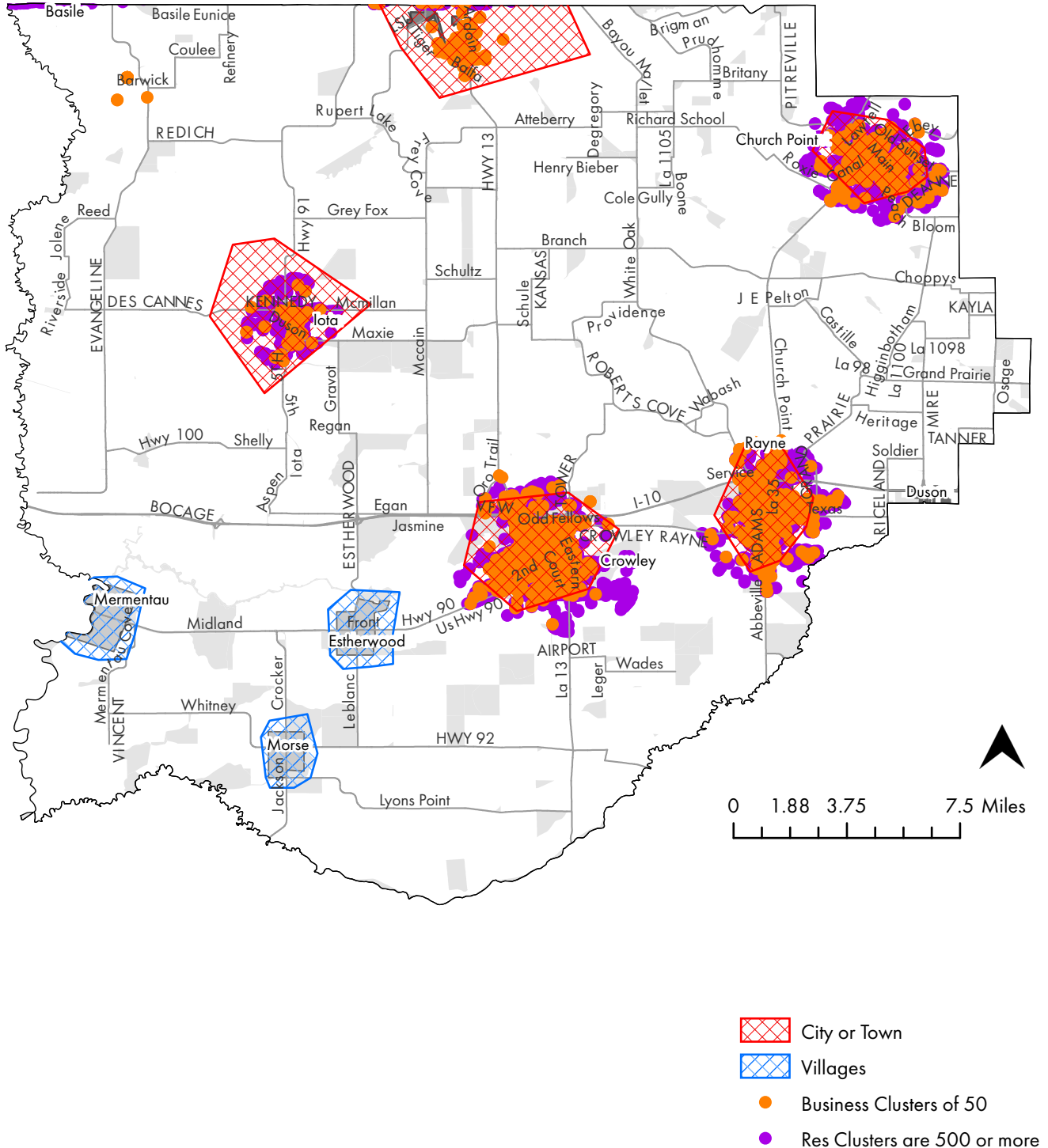


Figure 22: Business and Residential Clusters in Acadia Parish

EVANGELINE PARISH



ABOUT EVANGELINE PARISH

An experienced labor force, readily available land for business relocation or expansion and a strong commitment to economic growth make Evangeline Parish and its communities a place that offers amazing potential for growth and success. Strategic access to rail, commodity pipelines, I-49, U.S. Highway 167 and 190 are a unique draw for companies. Evangeline Parish's Opportunity Zones are located within the downtown area of Ville Platte, the seat of Evangeline Parish.

DIGITAL DIVIDE METRICS

ACCESS METRICS

In 2019, the estimated overall poverty rate in Evangeline Parish was 28.7%.⁹⁰ Over 38.1% of children under 18 live below the poverty level, compared with 19.5% of people age 65 or older and 26.9% for individuals age 18 to 64.⁹¹

Almost 22% of households received SNAP (the Supplemental Nutrition Assistance Program).⁹² Of these households, 41.3% had children under 18, and 33.4% included one or more people age 60 or older.⁹³ Over 35% of all households receiving SNAP were families with a female householder and no husband present.⁹⁴ About 17% of households receiving SNAP included two or more workers.⁹⁵

Renters were most likely to be cost-burdened in Evangeline Parish than owners. Cost-burdened households accounted for 27.2 percent of homeowners with a mortgage, 12.3 percent of homeowners without a mortgage, and 50.2 percent of renters.⁹⁶ Households that pay thirty percent or more of their income on housing costs are considered cost burdened.

EDUCATION METRICS

According to 2019 ACS data, 75.7% of people 25 years and over have graduated from high school and 11.6% have a bachelor's degree or higher.⁹⁷ About 24% of adults have not completed high school.⁹⁸ The total K-12 school enrollment was 8,068.⁹⁹ Nursery school enrollment was 572 and kindergarten through 12th grade enrollment was 6,558.¹⁰⁰ College or graduate school enrollment was 938.¹⁰¹

WORKFORCE METRICS

Over 45% of the population age 16 and older were employed; 48.2% were not currently in the labor force.¹⁰² An estimated 79.2% of the people employed were private wage and salary workers; 13.0% were federal, state, or local government workers; and 7.8% were self-employed in their own (not incorporated) business.¹⁰³

AFFORDABILITY METRICS

The median household income was \$31,965.¹⁰⁴ An estimated 12.4% of households had income below \$10,000 a year and 2.0% had income over \$200,000 or more.¹⁰⁵

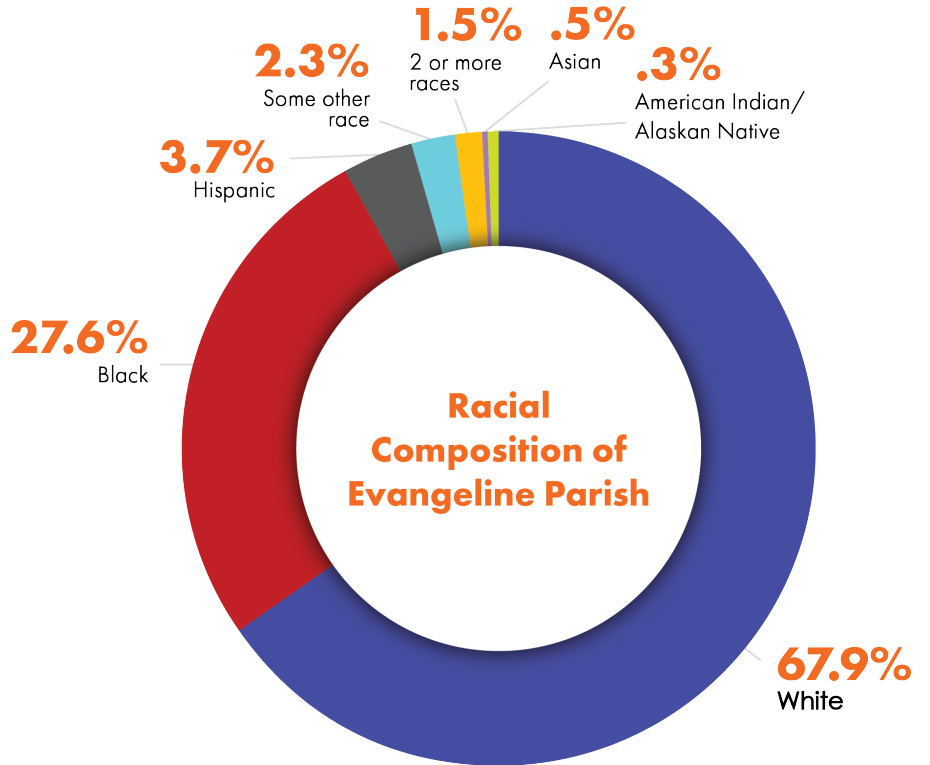


Cameron Valves & Measurement in Ville Platte

EVANGELINE PARISH BY THE NUMBERS

33,589
Population

35.7	Median Age
28.7%	Poverty Rate
12,172	Number of Households
\$31,965	Median Household Income
\$96,600	Median Home Value



TOTAL BUSINESSES
1,634



TOTAL EMPLOYED
45.1%

EVANGELINE PARISH
AGE DISTRIBUTION

24.9%	UNDER 18
60.2%	18-64
15.1%	OVER 65

Figure 23: Demographic Information for Evangeline Parish 106

INFRASTRUCTURE IN EVANGELINE PARISH

As part of this assessment geospatial data for Evangeline Parish was catalogued and compiled into a mapping product, represented in **Figure 24**. Critical infrastructure included in this assessment included identification of utility and road rights-of-way that could support future broadband expansion. Major highways and their associated right of way are indicated in Red. Electric Transmission lines are indicated in green. Evangeline Parish falls predominantly within the service area of the electric power company CLECO. Electric utility poles serve as a primary distribution for future broadband service or “last mile” installations. Under recent enabling legislation, electric cooperatives are required to “grant permission to a broadband affiliate or a broadband service provider to use the electric delivery system of the cooperative to provide broadband services...” when there is sufficient capacity, is safe to do so, does not reduce reliability of the electric service, or generally applicable engineering purposes make it unfeasible.¹⁰⁷ Map layers for these electric delivery lines are not currently available, but are generally presumed to serve all of the address points within the parish and are otherwise available for future broadband expansion.

Place-based economic development incentives, such as Opportunity Zones represent another form of critical infrastructure. Opportunity Zones are an economic development tool that allows people to invest in distressed communities.¹⁰⁸ Their purpose is to spur economic growth and job creation in low-income, high poverty rate communities while providing tax benefits to investors. Opportunity Zones were created under the Tax Cuts and Jobs Act of 2017.¹⁰⁹ Within Evangeline Parish, two Opportunity Zones are located in the City of Ville Platte. To help attract outside investment APC has developed an Opportunity Zone Prospectus.¹¹⁰ Improvement of broadband services within the Ville Platte Opportunity Zones is critical to maximize the potential impact of this economic development tool. Opportunity Zones are shaded pink and represent areas for future targeted investment.

Anchor institutions typically require high levels of broadband connectivity and reliability. Because of their role in providing essential public services, anchor institutions lacking reliable broadband Internet will be prioritized in future broadband expansion plans. Point data for anchor institutions such as: colleges and universities, private and public elementary and secondary schools, police stations, hospitals and nursing homes, fire stations, state government buildings, courthouses, and emergency operations centers are identified with institution-specific icons in **Figure 24**. Also included for Evangeline Parish in **Figure 24**, are the locations of existing cell towers and electric substations which are both dependent upon broadband.



INFRASTRUCTURE MAP

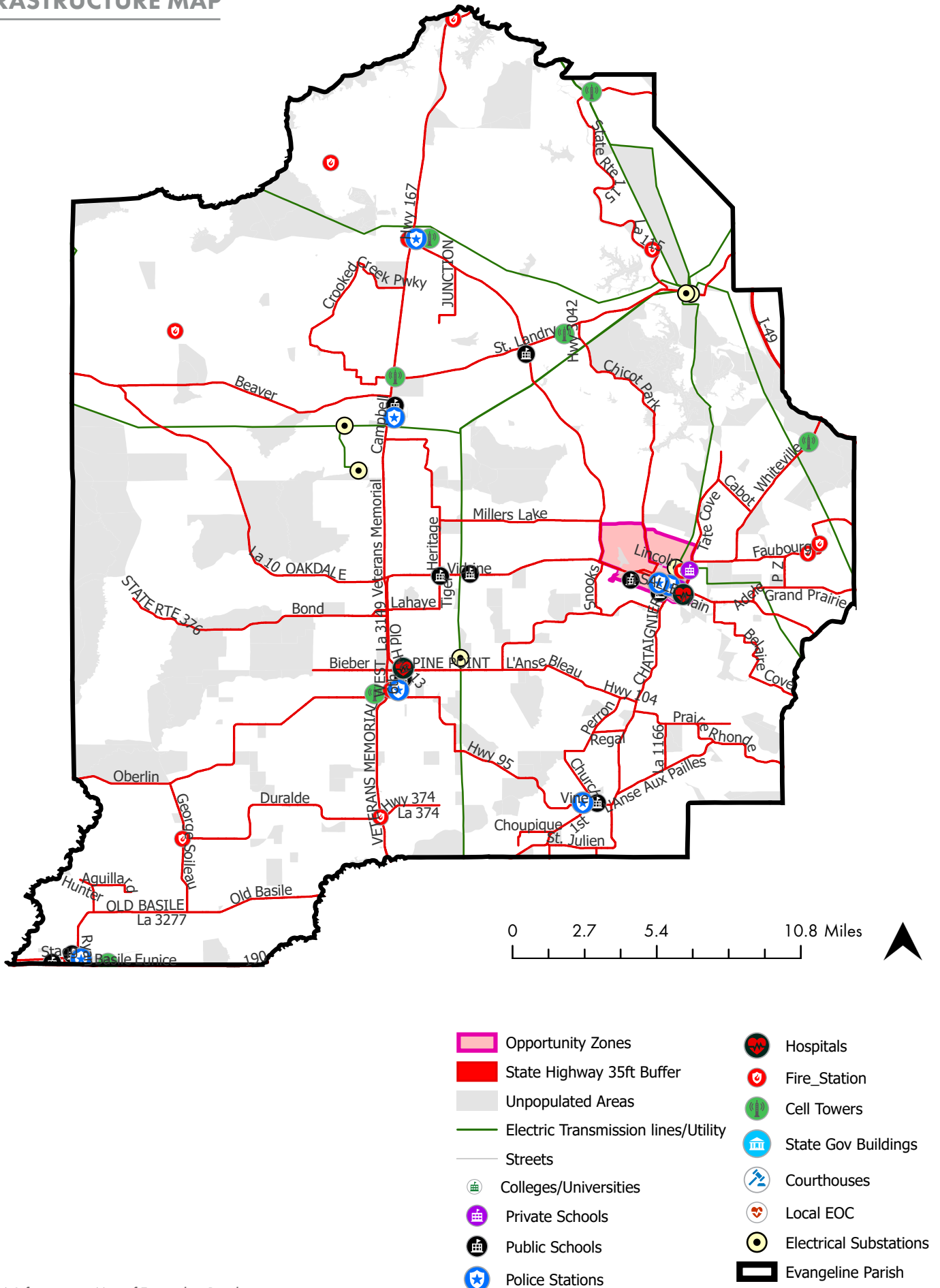


Figure 24: Infrastructure Map of Evangeline Parish

FCC DATA MAP

FCC Form 477 is derived from broadband industry self-reporting of advertised availability. Under FCC Form 477, a census block and addresses within it are considered served at the reported service level if a single location within that block can receive the advertised service regardless of cost or service-in-fact. It is important to note that while FCC Form 477 would indicate that more than a large portion of Evangeline Parish is considered served, speed test results indicate that more than three quarters of respondents are reporting actual speed test results below FCC's standard.

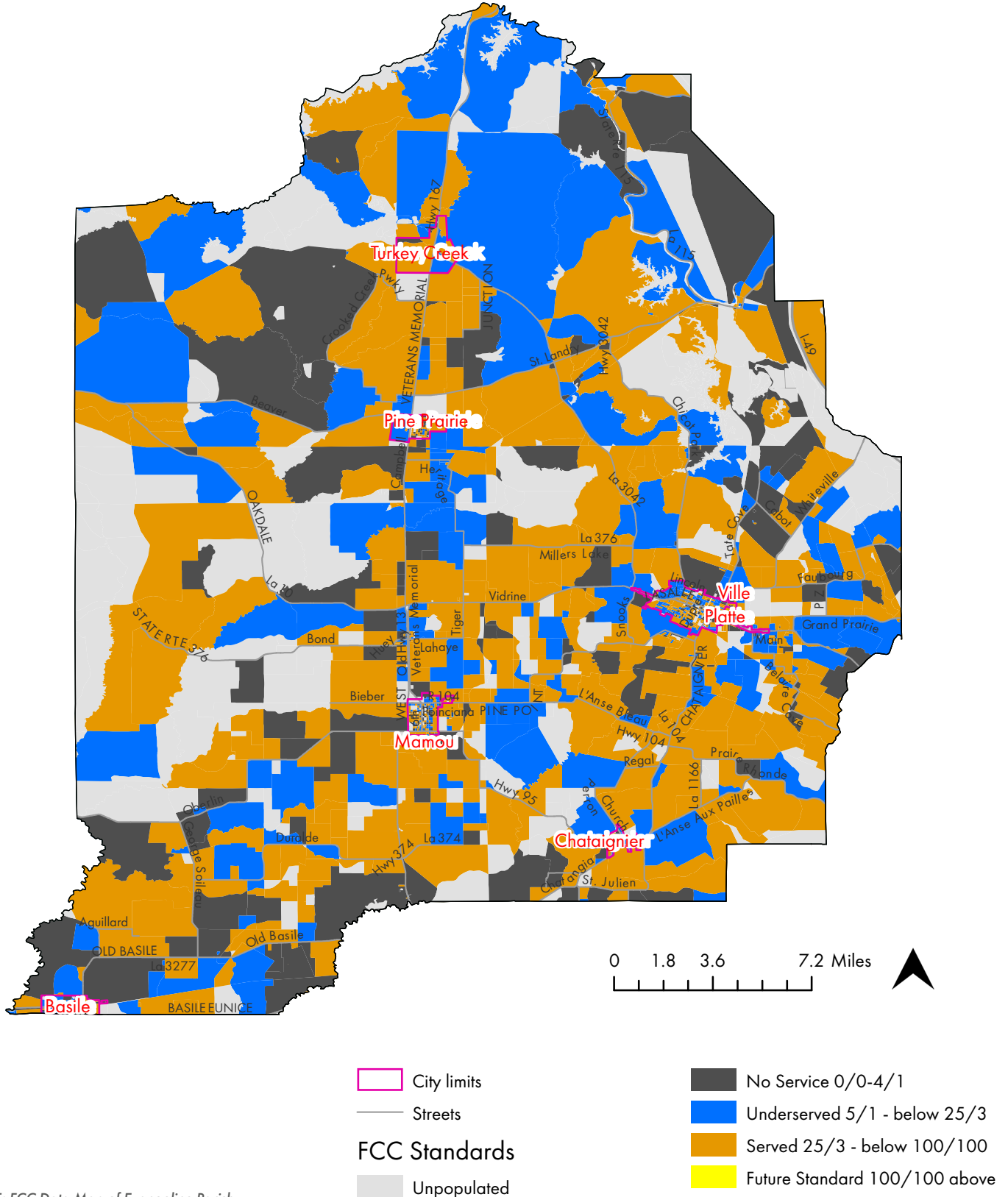


Figure 25: FCC Data Map of Evangeline Parish

EVANGELINE PARISH SPEED TEST RESULTS

The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 24 surveys were submitted from Evangeline Parish, of these 5 reported broadband speeds from census blocks that the FCC considers unserved and 20 were from census blocks that are considered served based on the December 2019 FCC Form 477 data.¹¹¹ Survey speed test data from Evangeline Parish and FCC Form 477 were mapped for comparison and can be seen in **Figures 25 and 26** respectively.

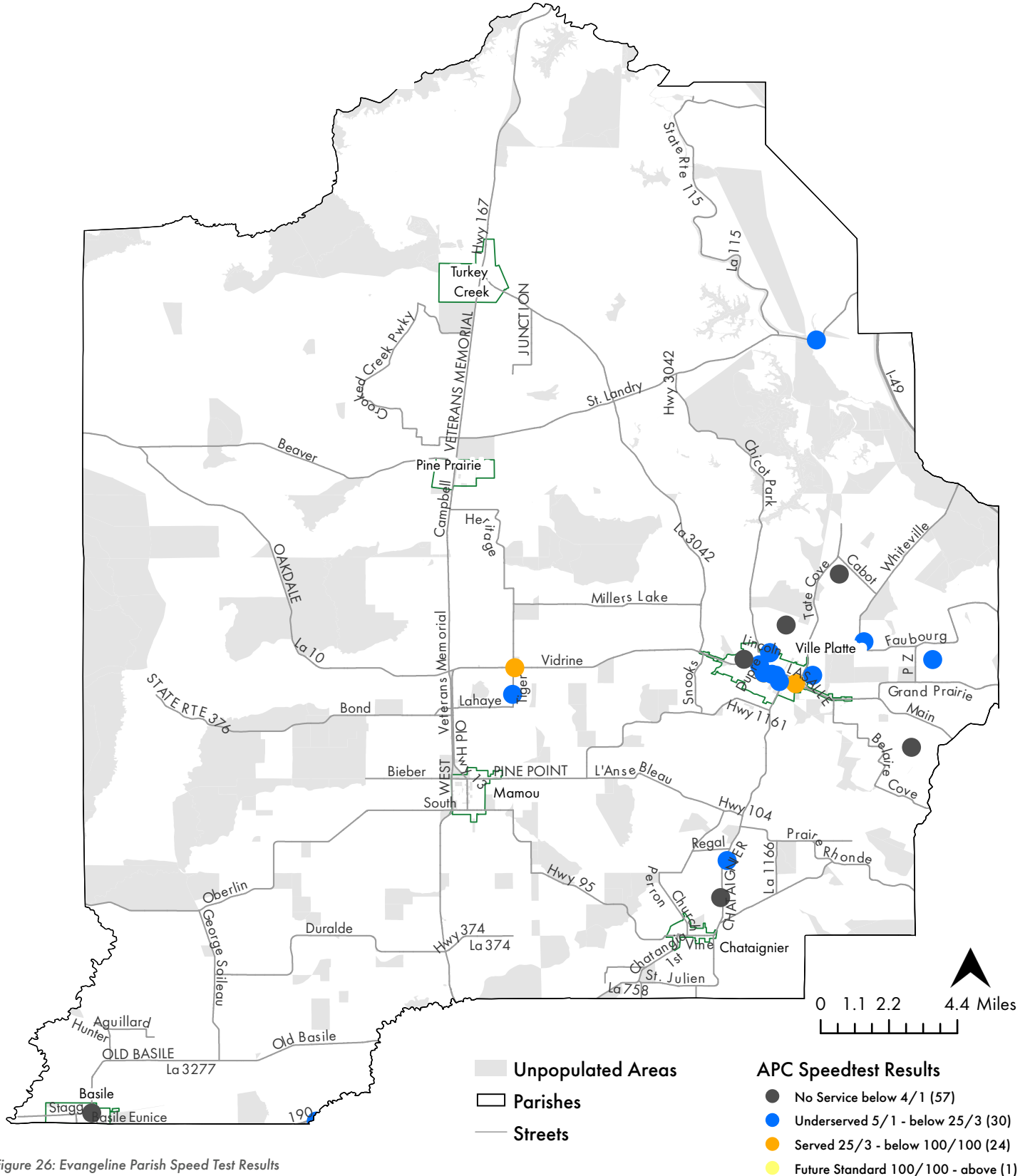


Figure 26: Evangeline Parish Speed Test Results

EVANGELINE PARISH SPEED TEST RESULTS CONTINUED

The median reported broadband speeds in Evangeline Parish were 10.06 Mbps download and 1.18 Mbps upload. Both are well below the FCC current definition of broadband of 25 Mbps download and 3 Mbps upload. The top three reported broadband service providers in Evangeline Parish were CenturyLink (18%), Conterra (3%), AT&T (1%) and Hughes Net (1%). A plurality of respondents (48.0%) in Evangeline Parish reported spending between \$50.00 and \$100.00 per month for broadband service.

Table 15: Reported Internet Providers in Evangeline Parish

REPORTED INTERNET PROVIDERS IN EVANGELINE PARISH:	
Provider	Percentage
AT&T	4%
Century Link	75%
Conterra	13%
Hughes Net	4%
Not Reported	4%

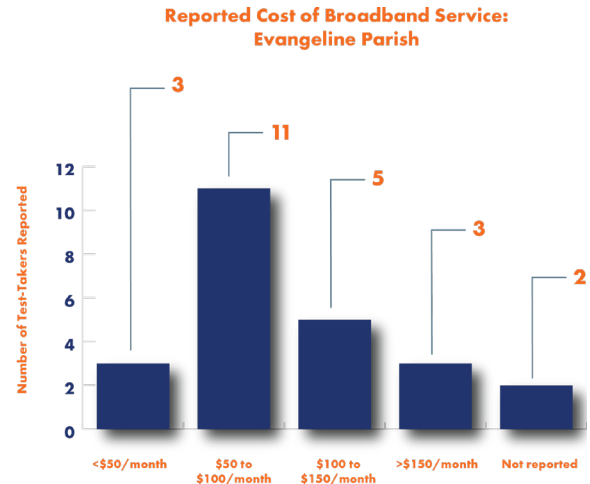


Figure 27: Reported broadband costs in Evangeline Parish

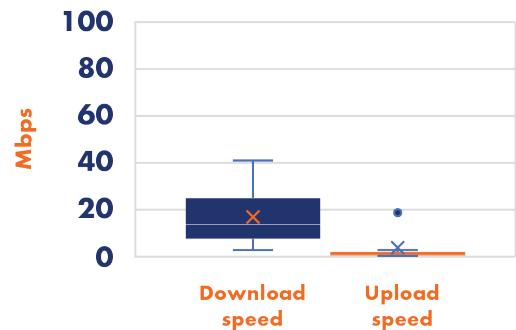


Figure 28: Reported broadband speed in Evangeline Parish

ADOPTION METRICS

In 2015-2019, Evangeline Parish had a total of 15,055 housing units.¹¹² Average household size was 2.63 people.¹¹³ 76.8% of existing housing units were single-family houses either not attached to any other structure or attached to one or more structures (commonly referred to as “townhouses” or “row houses”).¹¹⁴ 9.7% of the housing units were in multi-unit structures, or those buildings that contained two or more apartments.¹¹⁵ 13.4% were mobile homes, while any remaining housing units were classified as “other,” which included boats, recreational vehicles, vans, etc.¹¹⁶ 6.0% of the housing inventory was comprised of houses built since 2010, while 5.4% of the houses were first built

in 1939 or earlier.¹¹⁷ In 2015-2019, 12,172 housing units were occupied or had people living in them, while the remaining 2,883 were vacant.¹¹⁸ Of the occupied housing units, the percentage of these houses occupied by owners (also known as the homeownership rate) was 65.5% while renters occupied 34.5%.¹¹⁹ The median property value for owner-occupied houses was \$96,600.¹²⁰ For renter-occupied houses, the median gross rent was \$577.¹²¹ Gross rent includes the monthly contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

BUSINESS AND RESIDENTIAL CLUSTERS

As part of this assessment, address point data were analyzed to identify high-density clusters of housing and businesses in Evangeline Parish. Through a side-by-side comparison with FCC Form 477 Data and speed test data, cluster data will be used to define areas for broadband expansion under future funding opportunities. Identified clusters represent both incorporated and unincorporated areas throughout the region.

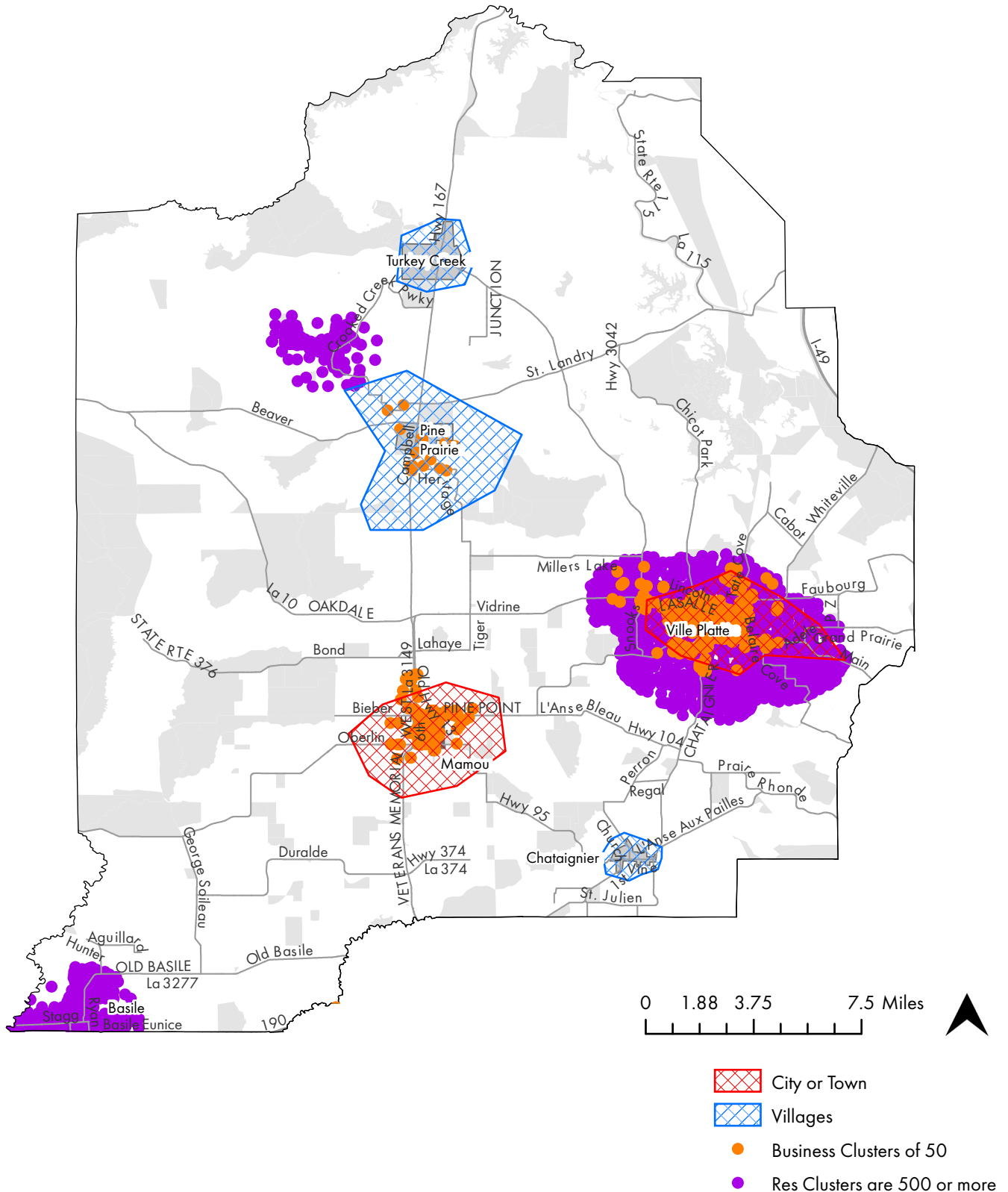
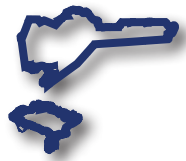


Figure 29: Business and Residential Clusters in Evangeline Parish

IBERIA PARISH



ABOUT IBERIA PARISH

Iberia Parish and its progressive communities are the place for exciting opportunities. Iberia Parish offers a hard-working labor force, cutting edge medical and industrial technology along with worldwide leaders in the exploration of oil and natural gas. The Opportunity Zones in Iberia Parish are located within New Iberia, the seat of Parish Government, and are a short distance from the Port of Iberia and the Acadiana Regional Airport.

DIGITAL DIVIDE METRICS

ACCESS METRICS

In 2019, the estimated overall poverty rate in Iberia Parish was 22.1%.¹²² Over 32.9% of children under 18 live below the poverty level, compared with 14.9% of people age 65 and older and 19.1% for individuals 18 to 64.¹²³

About 21% of households received SNAP (the Supplemental Nutrition Assistance Program).¹²⁴ Of these households, 61.8% had children under 18, and 24.4% included one or more people age 60 or older.¹²⁵ Over 44% of all households receiving SNAP were families with a female householder and no husband present.¹²⁶ About 24% of households receiving SNAP included two or more workers.¹²⁷

Renters were most likely to be cost-burdened in Iberia Parish than owners. Cost-burdened households in Iberia Parish, Louisiana accounted for 27.2% of homeowners with a mortgage, 6.7% of homeowners without a mortgage, and 51.8% of renters.¹²⁸ Households that pay thirty percent or more of their income on housing costs are considered cost burdened.

EDUCATION METRICS

According to 2019 ACS data, 79.9% of people 25 years and over have graduated from high school and 13.6% have a bachelor's degree or higher.¹²⁹ About 20.1% of adults have not completed high school.¹³⁰ The total K-12 school enrollment was 17,772.¹³¹ Nursery school enrollment was 1,258 and kindergarten through 12th grade enrollment was 13,971.¹³² College or graduate school enrollment was 2,543.¹³³

WORKFORCE METRICS

Over 54% of the population age 16 and older were employed; 39.5% were not currently in the labor force.¹³⁴ An estimated 81.6% of the people employed were private wage and salary workers; 11.4% were federal, state, or local government workers; and 6.7% were self-employed in their own (not incorporated) business.¹³⁵

AFFORDABILITY METRICS

The median household income was \$46,861.¹³⁶ An estimated 8.9% of households had income below \$10,000 a year and 1.8% had income over \$200,000 or more.¹³⁷

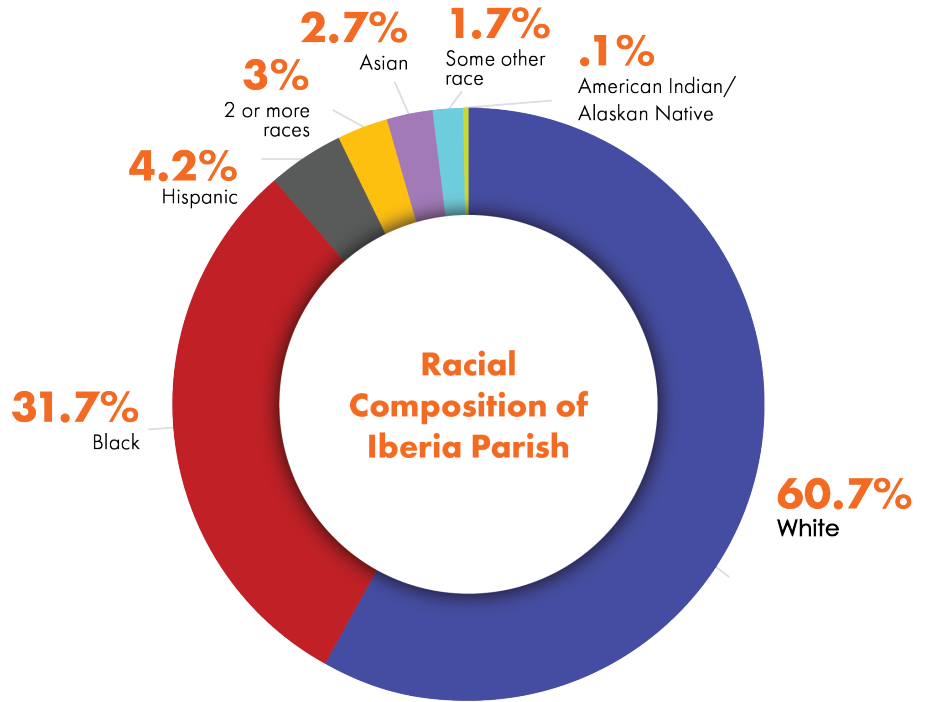


Port of Iberia

IBERIA PARISH BY THE NUMBERS

71,887
Population

36.5	Median Age
22.1%	Poverty Rate
26,184	Number of Households
\$46,861	Median Household Income
\$115,600	Median Home Value



TOTAL BUSINESSES
4,782



TOTAL EMPLOYED
54.9%

IBERIA PARISH AGE DISTRIBUTION

26.3%	UNDER 18
59.3%	18-64
14.5%	OVER 65

Figure 30: Demographic Information for Iberia Parish¹³⁸

INFRASTRUCTURE IN IBERIA PARISH

As part of this assessment geospatial data for Iberia Parish was catalogued and compiled into a mapping product, represented in **Figure 31**. Critical infrastructure included in this assessment included identification of utility and road rights-of-way that could support future broadband expansion. Major highways and their associated right of way are indicated in Red. Electric Transmission lines are indicated in green. Iberia Parish falls predominantly within the service area of the electric power companies CLECO and Entergy. Electric utility poles serve as a primary distribution for future broadband service or “last mile” installations. Under recent enabling legislation, electric cooperatives are required to “grant permission to a broadband affiliate or a broadband service provider to use the electric delivery system of the cooperative to provide broadband services...” when there is sufficient capacity, is safe to do so, does not reduce reliability of the electric service, or generally applicable engineering purposes make it unfeasible.¹³⁹ Map layers for these electric delivery lines are not currently available, but are generally presumed to serve all of the address points within the parish and are otherwise available for future broadband expansion.

Place-based economic development incentives, such as Opportunity Zones represent another form of critical infrastructure. Opportunity Zones are an economic development tool that allows people to invest in distressed communities.¹⁴⁰ Their purpose is to spur economic growth and job creation in low-income, high poverty rate communities while providing tax benefits to investors. Opportunity Zones were created under the Tax Cuts and Jobs Act of 2017.¹⁴¹ Within Iberia Parish, four Opportunity Zones are located in the City of New Iberia. To help attract outside investment APC has developed an Opportunity Zone Prospectus.¹⁴² Improvement of broadband services within the New Iberia Opportunity Zones are critical to maximize the potential impact of this economic development tool. Opportunity Zones are shaded pink and represent areas for future targeted investment.

Anchor institutions typically require high levels of broadband connectivity and reliability. Because of their role in providing essential public services, anchor institutions lacking reliable broadband Internet will be prioritized in future broadband expansion plans. Point data for anchor institutions such as: colleges and universities, private and public elementary and secondary schools, police stations, hospitals and nursing homes, fire stations, state government buildings, courthouses, and emergency operations centers are identified with institution-specific icons in **Figure 31**. Also included for Iberia Parish in **Figure 31**, are the locations of existing cell towers and electric substations which are both dependent upon broadband.



INFRASTRUCTURE MAP

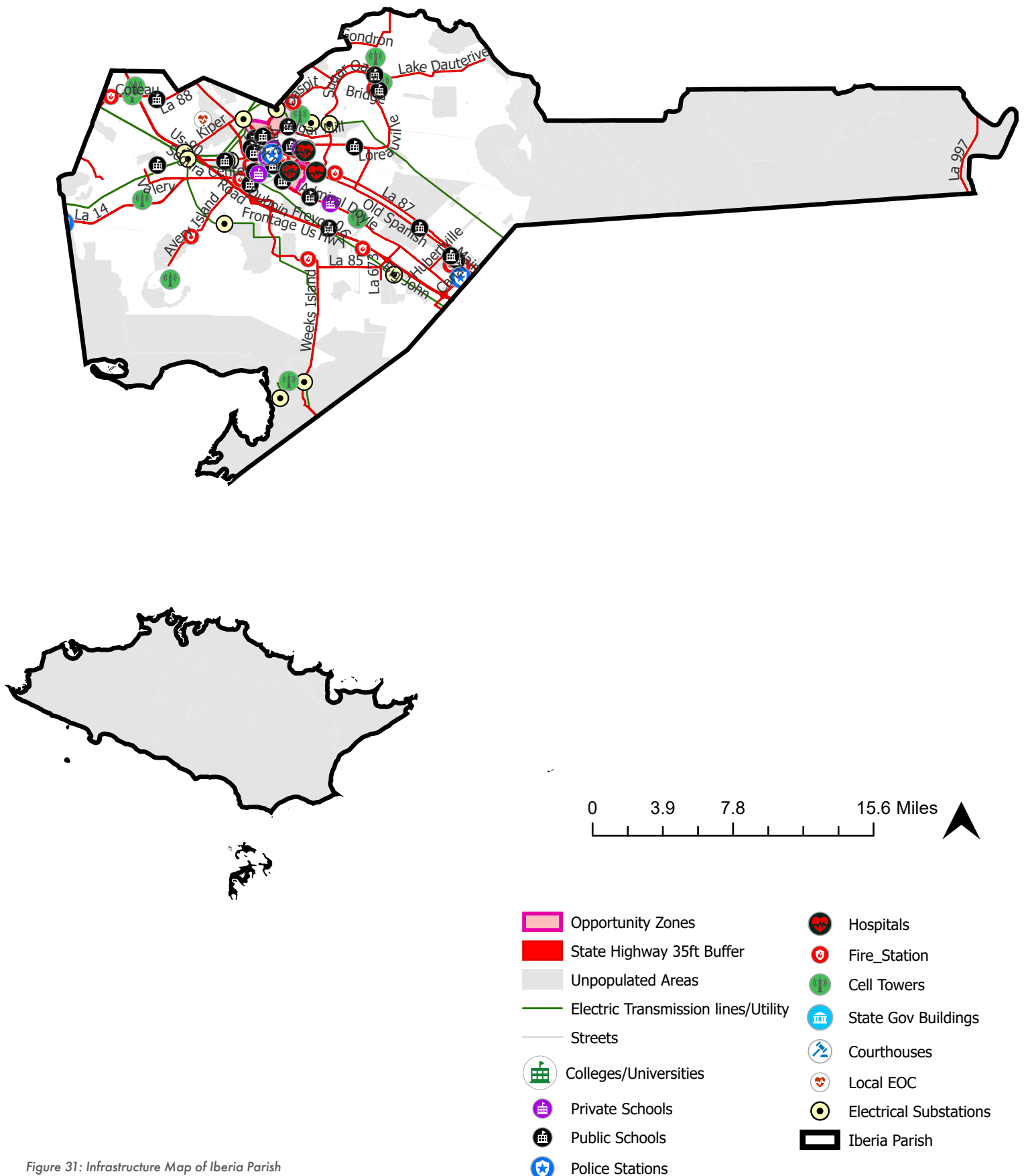


Figure 31: Infrastructure Map of Iberia Parish

FCC DATA MAP

FCC Form 477 is derived from broadband industry self-reporting of advertised availability. Under FCC Form 477, a census block and addresses within it are considered served at the reported service level if a single location within that block can receive the advertised service regardless of cost or service-in-fact. It is important to note that while FCC Form 477 would indicate that more than a large portion of Iberia Parish is considered served, speed test results indicate that more than three quarters of respondents are reporting actual speed test results below FCC’s standard.

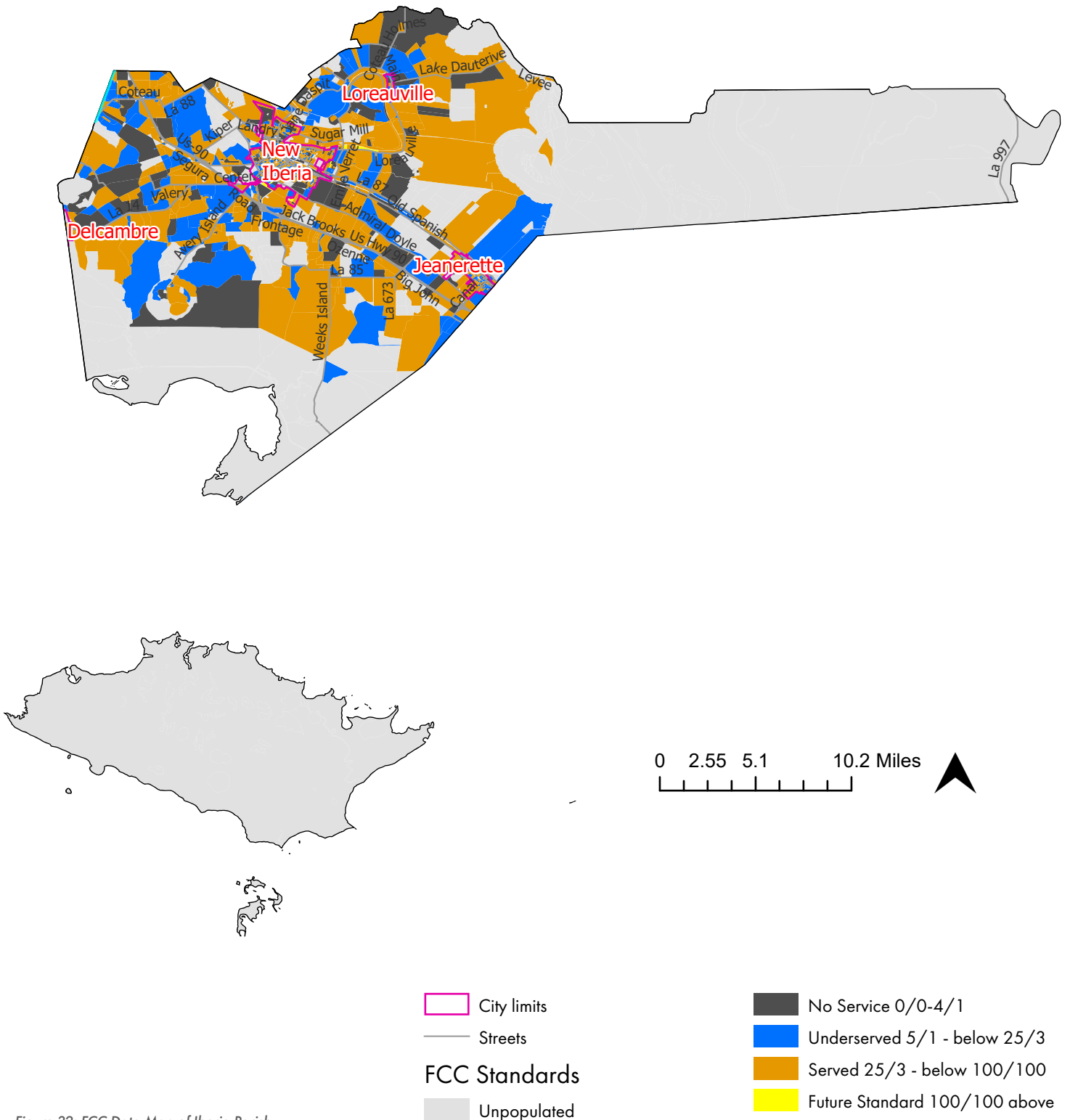


Figure 32: FCC Data Map of Iberia Parish

IBERIA PARISH SPEED TEST RESULTS

The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 65 surveys were submitted from Iberia Parish, of these 11 reported broadband speeds from census blocks that the FCC considers unserved and 54 were from census blocks that are considered served based on the December 2019 FCC Form 477 data.¹⁴³ One survey response was not able to be attributed to a specific census block. Survey speed test data from Iberia Parish and FCC Form 477 were mapped for comparison and can be seen in **Figures 32 and 33** respectively.

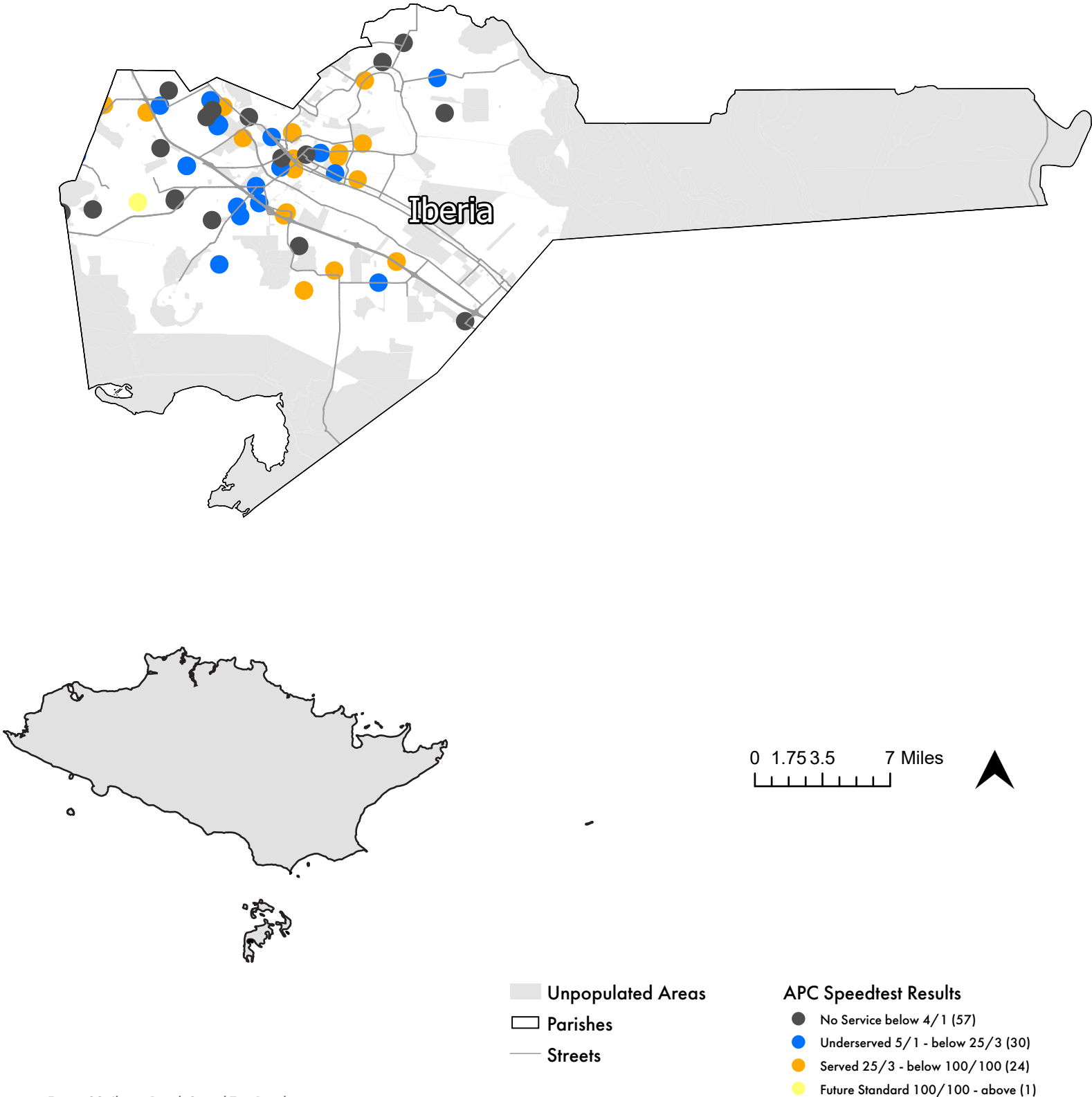


Figure 33: Iberia Parish Speed Test Results

IBERIA PARISH SPEED TEST RESULTS CONTINUED

The median reported broadband speeds in Iberia Parish were 26.7 Mbps download and 7.00 Mbps upload. Speeds are slightly above the FCC current definition of broadband of 25 Mbps download and 3 Mbps upload. The top three reported broadband service providers in Iberia Parish were Cox Communications (45%), AT&T (30%), and Suddenlink (14%). A plurality of respondents (38.5%) in Iberia Parish reported spending between \$50.00 and \$100.00 per month for broadband service while almost one quarter (23.1%) reported spending \$150 or more per month for broadband service.

Table 16: Reported Internet Providers in Iberia Parish

REPORTED INTERNET PROVIDERS IN IBERIA PARISH:	
Provider	Percentage
AT&T	29%
Cajun Broadband	2%
Cox	45%
DETEL	2%
HughesNet	2%
Suddenlink	14%
Not Reported	10%

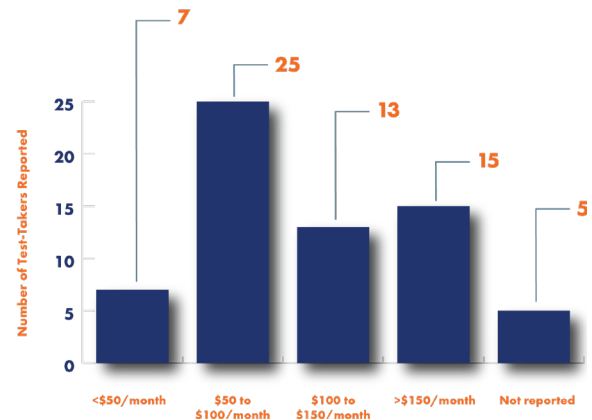


Figure 34: Reported broadband costs in Iberia Parish

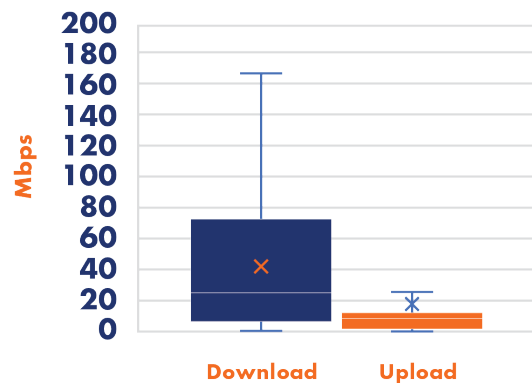


Figure 35: Reported broadband speed in Iberia Parish

ADOPTION METRICS

In 2015-2019, Iberia Parish had a total of 30,595 housing units.¹⁴⁴ 67.7% of existing housing units were single-family houses either not attached to any other structure or attached to one or more structures (commonly referred to as “townhouses” or “row houses”).¹⁴⁵ 11.1% of the housing units were in multi-unit structures, or those buildings that contained two or more apartments.¹⁴⁶ 21.0% were mobile homes, while any remaining housing units were classified as “other,” which included boats, recreational vehicles, vans, etc.¹⁴⁷ 5.3% of the housing inventory was comprised of houses built since 2010, while 7.7% of the houses were

first built in 1939 or earlier.¹⁴⁸ In 2015-2019, 26,184 housing units were occupied or had people living in them, while the remaining 4,411 were vacant.¹⁴⁹ Of the occupied housing units, the percentage of these houses occupied by owners (also known as the homeownership rate) was 67.9% while renters occupied 32.1%.¹⁵⁰ The median property value for owner-occupied houses was \$115,600.¹⁵¹ For renter-occupied houses, the median gross rent was \$768.¹⁵² Gross rent includes the monthly contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

BUSINESS AND RESIDENTIAL CLUSTERS

As part of this assessment, address point data were analyzed to identify high-density clusters of housing and businesses in Iberia Parish. Through a side-by-side comparison with FCC Form 477 Data and speed test data, cluster data will be used to define areas for broadband expansion under future funding opportunities. Identified clusters represent both incorporated and unincorporated areas throughout the region.

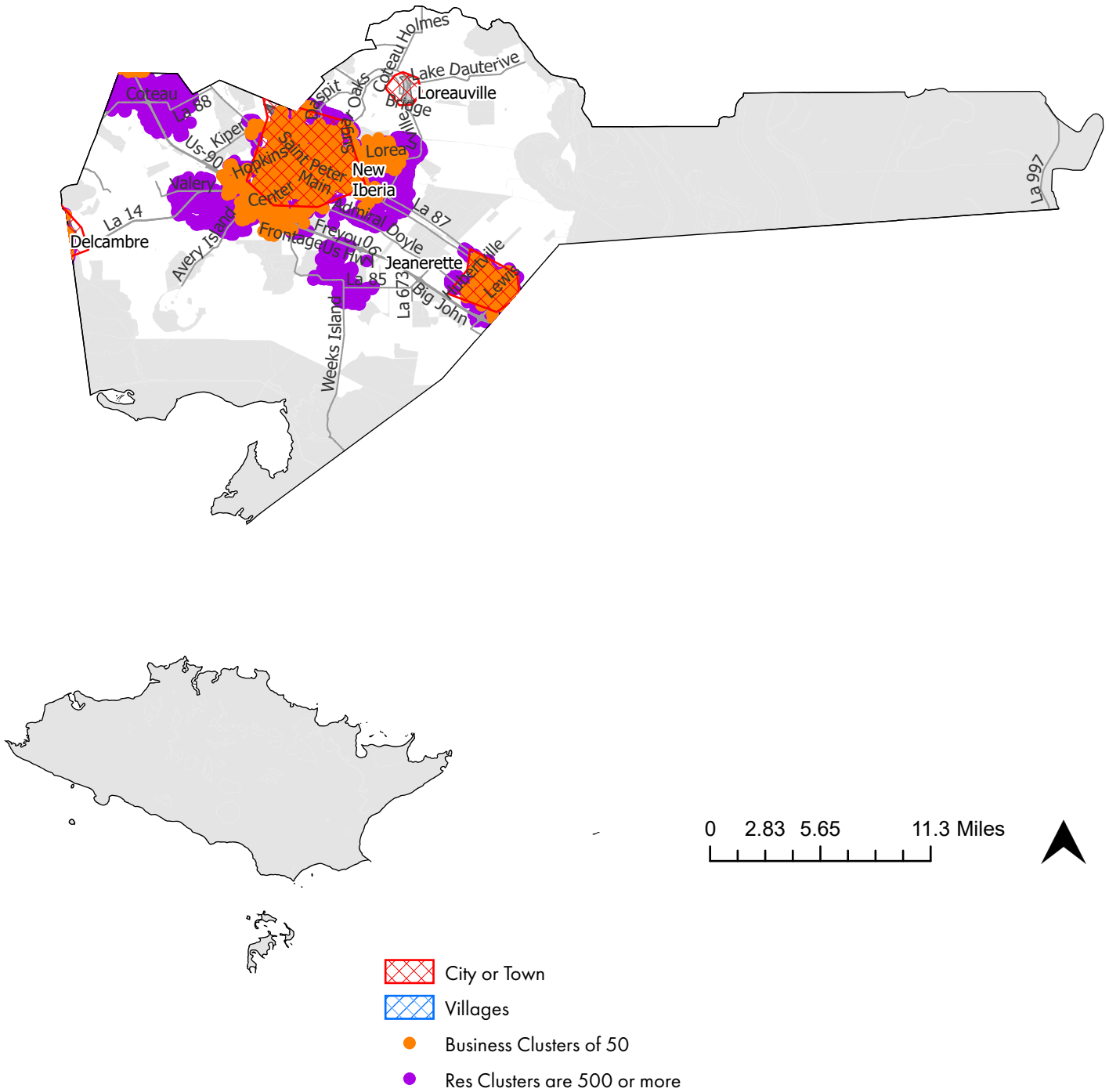
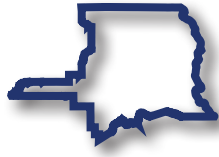


Figure 36: Business and Residential Clusters in Iberia Parish

ST. LANDRY PARISH



ABOUT ST. LANDRY PARISH

St. Landry Parish is home to a hard-working and highly-trained population. Its proximity to I-10 and I-49 along with U.S. Highways 190, 167 and 71, provide north-south and east-west connectivity to north Louisiana and Texas. St. Landry Parish's Opportunity Zones are located in the Cities of Eunice and Opelousas. The Eunice Opportunity Zone is located adjacent to the Louisiana State University at Eunice Campus while the three Opelousas Opportunity Zones are in and around the city's historic downtown.

DIGITAL DIVIDE METRICS

ACCESS METRICS

In 2019, the estimated poverty rate in St. Landry Parish was 26.2%.¹⁵³ Over 37.8% of children under 18 live below the poverty level, compared with 19.8% of people age 65 and older and 22.6% for individuals age 18 to 64 years.¹⁵⁴

Almost 18% of households received SNAP (the Supplemental Nutrition Assistance Program).¹⁵⁵ Of these households, 54.1% had children under 18, and 27.6% included one or more people age 60 or older.¹⁵⁶ Over 5.6% of all households receiving SNAP were families with a female householder and no husband present.¹⁵⁷ Almost 18% of households receiving SNAP included two or more workers.¹⁵⁸

Renters were most likely to be cost-burdened in St. Landry Parish than owners. Cost-burdened households accounted for 24.4% of homeowners with a mortgage, 11.0% of homeowners without a mortgage, and 50.9% of renters.¹⁵⁹ Households that pay thirty percent or more of their income on housing costs are considered cost burdened.

EDUCATION METRICS

According to 2019 ACS data, 76.7% of people 25 years and over have graduated from high school and 14.8% have a bachelor's degree or higher.¹⁶⁰ About 23.3% of adults have not completed high school.¹⁶¹ The total K-12 school enrollment was 19,842.¹⁶² Nursery school enrollment was 1,383 and kindergarten through 12th grade enrollment was 16,334.¹⁶³ College or graduate school enrollment was 2,125.¹⁶⁴

WORKFORCE METRICS

About 49.4% of the population age 16 and older were employed; 47.4% were not currently in the labor force.¹⁶⁵ An estimated 81.3% of the people employed were private wage and salary workers; 12.5% were federal, state, or local government workers; and 6.2% were self-employed in their own (not incorporated) business.¹⁶⁶

AFFORDABILITY METRICS

The median household income was \$36,403.¹⁶⁷ An estimated 15.2% of households had income below \$10,000 a year and 2.2% had income over \$200,000 or more.¹⁶⁸

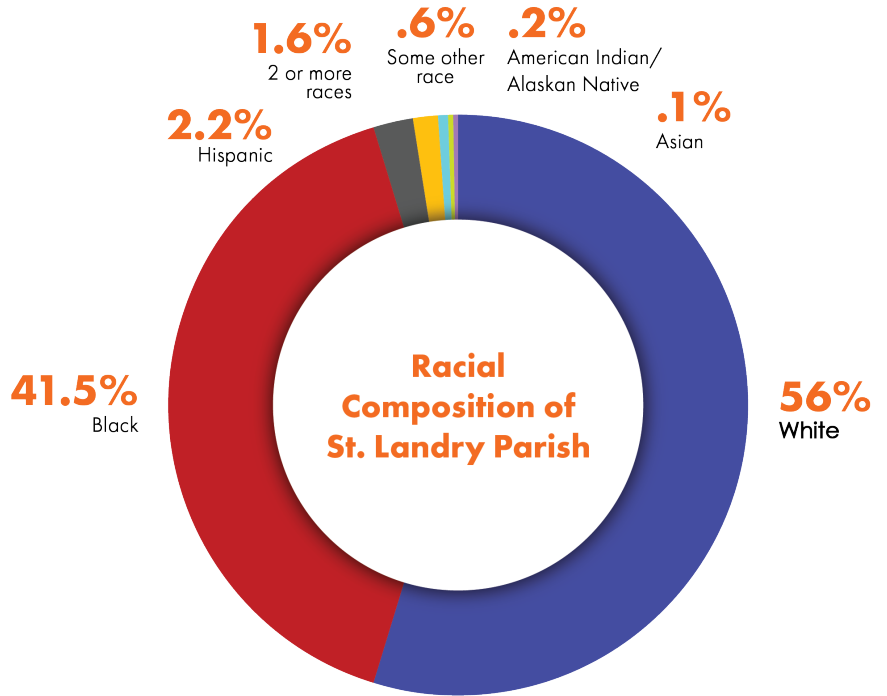


Walmart Distribution Center in Opelousas

ST. LANDRY PARISH BY THE NUMBERS

83,172
Population

36.7	Median Age
26.2%	Poverty Rate
30,485	Number of Households
\$36,403	Median Household Income
\$108,400	Median Home Value



TOTAL BUSINESSES
5,411



TOTAL EMPLOYED
49.4%

ST. LANDRY PARISH
AGE DISTRIBUTION

26.8%	UNDER 18
57.3%	18-64
15.8%	OVER 65

Figure 37: Demographic Information for St. Landry Parish 169

INFRASTRUCTURE IN ST. LANDRY PARISH

As part of this assessment geospatial data for St. Landry Parish was catalogued and compiled into a mapping product, represented in **Figure 38**. Critical infrastructure included in this assessment included identification of utility and road rights-of-way that could support future broadband expansion. Major highways and their associated right of way are indicated in Red. Electric Transmission lines are indicated in green. St. Landry Parish falls predominantly within the service area of the electric power companies CLECO, SLEMCO, and Entergy. Electric utility poles serve as a primary distribution for future broadband service or “last mile” installations. Under recent enabling legislation, electric cooperatives are required to “grant permission to a broadband affiliate or a broadband service provider to use the electric delivery system of the cooperative to provide broadband services...” when there is sufficient capacity, is safe to do so, does not reduce reliability of the electric service, or generally applicable engineering purposes make it unfeasible.¹⁷⁰ Map layers for these electric delivery lines are not currently available, but are generally presumed to serve all of the address points within the parish and are otherwise available for future broadband expansion.

Place-based economic development incentives, such as Opportunity Zones represent another form of critical infrastructure. Opportunity Zones are an economic development tool that allows people to invest in distressed communities.¹⁷¹ Their purpose is to spur economic growth and job creation in low-income, high poverty rate communities while providing tax benefits to investors. Opportunity Zones were created under the Tax Cuts and Jobs Act of 2017.¹⁷² Within St. Landry Parish, Opportunity Zones are located in the City of Opelousas (3) and Town Eunice (1). To help attract outside investment APC has developed an Opportunity Zone Prospectus.¹⁷³ Improvement of broadband services within the Opelousas and Eunice Opportunity Zones is critical to maximize the potential impact of this economic development tool. Opportunity Zones are shaded pink and represent areas for future targeted investment.

Anchor institutions typically require high levels of broadband connectivity and reliability. Because of their role in providing essential public services, anchor institutions lacking reliable broadband Internet will be prioritized in future broadband expansion plans. Point data for anchor institutions such as: colleges and universities, private and public elementary and secondary schools, police stations, hospitals and nursing homes, fire stations, state government buildings, courthouses, and emergency operations centers are identified with institution-specific icons in **Figure 38**. Also included for St. Landry Parish in **Figure 38**, are the locations of existing cell towers and electric substations which are both dependent upon broadband.



INFRASTRUCTURE MAP

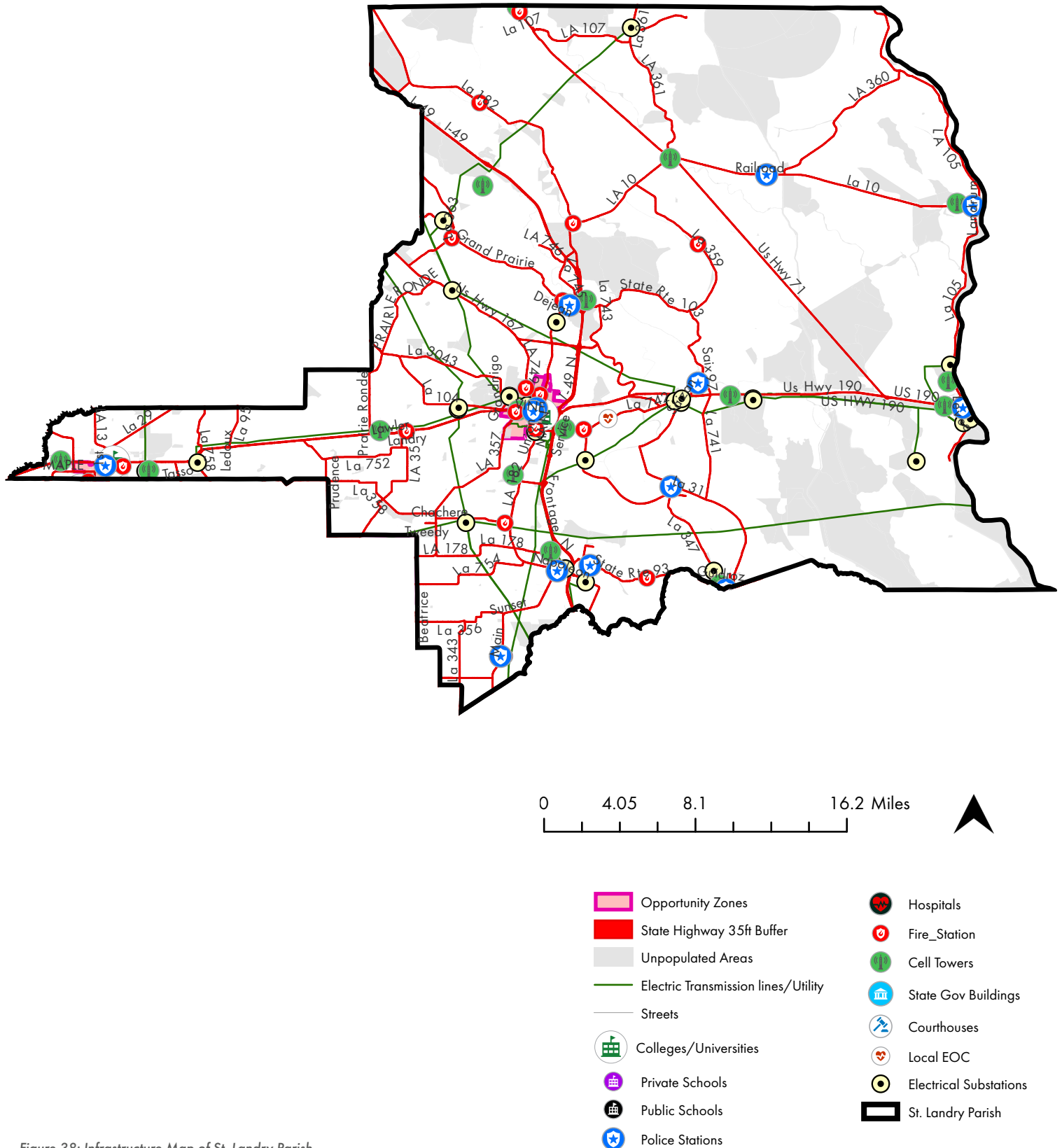
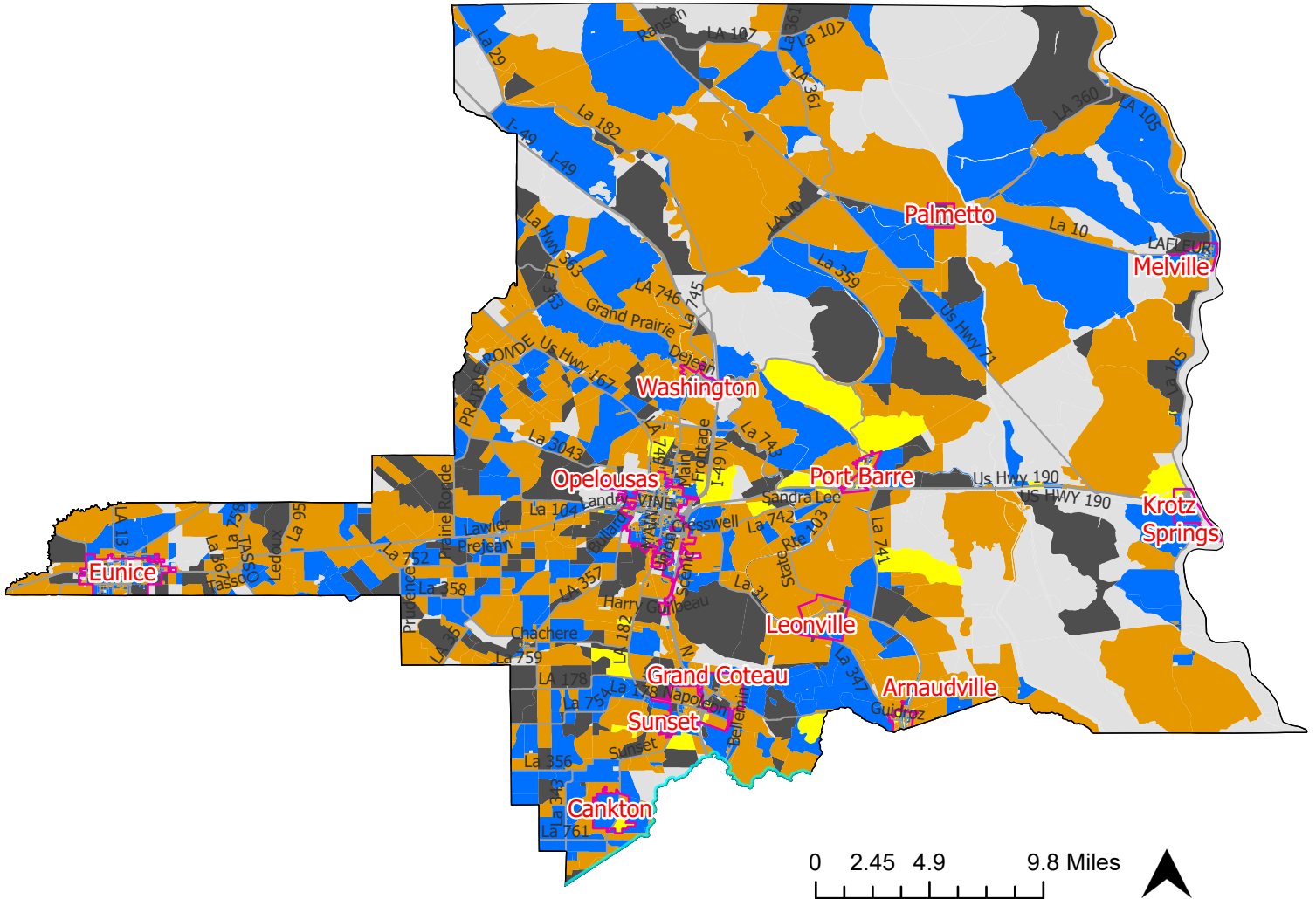


Figure 38: Infrastructure Map of St. Landry Parish

FCC DATA MAP

FCC Form 477 is derived from broadband industry self-reporting of advertised availability. Under FCC Form 477, a census block and addresses within it are considered served at the reported service level if a single location within that block can receive the advertised service regardless of cost or service-in-fact. It is important to note that while FCC Form 477 would indicate that more than a large portion of St. Landry Parish is considered served, speed test results indicate that more than three quarters of respondents are reporting actual speed test results below FCC's standard.



- City limits
- Streets
- FCC Standards**
- No Service 0/0-4/1
- Underserved 5/1 - below 25/3
- Served 25/3 - below 100/100
- Future Standard 100/100 above
- Unpopulated

Figure 39: FCC Data Map of St. Landry Parish

ST. LANDRY PARISH SPEED TEST RESULTS

The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 209 surveys were submitted from St. Landry Parish, of these 25 reported broadband speeds from census blocks that the FCC considers unserved and 169 were from census blocks that are considered served based on the December 2019 FCC Form 477 data.¹⁷⁴ Responses from 16 surveys were not easily attributable to a specific census block. Survey speed test data from St. Landry Parish and FCC Form 477 were mapped for comparison and can be seen in **Figures 39 and 40** respectively.

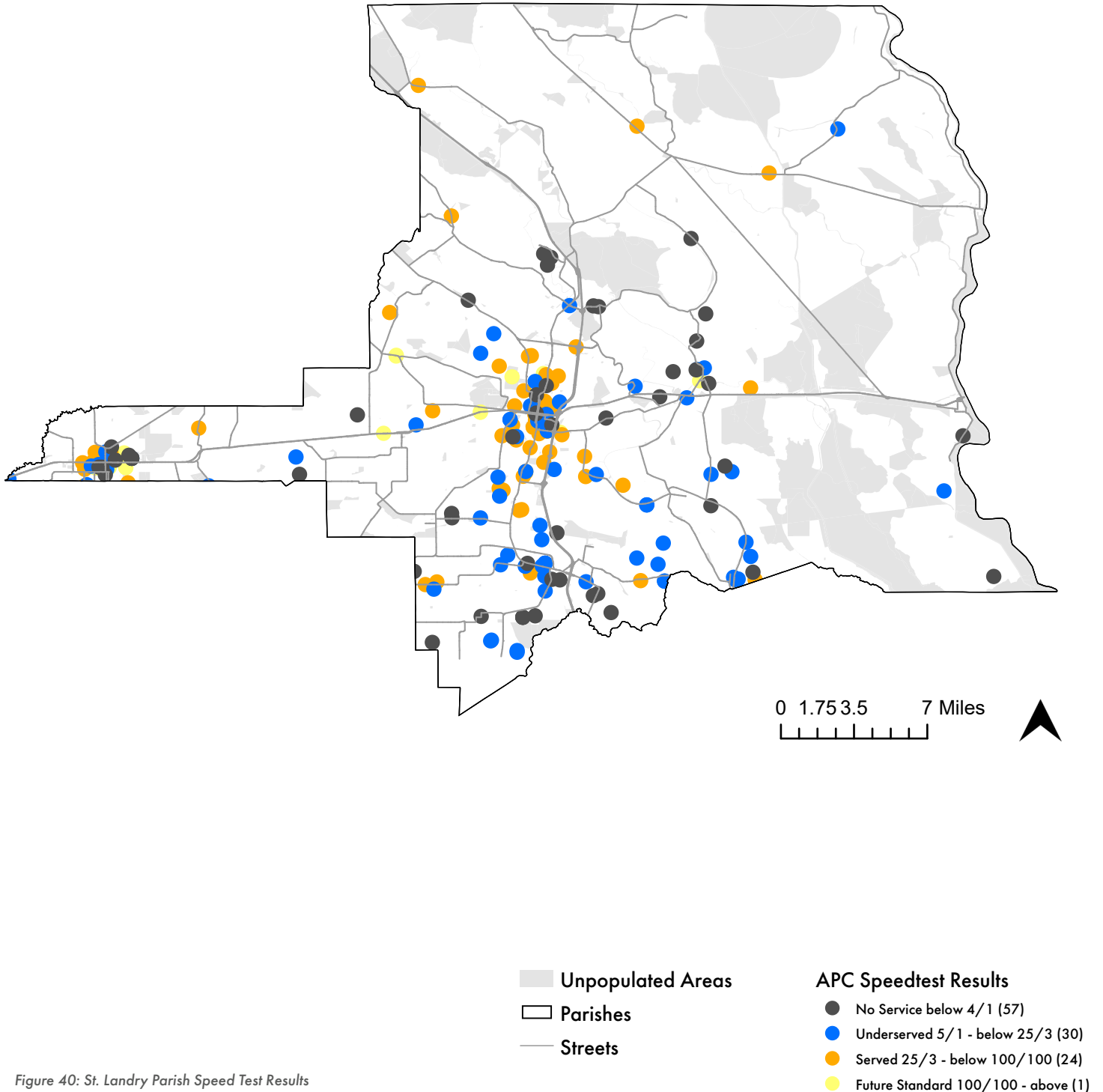


Figure 40: St. Landry Parish Speed Test Results

ST. LANDRY SPEED TEST RESULTS CONTINUED

The median reported broadband speeds in St. Landry Parish were 17.68 Mbps download and 5.44 Mbps upload. Both are well below the FCC current definition of broadband of 25 Mbps download and 3 Mbps upload. The top three reported broadband service providers in St. Landry Parish were AT&T (27%), Spectrum (18%), and Centurylink (16%). The majority of respondents (55.5%) in St. Landry Parish reported spending between \$50.00 and \$100.00 per month for broadband service.

Table 17: Reported Internet Providers in St. Landry Parish

REPORTED INTERNET PROVIDERS IN ST. LANDRY PARISH:	
Provider	Percentage
Acadiana Broadband	1%
Acadiana Wireless	3%
Allen's Cable	1%
AT&T	27%
CenturyLink	16%
Charter	5%
Cricket	1%
Hughes Net	1%
Spectrum	18%
T-Mobile	1%
Viasat	1%
Not Reported	22%

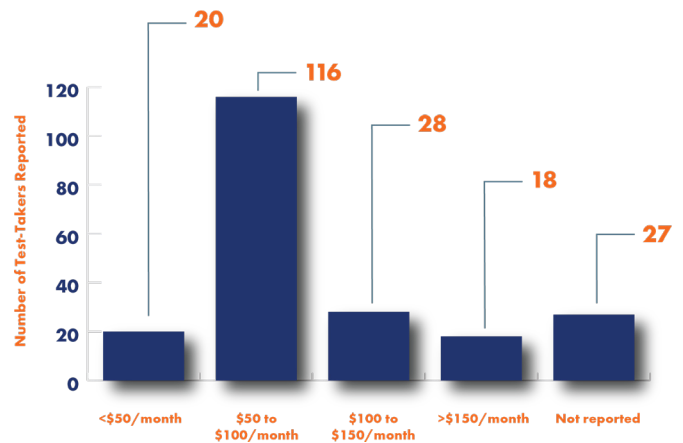


Figure 41: Reported broadband costs in St. Landry

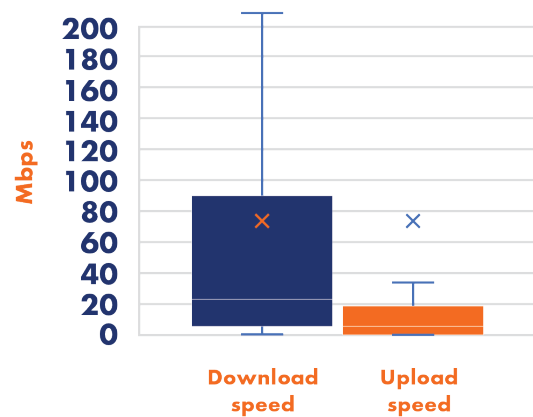


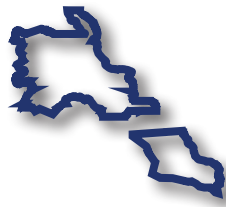
Figure 42: Reported broadband speed in St. Landry Parish

ADOPTION METRICS

In 2015-2019, St. Landry Parish had a total of 36,925 housing units and 70.1% of existing housing units were single-family houses either not attached to any other structure or attached to one or more structures (commonly referred to as "townhouses" or "row houses").¹⁷⁵ 8.8% of the housing units were in multi-unit structures, or those buildings that contained two or more apartments.¹⁷⁶ 20.8% were mobile homes, while any remaining housing units were classified as "other," which included boats, recreational vehicles, vans, etc.¹⁷⁷ 4.5% of the housing inventory was comprised of houses built since 2010, while 2.6% of the houses were

first built in 1939 or earlier.¹⁷⁸ In 2015-2019, 30,485 housing units were occupied or had people living in them, while the remaining 6,440 were vacant.¹⁷⁹ Of the occupied housing units, the percentage of these houses occupied by owners (also known as the homeownership rate) was 68.3% while renters occupied 31.7%.¹⁸⁰ The median property value for owner-occupied houses was \$108,400.¹⁸¹ For renter-occupied houses, the median gross rent was \$652.¹⁸² Gross rent includes the monthly contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

ST. MARTIN PARISH



ABOUT ST. MARTIN PARISH

With a population of approximately 53,000, St. Martin Parish is part of the Lafayette MSA and sits at the corridor of both Interstate 10 and U.S. Highway 90. St. Martin Parish is the only parish to have non-contiguous parts, in that, there are three major geographical areas dividing the 740 square mile parish, including the Atchafalaya Basin, the prairie, and the Bayou Teche area, on which several noteworthy cities, including the parish seat of St. Martinville, are located.

DIGITAL DIVIDE METRICS

ACCESS METRICS

In 2019, the estimated overall poverty rate in St. Martin Parish was 18.9%.¹⁸³ About 28.4% of children under 18 live below the poverty level, compared with 14.4% of people age 65 or older and 16.3% of individuals age 18 to 64.¹⁸⁴

About 16.1% of households received SNAP (the Supplemental Nutrition Assistance Program).¹⁸⁵ Of these households, 61.7% had children under 18, and 32.8% included one or more people age 60 or older.¹⁸⁶ Over 43.0% of all households receiving SNAP were families with a female householder and no husband present.¹⁸⁷ About 23.4% of households receiving SNAP included two or more workers.¹⁸⁸

Renters were most likely to be cost-burdened in St. Martin Parish than owners. Cost-burdened households accounted for 25.2% of homeowners with a mortgage, 8.2% of homeowners without a mortgage, and 49.8% of renters.¹⁸⁹ Households that pay thirty percent or more of their income on housing costs are considered cost burdened.

EDUCATION METRICS

According to 2019 ACS data, 81.9% of people 25 years and over have graduated from high school and 14.5% have a bachelor's degree or higher.¹⁹⁰ About 18.1% of adults have not completed high school.¹⁹¹ The total K-12 school enrollment was 12,330.¹⁹² Nursery school enrollment was 780 and kindergarten through 12th grade enrollment was 9,833.¹⁹³ College or graduate school enrollment was 1,717.¹⁹⁴

WORKFORCE METRICS

Over 53.8% of the population age 16 and older were employed; 41.6% were not currently in the labor force.¹⁹⁵ An estimated 77.4% of the people employed were private wage and salary workers; 14.7% were federal, state, or local government workers; and 7.5% were self-employed in their own (not incorporated) business.¹⁹⁶

AFFORDABILITY METRICS

The median household income was \$48,656.¹⁹⁷ An estimated 9.0% of households had income below \$10,000 a year and 3.4% had income over \$200,000 or more.¹⁹⁸

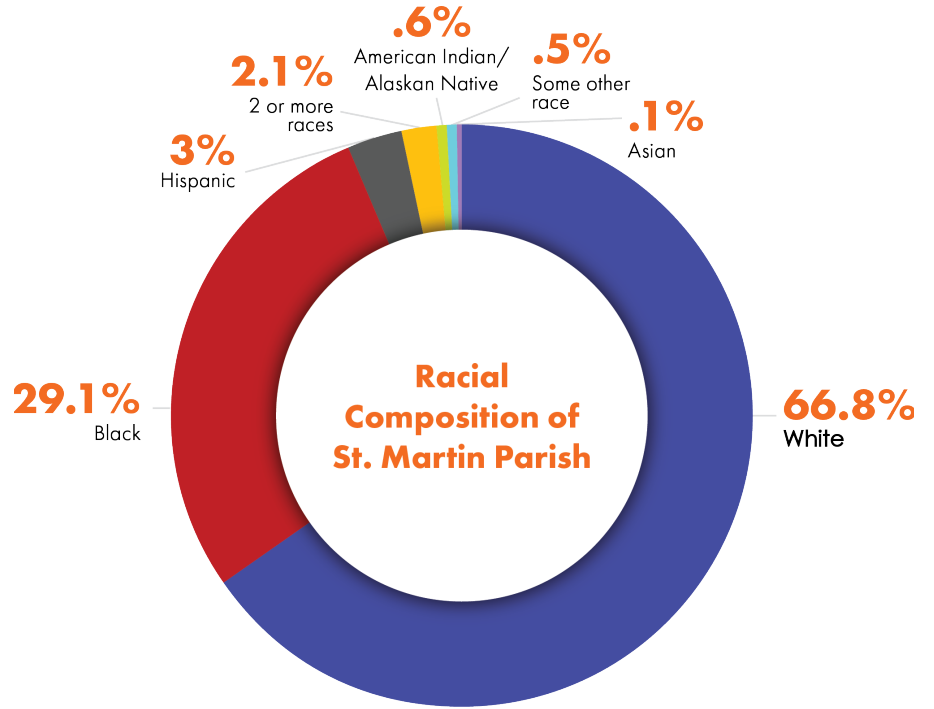


Lake Martin in Breaux Bridge

ST. MARTIN PARISH BY THE NUMBERS

53,732
Population

37.7	Median Age
18.9%	Poverty Rate
19,749	Number of Households
\$48,656	Median Household Income
\$124,900	Median Home Value



TOTAL BUSINESSES
3,205



TOTAL EMPLOYED
53.8%

ST. MARTIN PARISH AGE DISTRIBUTION

24.3%	UNDER 18
60.9%	18-64
14.7%	OVER 65

Figure 44: Demographic Information for St. Martin Parish 199

INFRASTRUCTURE IN ST. MARTIN PARISH

As part of this assessment geospatial data for St. Martin Parish was catalogued and compiled into a mapping product, represented in **Figure 45**. Critical infrastructure included in this assessment included identification of utility and road rights-of-way that could support future broadband expansion. Major highways and their associated right of way are indicated in Red. Electric Transmission lines are indicated in green. St. Martin Parish falls predominantly within the service area of the electric power companies Entergy, CLECO, and SLEMCO. Electric utility poles serve as a primary distribution for future broadband service or “last mile” installations. Under recent enabling legislation, electric cooperatives are required to “grant permission to a broadband affiliate or a broadband service provider to use the electric delivery system of the cooperative to provide broadband services...” when there is sufficient capacity, is safe to do so, does not reduce reliability of the electric service, or generally applicable engineering purposes make it unfeasible.²⁰⁰ Map layers for these electric delivery lines are not currently available, but are generally presumed to serve all of the address points within the parish and are otherwise available for future broadband expansion.

Place-based economic development incentives, such as Opportunity Zones represent another form of critical infrastructure. Opportunity Zones are an economic development tool that allows people to invest in distressed communities.²⁰¹ Their purpose is to spur economic growth and job creation in low-income, high poverty rate communities while providing tax benefits to investors. Opportunity Zones were created under the Tax Cuts and Jobs Act of 2017.²⁰² Within St. Martin Parish, an Opportunity Zone are located in the City of Breaux Bridge. To help attract outside investment APC has developed an Opportunity Zone Prospectus.²⁰³ Improvement of broadband services within the Breaux Bridge Opportunity Zone is critical to maximize the potential impact of this economic development tool. Opportunity Zones are shaded pink and represent areas for future targeted investment.

Anchor institutions typically require high levels of broadband connectivity and reliability. Because of their role in providing essential public services, anchor institutions lacking reliable broadband Internet will be prioritized in future broadband expansion plans. Point data for anchor institutions such as: colleges and universities, private and public elementary and secondary schools, police stations, hospitals and nursing homes, fire stations, state government buildings, courthouses, and emergency operations centers are identified with institution-specific icons in **Figure 45**. Also included for St. Martin Parish in **Figure 45**, are the locations of existing cell towers and electric substations which are both dependent upon broadband.



INFRASTRUCTURE MAP

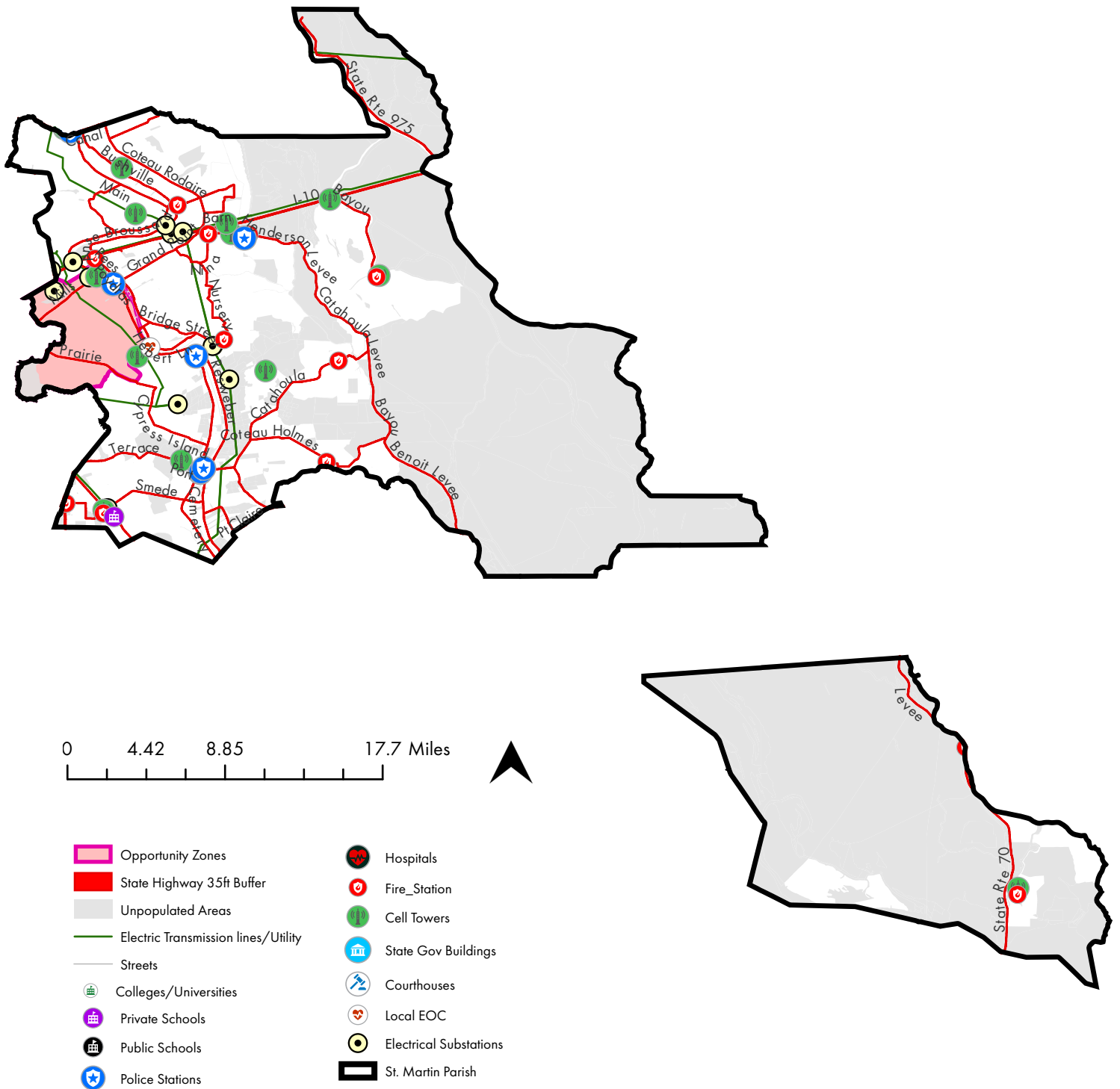


Figure 45: Infrastructure Map of St. Martin Parish

FCC DATA MAP

FCC Form 477 is derived from broadband industry self-reporting of advertised availability. Under FCC Form 477, a census block and addresses within it are considered served at the reported service level if a single location within that block can receive the advertised service regardless of cost or service-in-fact. It is important to note that while FCC Form 477 would indicate that more than a large portion of St. Martin Parish is considered served, speed test results indicate that more than three quarters of respondents are reporting actual speed test results below FCC's standard.

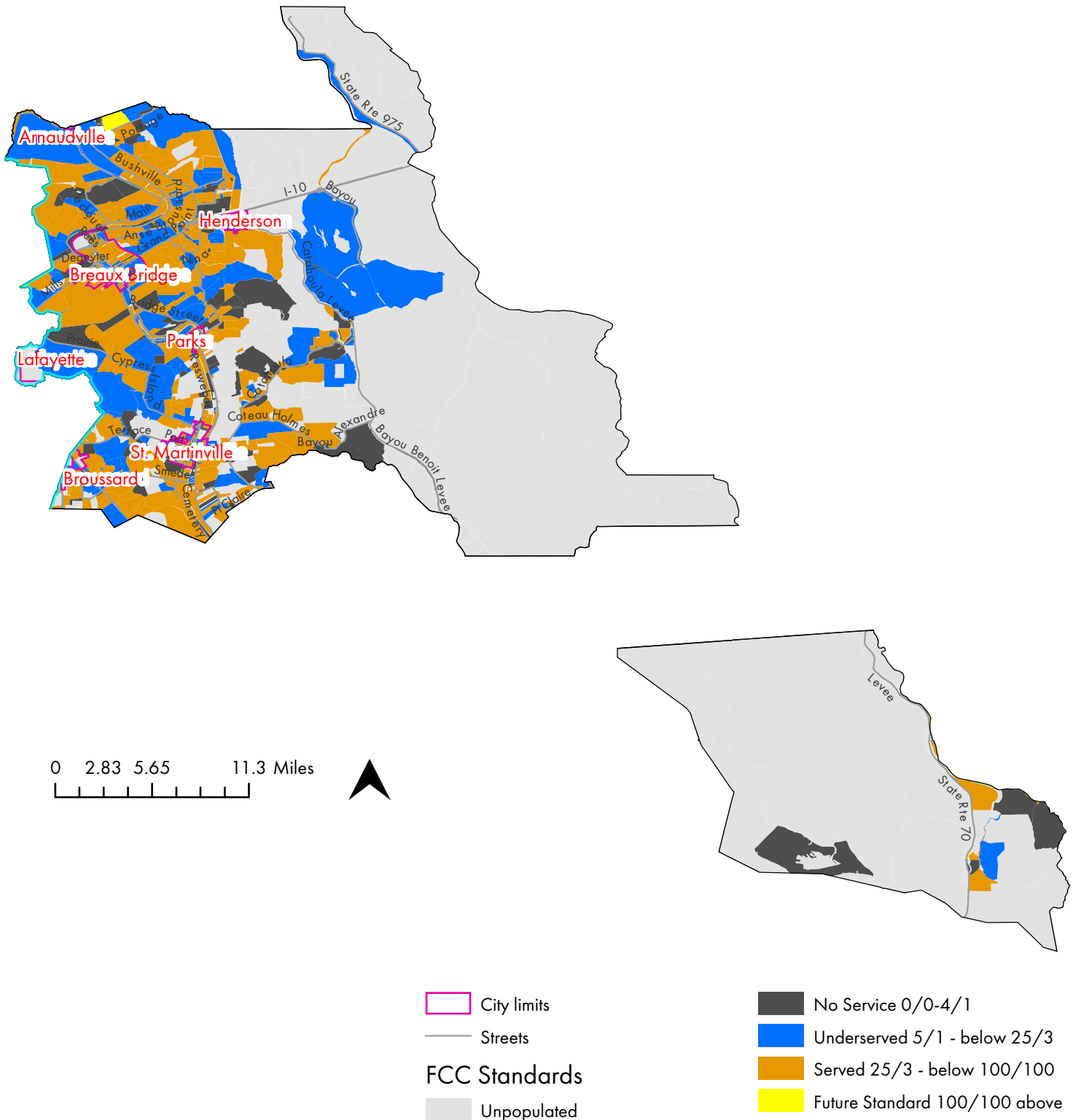


Figure 46: FCC Data Map of St. Martin Parish

ST. MARTIN PARISH SPEED TEST RESULTS

The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 94 surveys were submitted from St. Martin Parish, of these 19 reported broadband speeds from census blocks that the FCC considers unserved and 75 were from census blocks that are considered served based on the December 2019 FCC Form 477 data.²⁰⁴ Survey speed test data from St. Martin Parish and FCC Form 477 were mapped for comparison and can be seen in **Figures 46 and 47** respectively.

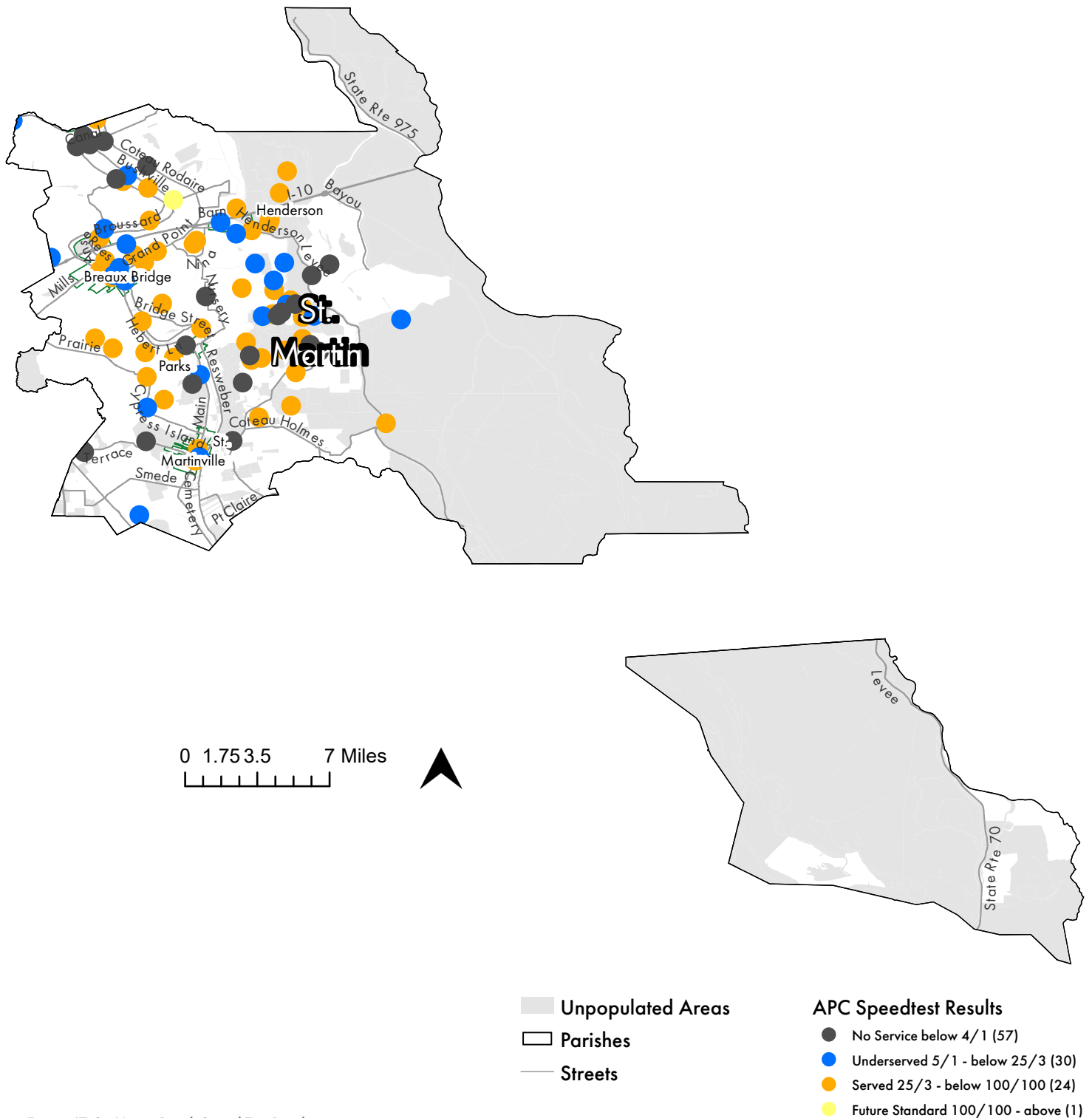


Figure 47: St. Martin Parish Speed Test Results

ST. MARTIN PARISH SPEED TEST RESULTS CONTINUED

The median reported broadband speeds in St. Martin Parish were 45.60 Mbps download and 9.88 Mbps upload. Both are above the FCC current definition of broadband of 25 Mbps download and 3 Mbps upload. The top three reported broadband service providers in St. Martin Parish were COX (40%), AT&T (17%), and Centurylink (11%). A plurality of respondents (42.9%) in St. Martin Parish reported spending between \$50.00 and \$100.00 per month for broadband service.

Table 18: Reported Internet Providers in St. Martin Parish

REPORTED INTERNET PROVIDERS IN ST. MARTIN PARISH:	
Provider	Percentage
AT&T	16%
CenturyLink	11%
Charter	2%
Cox	38%
Spectrum	2%
Straight Talk	1%
Suddenlink	2%
Verizon	1%
Xfinity	1%
Not Reported	23%

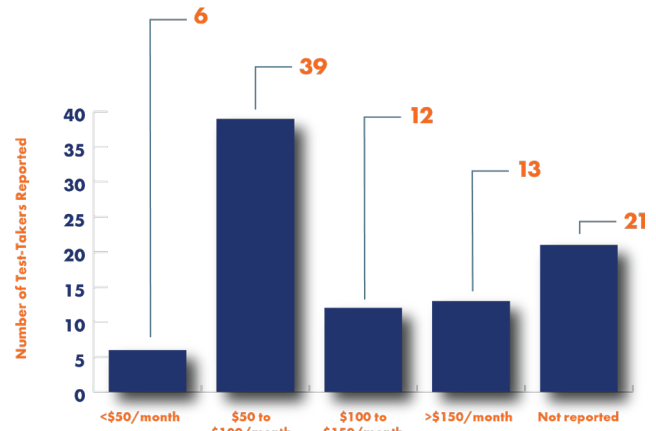


Figure 48: Reported broadband costs in St. Martin

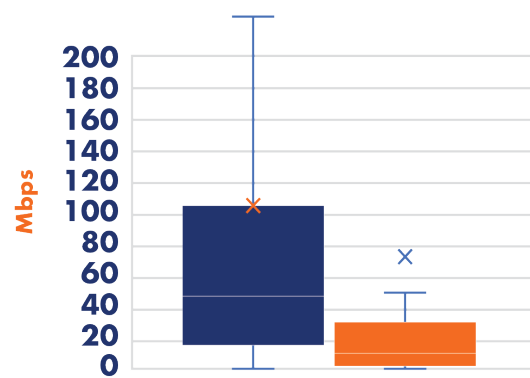


Figure 49: Reported broadband speed in St. Martin Parish

ADOPTION METRICS

In 2015-2019, St. Martin Parish had a total of 23,384 housing units and 68.6 % of existing housing units were single-family houses either not attached to any other structure or attached to one or more structures (commonly referred to as "townhouses" or "row houses").²⁰⁵ 4.7 % of the housing units were in multi-unit structures, or those buildings that contained two or more apartments.²⁰⁶ 26.5 % were mobile homes, while any remaining housing units were classified as "other," which included boats, recreational vehicles, vans, etc.²⁰⁷ 4.5 % of the housing inventory was comprised of houses built since 2010, while 2.6 % of the houses were

first built in 1939 or earlier.²⁰⁸ In 2015-2019, 19,749 housing units were occupied or had people living in them, while the remaining 3,635 were vacant.²⁰⁹ Of the occupied housing units, the percentage of these houses occupied by owners (also known as the homeownership rate) was 78.8 % while renters occupied 21.2%.²¹⁰ The median property value for owner-occupied houses was \$124,900.²¹¹ For renter-occupied houses, the median gross rent was \$658.²¹² Gross rent includes the monthly contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

BUSINESS AND RESIDENTIAL CLUSTERS

As part of this assessment, address point data were analyzed to identify high-density clusters of housing and businesses in St. Martin Parish. Through a side-by-side comparison with FCC Form 477 Data and speed test data, cluster data will be used to define areas for broadband expansion under future funding opportunities. Identified clusters represent both incorporated and unincorporated areas throughout the region

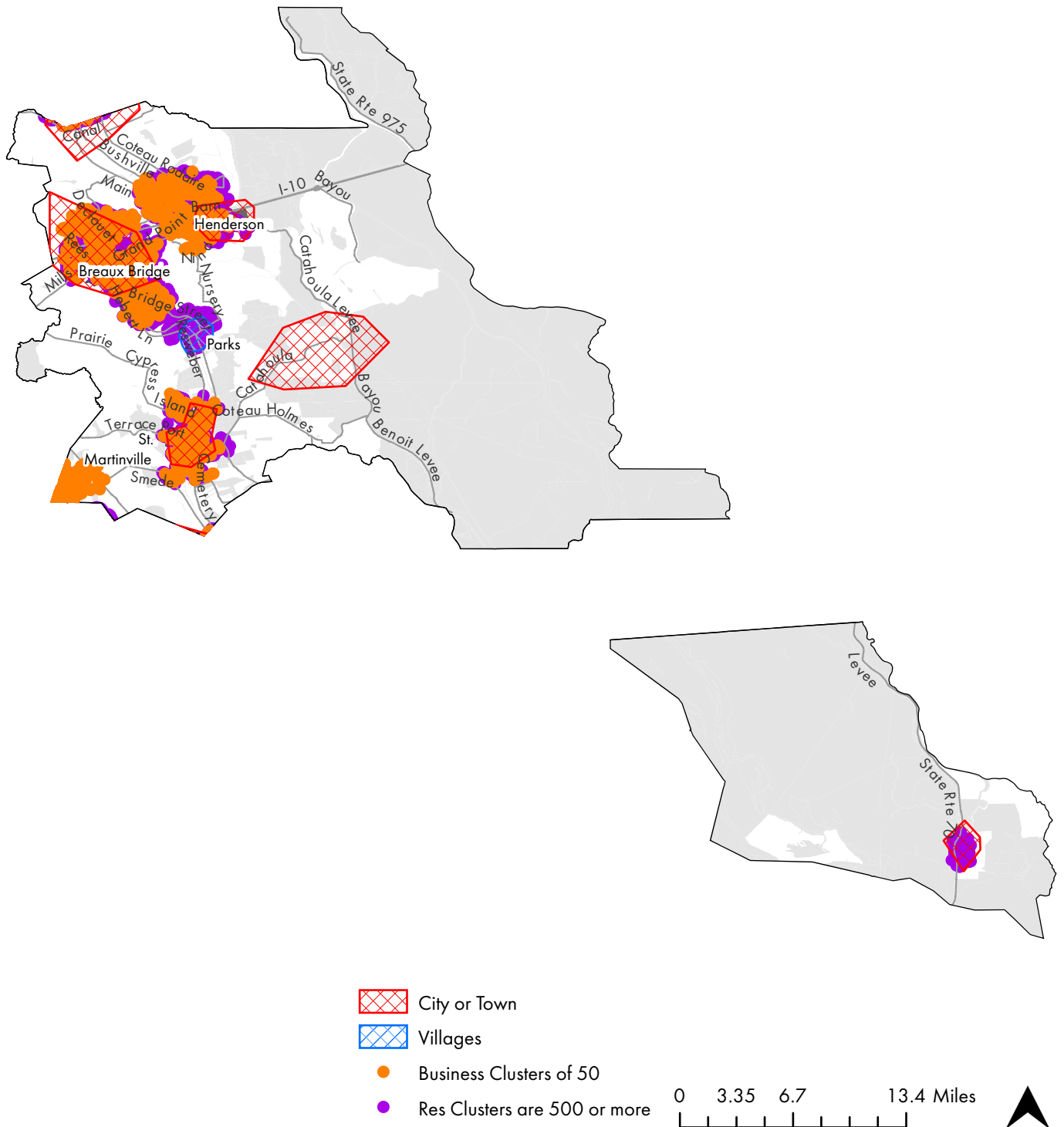


Figure 50: Business and Residential Clusters in St. Martin Parish

VERMILION PARISH



ABOUT VERMILION PARISH

Vermilion Parish is known for its fresh seafood, bountiful agriculture, great access via road and waterways, and a rich history of cultural and eco-tourism. This bilingual (English/French), coastal parish is large and diverse with wandering bayous and farmlands, authentic local cuisine, family-friendly festivals and Cajun towns connecting it all. Vermilion is centrally located in the southern part of Louisiana immediately adjacent to the Gulf of Mexico. This proximity to the Gulf makes the parish an ideal location for the numerous companies needing to serve this region's oil and gas industry.

DIGITAL DIVIDE METRICS

ACCESS METRICS

In 2019, the estimated overall poverty rate in Vermilion Parish was 17.6%.²¹³ About 21.3% of children under 18 live below the poverty level, compared with 14.7% of people age 65 years and older and 16.7% of individuals age 18 to 64.²¹⁴

About 16.5% of households received SNAP (the Supplemental Nutrition Assistance Program).²¹⁵ Of these households, 50.5% of households that received SNAP had children under 18, and 32.6% included one or more people age 60 or older.²¹⁶ Over 29.9% of all households receiving SNAP were families with a female householder and no husband present.²¹⁷ About 24% of households receiving SNAP included two or more workers.²¹⁸

Renters were most likely to be cost-burdened in Vermilion Parish than owners. Cost-burdened households in Vermilion Parish, Louisiana accounted for 19.2% of homeowners with a mortgage, 7.9% of homeowners without a mortgage, and 46.3% of renters.²¹⁹ Households that pay thirty% or more of their income on housing costs are considered cost burdened.

EDUCATION METRICS

According to 2019 ACS data, 81.9% of people 25 years and over have graduated from high school and 14.5% have a bachelor's degree or higher.²²⁰ About 18.1% of adults have not completed high school.²²¹ The total K-12 school enrollment was 12,330.²²² Nursery school enrollment was 780 and kindergarten through 12th grade enrollment was 9,833.²²³ College or graduate school enrollment was 1,717.²²⁴

WORKFORCE METRICS

Over 53.8% of the population age 16 and older were employed; 41.6% were not currently in the labor force.²²⁵ An estimated 77.4% of the people employed were private wage and salary workers; 14.7% were federal, state, or local government workers; and 7.5% were self-employed in their own (not incorporated) business.²²⁶

AFFORDABILITY METRICS

The median household income was \$48,656.²²⁷ An estimated 9.0% of households had income below \$10,000 a year and 3.4% had income over \$200,000 or more.²²⁸

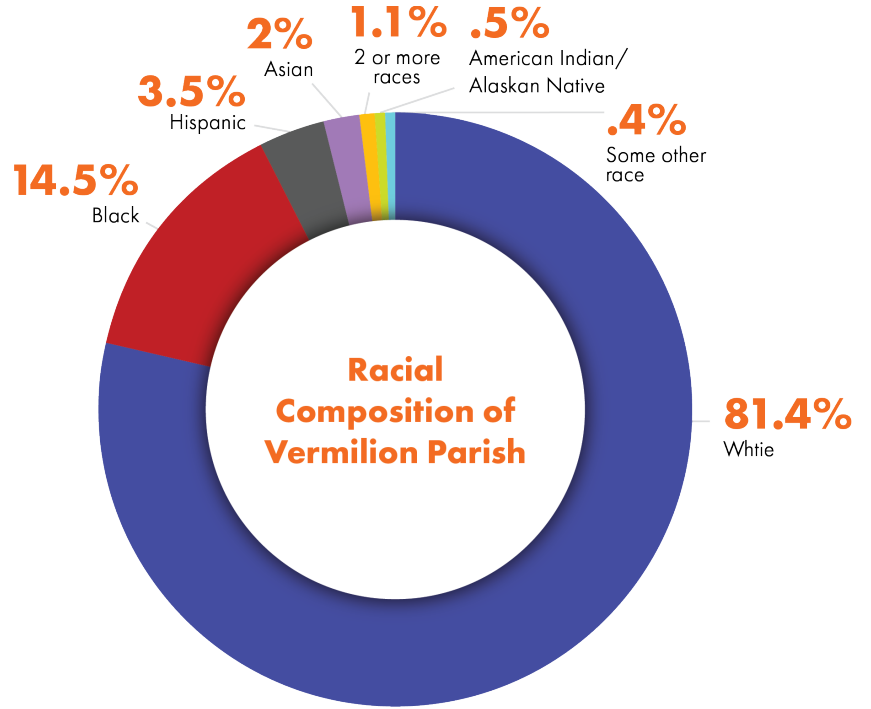


Planters Rice Mill in Abbeville

VERMILION PARISH BY THE NUMBERS

59,865
Population

38	Median Age
17.6%	Poverty Rate
22,086	Number of Households
\$51,945	Median Household Income
\$122,200	Median Home Value



TOTAL BUSINESSES
3,657



TOTAL EMPLOYED
52.7%

VERMILION PARISH
AGE DISTRIBUTION

25.6%	UNDER 18
59.3%	18-64
15%	OVER 65

Figure 51: Demographic Information for Vermilion Parish229

INFRASTRUCTURE IN VERMILION PARISH

As part of this assessment geospatial data for Vermilion Parish was catalogued and compiled into a mapping product, represented in **Figure 52**. Critical infrastructure included in this assessment included identification of utility and road rights-of-way that could support future broadband expansion. Major highways and their associated right of way are indicated in Red. Electric Transmission lines are indicated in green. Vermilion Parish falls predominantly within the service area of the electric power company Entergy. Electric utility poles serve as a primary distribution for future broadband service or “last mile” installations. Under recent enabling legislation, electric cooperatives are required to “grant permission to a broadband affiliate or a broadband service provider to use the electric delivery system of the cooperative to provide broadband services...” when there is sufficient capacity, is safe to do so, does not reduce reliability of the electric service, or generally applicable engineering purposes make it unfeasible.²³⁰ Map layers for these electric delivery lines are not currently available, but are generally presumed to serve all of the address points within the parish and are otherwise available for future broadband expansion.

Place-based economic development incentives, such as Opportunity Zones represent another form of critical infrastructure. Opportunity Zones are an economic development tool that allows people to invest in distressed communities.²³¹ Their purpose is to spur economic growth and job creation in low-income, high poverty rate communities while providing tax benefits to investors. Opportunity Zones were created under the Tax Cuts and Jobs Act of 2017.²³² Within Vermilion Parish, an Opportunity Zone is located in the City of Abbeville. To help attract outside investment APC has developed an Opportunity Zone Prospectus.²³³ Improvement of broadband services within the Abbeville Opportunity Zone is critical to maximize the potential impact of this economic development tool. Opportunity Zones are shaded pink and represent areas for future targeted investment.

Anchor institutions typically require high levels of broadband connectivity and reliability. Because of their role in providing essential public services, anchor institutions lacking reliable broadband Internet will be prioritized in future broadband expansion plans. Point data for anchor institutions such as: colleges and universities, private and public elementary and secondary schools, police stations, hospitals and nursing homes, fire stations, state government buildings, courthouses, and emergency operations centers are identified with institution-specific icons in **Figure 52**. Also included for Vermilion Parish in **Figure 52**, are the locations of existing cell towers and electric substations which are both dependent upon broadband.



INFRASTRUCTURE MAP

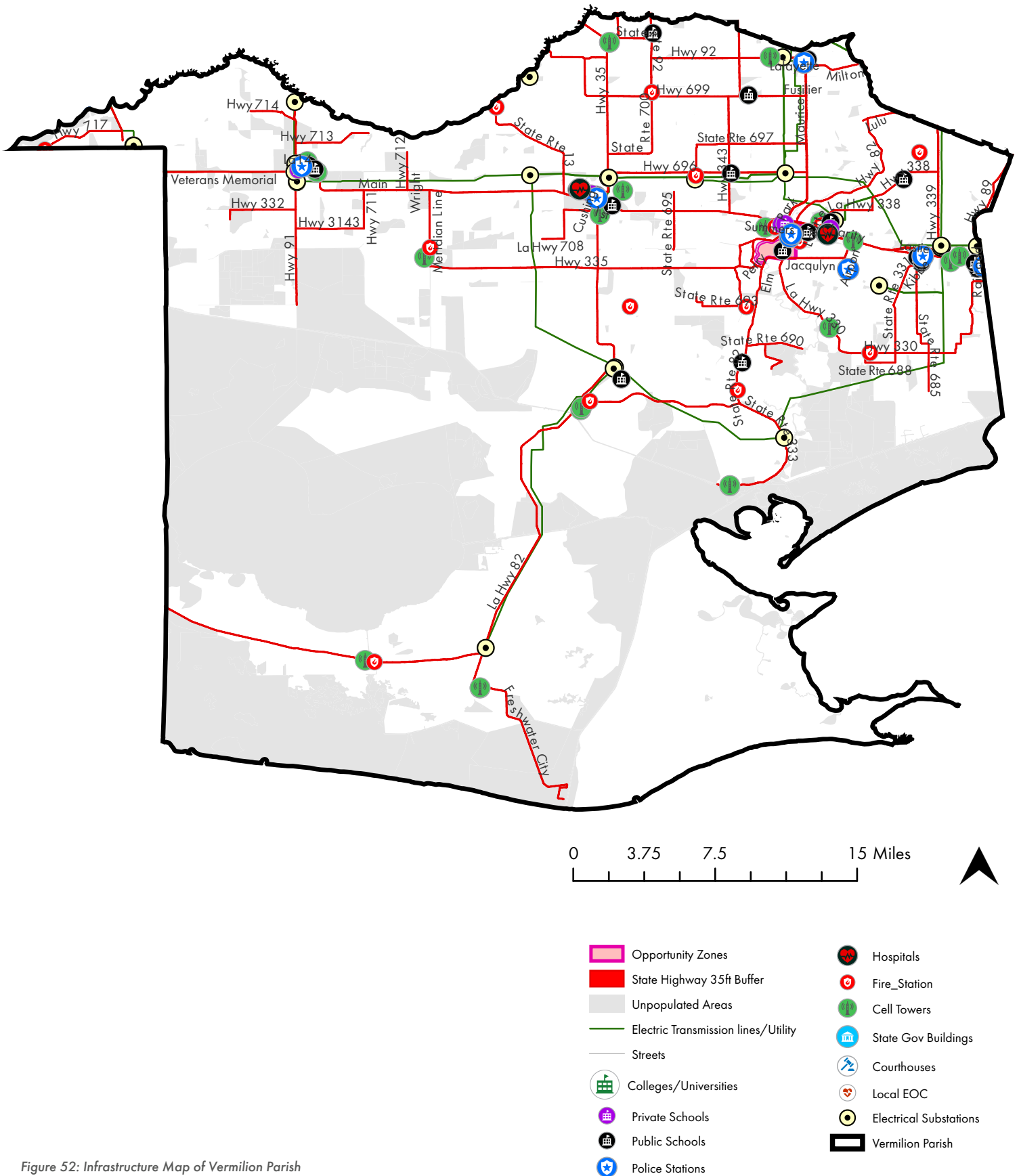


Figure 52: Infrastructure Map of Vermilion Parish

FCC DATA MAP

FCC Form 477 is derived from broadband industry self-reporting of advertised availability. Under FCC Form 477, a census block and addresses within it are considered served at the reported service level if a single location within that block can receive the advertised service regardless of cost or service-in-fact. It is important to note that while FCC Form 477 would indicate that more than a large portion of Vermilion Parish is considered served, speed test results indicate that more than three quarters of respondents are reporting actual speed test results below FCC's standard.

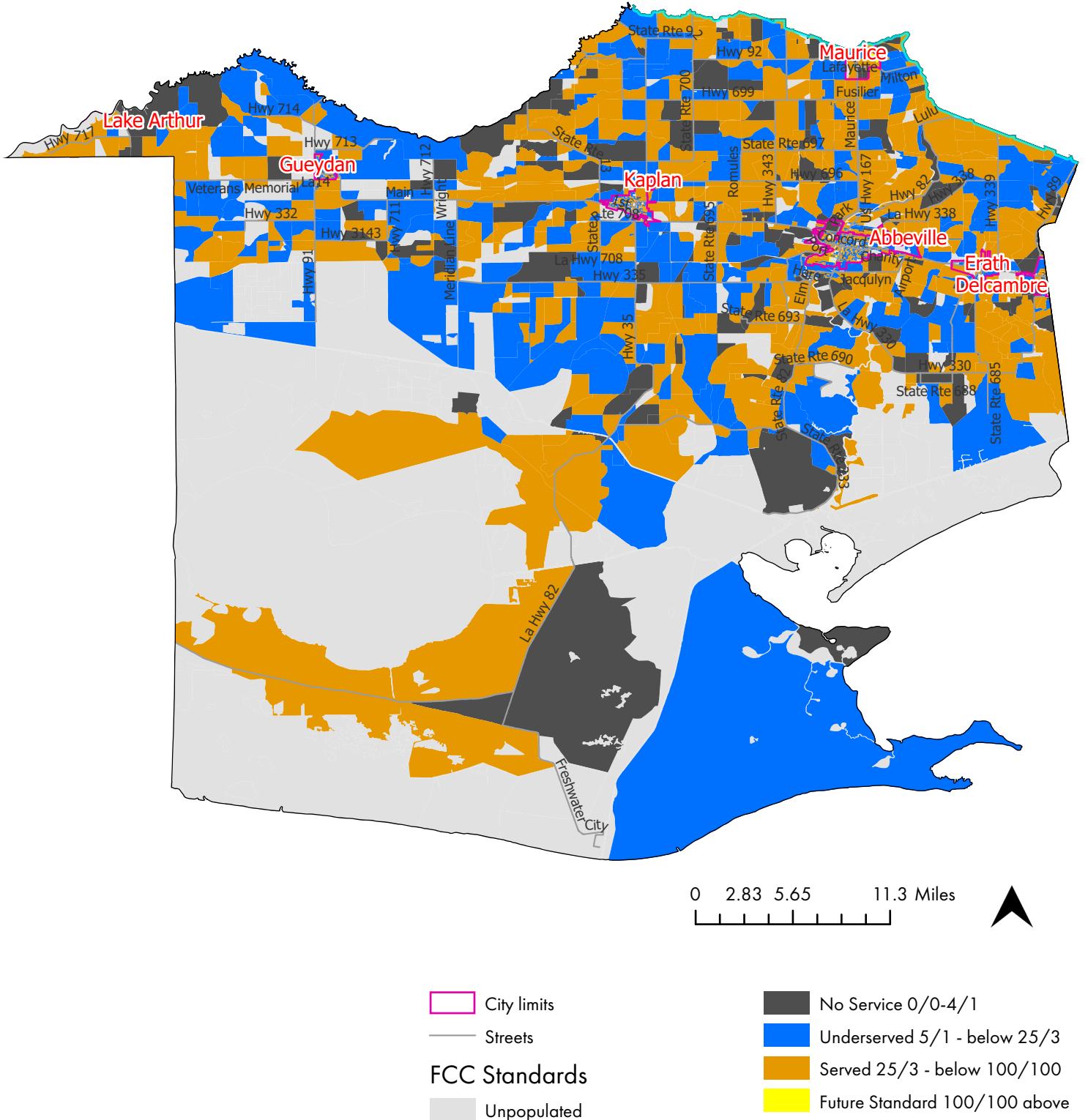


Figure 53: FCC Data Map of Vermilion Parish

VERMILION PARISH SPEED TEST RESULTS

The Acadiana Broadband Survey was conducted online from January 22, 2021, to April 29, 2021. During that period, approximately 33 surveys were submitted from Vermilion Parish, of these 2 reported broadband speeds from census blocks that the FCC considers unserved and 29 were from census blocks that are considered served based on the December 2019 FCC Form 477 data.²³⁴ Two survey responses were not able to be attributed to a particular census block. Survey speed test data from Vermilion Parish and FCC Form 477 were mapped for comparison and can be seen in **Figures 53 and 54** respectively.

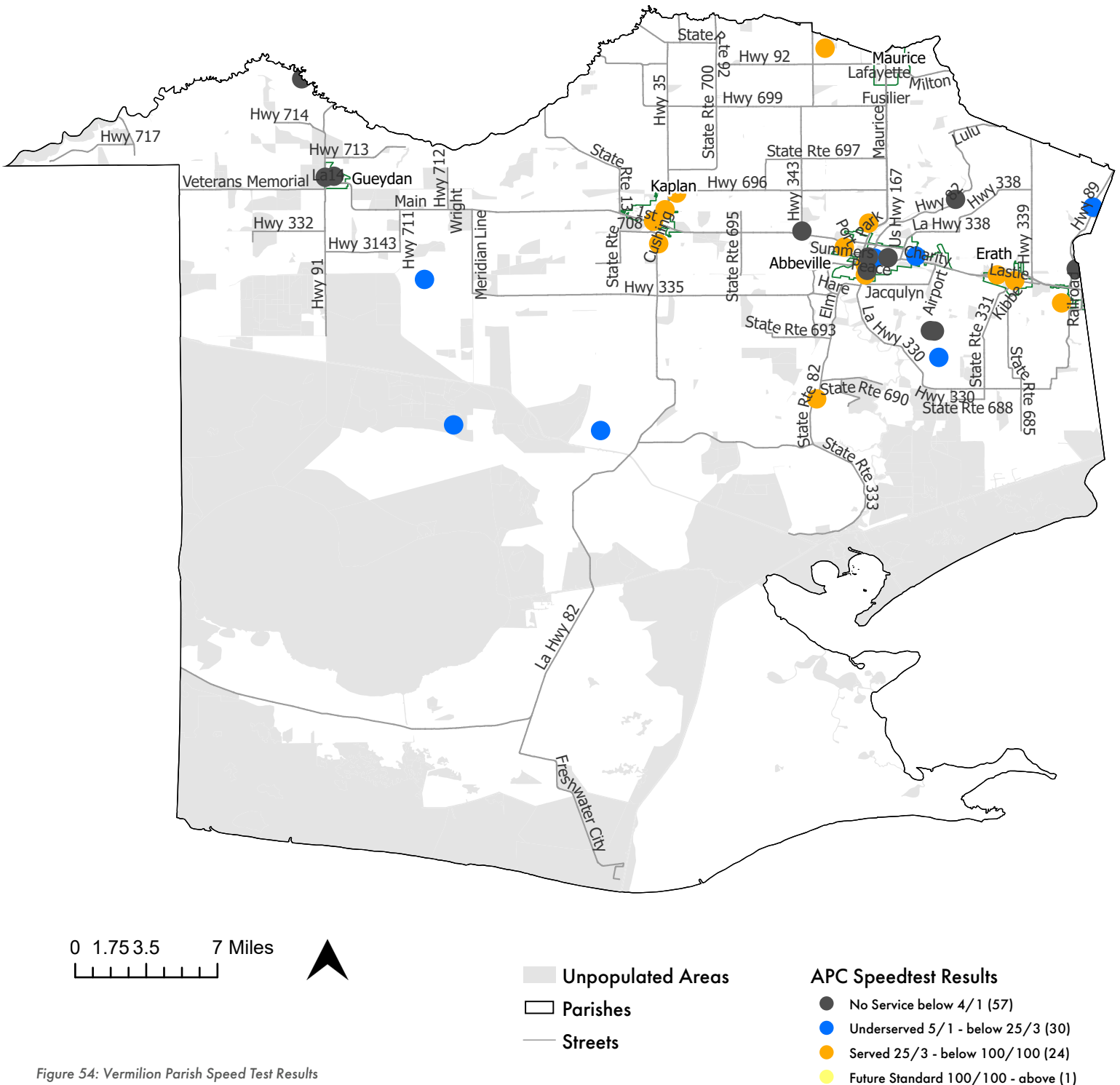


Figure 54: Vermilion Parish Speed Test Results

VERMILION PARISH SPEED TEST RESULTS CONTINUED

The median reported broadband speeds in Vermilion Parish were 27.95 Mbps download and 3.32 Mbps upload. Both are slightly above the current FCC definition of broadband of 25 Mbps download and 3 Mbps upload, however many households fail to meet both upload AND download standards. The top three reported broadband service providers in Vermilion Parish were Kaptel (31%), AT&T (25%), and Cox (22%). A majority of respondents (59 %) in Vermilion Parish reported spending between \$50.00 and \$100.00 per month for broadband service.

Table 19: Reported Internet Providers in Vermilion Parish

REPORTED INTERNET PROVIDERS IN VERMILION PARISH:	
Provider	Percentage
AT&T	25%
Cajun Broadband	3%
Cox	22%
Delcambre Communications	9%
Kaptel	31%
Not Reported	9%

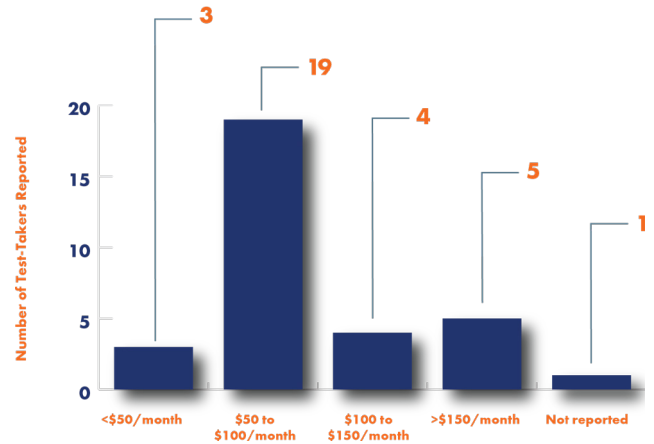


Figure 55: Reported broadband costs in Vermilion Parish



Figure 56: Reported broadband speed in Vermilion Parish

ADOPTION METRICS

In 2015-2019, Vermilion Parish had a total of 26,586 housing units and 72.8 % of existing housing units were single-family houses either not attached to any other structure or attached to one or more structures (commonly referred to as "townhouses" or "row houses").²³⁵ 5.6 % of the housing units were in multi-unit structures, or those buildings that contained two or more apartments.²³⁶ 21.1 % were mobile homes, while any remaining housing units were classified as "other," which included boats, recreational vehicles, vans, etc.²³⁷ 8.0 % of the housing inventory was comprised of houses built since 2010, while 8.7 % of the houses were

first built in 1939 or earlier.²³⁸ In 2015-2019, 22,086 housing units were occupied or had people living in them, while the remaining 4,500 were vacant.²³⁹ Of the occupied housing units, the percentage of these houses occupied by owners (also known as the homeownership rate) was 77.2 % while renters occupied 22.8%.²⁴⁰ The median property value for owner-occupied houses was \$122,200.²⁴¹ For renter-occupied houses, the median gross rent was \$685.²⁴² Gross rent includes the monthly contract rent and any monthly payments made for electricity, gas, water and sewer, and any other fuels to heat the house.

BUSINESS AND RESIDENTIAL CLUSTERS

As part of this assessment, address point data were analyzed to identify high-density clusters of housing and businesses in Vermilion Parish. Through a side-by-side comparison with FCC Form 477 Data and speed test data, cluster data will be used to define areas for broadband expansion under future funding opportunities. Identified clusters represent both incorporated and unincorporated areas throughout the region.

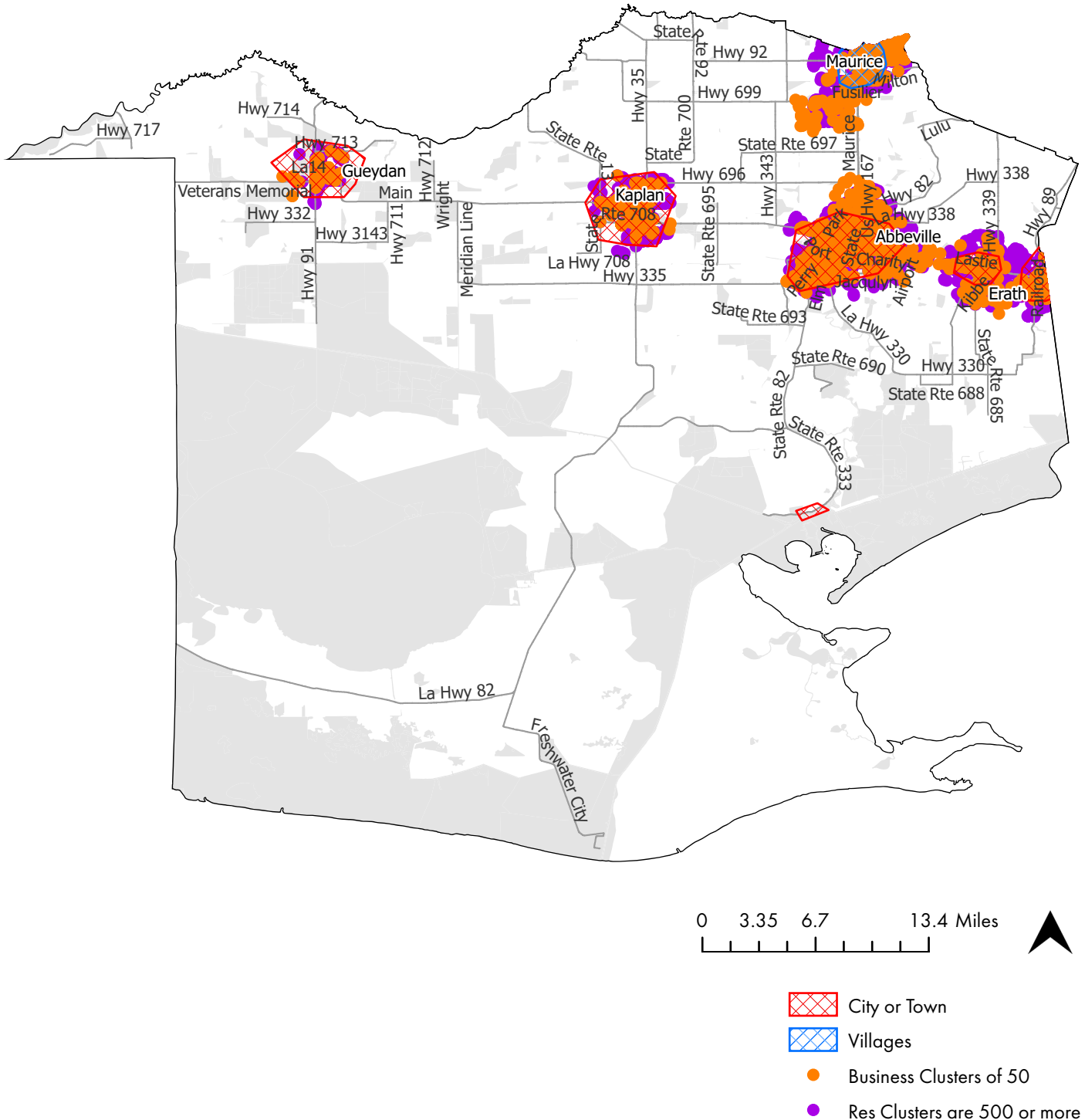


Figure 57: Business and Residential Clusters in Vermilion Parish

PUBLIC OUTREACH IN ACADIANA

RESULTS FROM PUBLIC OUTREACH: ROUNDTABLES AND FOCUS GROUPS

Starting on March 3, 2020, APC conducted a series of roundtables and targeted focus groups to both gauge the level of service throughout the region and the impact of limited broadband access on critical stakeholder groups. Both Zoom and Hybrid meetings were recorded and transcribed.

Table 20: Public Outreach: Roundtables and Focus Groups

STAKEHOLDER	DATE	FORMAT	NUMBER OF ATTENDEES
Local Service Providers, Economic Developers, Elected Officials, Electric Coops, Healthcare Officials	March 3, 2020	Roundtable (In-Person)	75
Education Leaders	March 16, 2021	Focus Group (Zoom)	23
Economic Developers	March 23, 2021	Focus Group (Zoom)	8
Elected Officials, Business Leaders, Economic Developers, Higher Education Leaders	April 6, 2021	Roundtable (Hybrid)	54
Healthcare leaders	April 28, 2021	Focus Group (Zoom)	7

ACADIANA
FIBER-TO-THE-HOME
INITIATIVE

FIBER-TO-THE-HOME ECONOMIC DEVELOPMENT ROUNDTABLES

Tuesday, April 6, 2021 | 10am – 2:30pm

MARCH 3, 2020, PROJECT KICKOFF ROUNDTABLE

The Acadiana Planning Commission, with support from St. Landry Economic Development (SLED) hosted a kickoff roundtable discussion at SLED's headquarters in Opelousas, Louisiana, to bring together key stakeholders from across Acadiana to discuss available resources, potential partnerships, and challenges to rural broadband access within the region. As part of the conversation, stakeholders learned about federal funding programs to improve rural broadband service from FCC's Nathan Egan, USDA's Roy Holleman, and DRA's Leslie Durham. Public comment was taken, and attendees had the opportunity to discuss their unique needs and challenges

In total, 75 attendees signed-in for the meeting representing a variety of stakeholders:

- electric co-ops
- small service providers
- fixed broadband service providers
- regional healthcare officials
- local economic development professionals

Regional large broadband service providers were invited to the meeting, however, none attended. This meeting occurred just prior to the COVID-19 public health emergency, which dramatically changed the broadband discussion.



Fiber-to-the-Home Economic Development Roundtables, March 3, 2021, LEDA:

FOCUS GROUP MEETINGS

To contextualize information that was received through the Acadiana broadband survey, a series of focus groups were conducted in the months of March and April 2021. Critical stakeholder groups that were identified for specialized focus groups include: Economic Development, Education, and Healthcare. Each focus group meeting was by invitation only with a targeted attendance limited to 8 to 10 participants so that all participants had an opportunity to participate and contribute to the discussion. Each focus group was asked to respond to the same set of questions. The following is a summary of what was learned from each focus group.

EDUCATION FOCUS GROUP (MARCH 16, 2021)

On March 16, 2021, APC conducted a broadband in education focus group. Invited attendees included superintendents from all parishes in the Acadiana region, representatives from the University of Louisiana at Lafayette (UL Lafayette), South Louisiana Community College (SLCC), Louisiana State University at Eunice (LSUE), Southern University A & M (SU), Southern University Law Center (SULC), and Love Our Schools - Link & Learn. In total, 23 representatives from these institutions participated in the focus group.

Major takeaways from the education focus groups are as follows:

- Most campuses had adequate broadband access.
- Local K-12 school systems have adequate equipment to provide their students with a laptop or tablet.
- During the pandemic K-12 school systems noticed a significant proportion of their student population lacks good, reliable access to broadband services at home.
- Broadband access for postsecondary students was much less of a problem than for K-12 students, with the exception of postsecondary students living in rural parts of the region.

In response to the adequacy of broadband service to their campuses, representatives from both the universities and the local K-12 school systems reported having adequate fiber access to most of their campuses at connection speeds at or exceeding 1 Gbps. However, some of the rural school systems reported that a small minority of their more remote facilities currently lacked adequate broadband access, though this problem is one that they are currently addressing and that they anticipated being resolved in the near future. All have stated that they have been able to provide these services through the "E-Rate" program. Additionally, representatives from local school systems stated that they had adequate equipment to serve all of their students with a laptop or tablet with some built-in redundancy for equipment failures.

Student access to reliable broadband Internet was the largest problem reported by participants in the education focus group; however, this experience was not uniform across the region. The representative from SLCC, whose main campus is located in Lafayette Parish, reported that the school sent a survey to its students last semester and received responses from 1,500 students. Ninety-three percent of respondents indicated that they had adequate broadband service and 6.7% noted they did not have reliable access. In contrast, LSUE found that broadband access was a major problem for their students, most of whom live in rural areas of Evangeline, Acadia, and St. Landry Parishes, between the towns of Iota and Mamou. While LSUE was able to upgrade their campus to one gigabyte broadband service, it is in the surrounding areas where their students struggle to find adequate access. Elementary and secondary educational systems in those areas reported similar challenges.

The pandemic forced educators on all levels to be creative in how they present and deliver instruction by opening great avenues for different modalities of teaching and that all require broadband access. These include: guided learning, practice, and the ability to offer advanced courses for even the smallest schools within a system. Most educators in the group concluded that aspects of remote learning through broadband would continue after the pandemic.

ECONOMIC DEVELOPMENT FOCUS GROUP (MARCH 23, 2021)

On March 23, 2021, APC conducted an economic development focus group. Invited attendees included representatives from parish Economic Development Organizations (EDO's) and local chambers of commerce. Eight representatives from five of the seven regional parishes attended.

Major takeaways from the economic development focus group are as follows:

- Broadband access and affordability is still a problem within many downtowns such as Crowley, Abbeville, Church Point and Ville Platte that FCC considers "served"
- Frequent broadband and wired-telephone outages
- Inability to run credit machines, particularly during regular business hours
- Limited broadband access and/or adequate broadband bandwidth impacts the ability to order stock or sell good over the Internet
- Limited ability for employees to work remotely due to poor Internet access
- Need for a regional fiber optic backbone to support business and industry
- Reliable and affordable broadband is a critical asset for economic development and business growth

In response to the adequacy of broadband service to local businesses, group members described broadband access to their communities as being unreliable, and expensive for speed beyond the very basic service. Businesses are frequently unable to operate phones and credit card machines at the same time. Focus group members also reported how broadband speed has hindered telecommuting, either from lack of sufficient access at the business or for employees telecommuting from their home.

Regarding the adequacy of available broadband services for the local business community to implement e-commerce solutions, group members reported that available services were baseline but not really adequate in most larger incorporated areas. Services were completely lacking in smaller communities like Iota, Egan, Branch, and other rural areas. Even in

"Broadband Access is bigger of an issue than just competing globally. [Without it] they can't even function locally."

- Attendee of the Economic Development Focus Group

larger communities which are usually served by cable broadband providers, businesses have reported challenges. Due to limited/decreased bandwidth, businesses indicate they have trouble processing a lot of web orders during peak hours and have to wait until the evening or overnight.

Another problem identified by the economic development focus group was that while the infrastructure was technically present in many of their communities, it was unaffordable. More specifically, in many places that have the infrastructure, incumbent service providers won't offer certain packages unless they can get a minimum number of users to subscribe to their services. As such, there are places with fiber connectivity that cannot access the fiber, because there are not enough users. The economic development focus group observed that lowering that barrier would improve access for their businesses.

Focus group attendees found agreement in the increased dependence of their businesses on access to broadband as a result of the COVID-19 pandemic. Many businesses had to pivot to adapt to the closure of their brick-and-mortar stores which made them more dependent upon broadband Internet access. Members of the focus group observed because of limited broadband access and the complexity of implementing a fully developed e-commerce solution, many local businesses began using mobile Internet options (e.g., Facebook Marketplace, Squarespace) rather than traditional e-commerce sites.

HEALTHCARE FOCUS GROUP (APRIL 28, 2021)

On April 28, 2021, APC conducted a broadband in education focus group. Invited attendees included management from regional healthcare providers, the state office of public health, and school-based clinics from all parishes in the Acadiana region. In total, 7 representatives from these institutions participated in the focus group.

Major takeaways from the healthcare focus groups are as follows:

- Most larger campuses had adequate access to broadband.
- Broadband access to smaller rural healthcare clinics and hospitals often had limited access to broadband.
- The switch to telehealth services during the COVID-19 pandemic was hampered by limited or expensive broadband services for the most vulnerable populations in the region. Much of the patient population lacks good, reliable access to broadband services at home which prevents them from accessing telehealth services.
- School-based clinics supported by telehealth providers lack qualified staff to operate the technology.

The adequacy of broadband service to health campuses was adequate in most places, but some rural clinics, and people living in rural areas lacked broadband access to use telehealth services. Focus group members reported having adequate fiber access to most of their campuses at connection speeds at or exceeding 1 Gbps. In contrast, some rural clinics reported that their clinic lacked adequate broadband access. These rural clinic providers pointed out their patients in their personal domain and habit, lack access to both necessary technology and adequate broadband that would allow them to be able to connect timely for telehealth appointments and visits. This deficiency created a healthcare access gap for poor, rural residents. Group members attribute this access gap to both cost and availability of broadband service.

During the pandemic, public health officials reported that limited broadband access had a negative impact on their ability to provide basic services. For example, the state department of public health established an

evacuation center for the region's homeless population at Chicot State Park. During the initial phases of the COVID-19 pandemic, Chicot State Park was the only place in the region for homeless people who had tested positive for COVID-19 to quarantine. However, the Chicot State Park site lacked good broadband access. In the area there was a rural hospital that served many of these patients. While in quarantine, many of the patients had other minor ailments that did not need an emergency room visit, but because access to telemedicine at the evacuation site, site directors would have to call an ambulance to transport the COVID-positive patient to the emergency room. Transporting the patient to the emergency room took a lot of effort and required officials to dip into limited PPE supplies to keep themselves and the care providers safe.

REGIONAL ROUNDTABLE WITH STATE BROADBAND DIRECTOR (APRIL 6, 2021)

On April 6, 2021, APC hosted a day-long regional roundtable with the newly appointed state Director of Broadband Vaneeth Iyengar and Delta Regional Authority Louisiana Designee Leslie Durham. The day consisted of a series of sessions with different themes. The first session consisted of representatives from the APC board: the highest elected official (parish or police jury president) from each parish in the Acadiana region; representatives from the major institutions of higher education in the region, including the President of UL Lafayette, the Chancellor of LSUE, and the

“As a university, we've benefited quite a bit because of fiber to the home [from]... LUS fiber that significantly support our operations and, especially in the past year as we transitioned to e-learning and remote education.”

- Attendee of the Regional Roundtable with State Broadband Director

"...[I]t's hard for us to see right now a scenario where a local government could provide any kind of an offering of the type we're talking about and not be subject to this Act..."

- Attendee of the Regional Roundtable with State Broadband Director

Chancellor from SLCC; and a representative from OneAcadiana, the regional private-sector economic development organization. The second session included the economic development leaders from each parish as well as major local business leaders. The third session focused on research by the Blanco Public Policy Center and economists from the University of Louisiana at Lafayette.

FIRST SESSION

Elected officials participating in the First Session emphasized the need for improved broadband access, affordability, reliability, and the desired ability for their jurisdiction to invest in expansion of broadband service into their communities. Of note is the stated high cost to obtain minimal broadband service from a limited number of available providers. The conversation centered on the need for a fiber to the home initiative (FTTH) throughout the region, with fiber being the only technology capable of supporting not only the current needs of the community but the only technology that can support future growth and needs. Elected officials expressed their desire to be able to invest both local and federal dollars in broadband infrastructure in their communities. However, they pointed Louisiana's Local Government Fair Competition Act effectively prohibits them from making this investment.

Subsequent dialog emphasized that while the commercial and regulatory environment has significantly changed since the adoption of the Act the COVID-19 pandemic has accelerated the need for updates. Broadband service has become as critical a utility as water, sewer, or electric. Consequently, participants intimated that it was time for the act to be modified to allow for greater broadband expansion.

Further conversation centered on the accuracy of the FCC Form 477 data and coverage maps. Participants observed that the FCC Form 477 maps, which are used to make grant and funding decisions by the federal government, are widely inaccurate. Participants were urged to participate in the mapping initiative being led by the Delta Regional Authority to crowd-source speed test data to either validate or dispute the FCC dataset and emphasized that there will be an unprecedented amount of federal dollars flowing into broadband expansion over the next several years.

SECOND SESSION

Business leaders and economic developers attending the second session emphasized the importance of

"...[W]hen we go through our hiring process, we ask if people have access to broadband, because today, we're 100% remote due to the pandemic; we're about to go back into the office, but we're not going to go back 100% ... places like New Iberia or Opelousas [and], other areas, if [people who live there] want a job with SchoolMint or companies like SchoolMint, they have to have access."

- Attendee of the Regional Roundtable with State Broadband Director

broadband access to the viability of the regional economy, to education, and to healthcare. Attending business leaders represented a range of business and industry. All emphasized that the current market demands reliable broadband access for them to function on a day-to-day business. For business that have recently relocated to Lafayette such as CGI, SchoolMint, and Tides Medical, access to gigabit fiber service was not what attracted them to relocate to Lafayette, but without it the region would never have been considered a viable option for their businesses. For companies like Acadian Companies, which operates in 34 of Louisiana's 64 parishes, access to reliable broadband is essential to their operations. One of their companies, Acadian Ambulance, has more than 650 vehicles deployed around Louisiana. Coordination of vehicle deployment depends upon reliable broadband access. During the COVID-19 pandemic, many of their support functions had to be transitioned so that employees could work from home. The transition was a challenge, with many of their employees unable to work remotely due to poor access to broadband.

During the meeting, representatives from the region's higher education institutions emphasized the importance of access to adequate broadband as they transitioned to e-learning and remote education. Higher education institutions such as the University of Louisiana at Lafayette, South Louisiana Community College, and Louisiana State University at Eunice are among the region's richest assets and are the primary providers of workforce training for its residents. University officials at all schools noted the challenge of providing services to students who live in rural areas with limited broadband access. Dr. Joe Savoie, President of UL Lafayette pointed out that "...those [students] who had access made the transition fairly well, [while] those who didn't struggled and suffered." The pandemic established that access to reliable broadband is vitally important for preparing and training the region's workforce.

THIRD SESSION

The third session focused on a presentation by Dr. Gary Wagner, an economist from UL Lafayette, on the impacts of broadband access in rural communities. His study linked population loss to broadband deficiencies. Communities that increased their broadband speeds saw an increase in population whereas communities that did not improve lost population.



Acadian Leaders Attending the Fiber-to-the-Home Economic Development Roundtables, March 3, 2021, LEDA:

SMART REGION VISION FOR ACADIANA

VISION FOR ACADIANA BROADBAND INITIATIVE

The economic future of the Acadiana Region is heavily dependent upon the expansion of broadband throughout the region. Population gain, and job creation are positively correlated to broadband expansion which provides an opportunity to promote economic resiliency and economic depth. Businesses need access to a reliable workforce, infrastructure, and quality of life for their workers. From an economic standpoint, regions like Acadiana are not just a loose assemblage of jurisdictions, such as cities or parishes, but rather form an ecosystem that increasingly lacks hard boundaries. Improving broadband access, affordability, and

adoption helps create regional depth by leveraging existing resources through greater connectivity. Regional prosperity arises from competitive industry clusters. In order to promote regional depth and identify and grow healthy ecosystem of competitive industry cluster APC envisions leveraging regional broadband expansion to establish Acadiana as a SMART Region. The following section will detail ongoing and planned efforts that support the development of Acadiana as SMART region that will give not only our major metropolitan area but also our rural communities a competitive edge well into the future.

ESTABLISHING ACADIANA AS A SMART REGION THROUGH THE DEPLOYMENT OF REGIONAL FIBER OPTIC RINGS

The Acadiana Broadband Initiative proposes the creation of a fully integrated regional fiber optic network that connects employment areas, higher education facilities, research institutions, and municipal facilities throughout the region. Service providers, city infrastructure and academic institutions would then be able to connect to the network. This regional broadband network will allow Acadiana to continue to develop as a nationally connected 21st century community and international information gateway and provide our region the necessary infrastructure to support job creation centered around a number of emerging industry clusters that will further support and enhance the creation of a SMART Region. Critical to establishing a SMART Region is the deployment of regional fiber optic rings. A fiber optic backbone system connecting all of Acadiana's seven parishes will facilitate the future deployment of SMART Infrastructure.

A Smart Region is a designation given to a geographic area that incorporates information and communication technologies (ICT) to enhance the resiliency, quality, and performance of regional commerce by promoting real-time telemetry and monitoring of critical infrastructure and services such as energy, transportation, and utilities in order to improve efficiency and reduce resource consumption, wastage, and costs.

With fiber rings in place, industries like finance, cloud services, and biotech would have a bigger incentive to move to and grow in the Acadiana region. A broad range of services, including connected transportation infrastructure, flooding alert systems, and autonomous vehicles could be made possible by the network. Some of these innovations integrate well with existing projects and are discussed in greater detail below.

EMERGENCY MANAGEMENT AND DISASTER RESPONSE AND RECOVERY

Regional Fiber Rings promote regional resiliency and supports a SMART REGION by establishing an interconnected, protected, and reliable emergency management communications system for the entire Acadiana region. The regional fiber infrastructure that does exist is limited in both the area that is covered and the level of interconnection. Hurricanes Katrina and Rita, followed by the 2020 hurricanes, show that the existing fragmented and limited regional broadband infrastructure demonstrate the need for a regional fiber backbone that can not only support natural disaster response efforts, but also aid in disaster recovery by reducing the amount of time required to bring affected areas back online quickly.

Hardening and protecting critical regional communications infrastructure will protect life and property during the next catastrophic event. Several recent examples illustrate the utility of such a program. During the 2020 hurricanes, the Town of Ville Platte experienced a telecommunications outage due to downed telecommunications lines that were haphazardly repaired and created problems for months after the storm. In the nearby town of Church Point, the Police Department has been without phone and Internet service five times in the past eighteen months. In both cases, a regional fiber backbone or ring would help mitigate these types of impacts in the future. Connection to emergency response centers and first responders, hospitals, ports, and airports would be prioritized as part of the regional fiber ring. Ideally, the major switching infrastructure for the regional fiber ring would be co-located with existing 911 and emergency response resources to harden them against natural disasters, a situation that does not currently exist on a regional level. The proposed hardened fiber rings ensure connectivity and redundancy among all critical infrastructure.

Regional fiber rings could provide real-time, reliable information for rapid disaster response and allow for predictive modeling that will permit local governments to deploy resources effectively prior to and during a major event. In partnership with the University of Louisiana at Lafayette and the Teche-Vermilion Freshwater District, APC is currently designing and deploying a regional gauge network that will help model potential flooding. Regional fiber rings could be essential to support the connectivity for real-time telemetry that the network will be capable of delivering. This gauge network, with its electronic sensors, will be used to inform flood models that can be used to respond to future events based on real-time telemetry from the gauge network and create an early warning system that protects and preserves life and property.

ACADIANA REGIONAL GAUGE NETWORK

Currently the Acadiana Planning Commission is partnering with the University's Louisiana Watershed Flood Center and the Teche-Vermilion Fresh Water

District to implement the Acadiana Regional Gauge Network. The aim is to enrich water management decisions in Acadiana through gauge instrumentation and data collection. By improving water monitoring in the area, Acadiana residents and emergency personnel can actively engage in pre-disaster planning.

This project will design and deploy a regional gauge network for the eight-parish service-area to monitor potential flooding and rainfall and develop a web-based public visualization interface for communicating near- to real-time alerts. Information collected will be later used to inform a data-driven hydrological model. This network will be composed of Streamflow, Rain Gauges, and Non-Contact Surface Water Velocity sensors and comprise a maximum of 230 gauges. This system would be incorporated into a pre-alert software platform for communication of real-time and/or near-time data allowing the general public to be better informed pre-disaster. Using telemetry technology, these sensors report data in the National Weather Service Automated Local Evaluation in Real Time (ALERT) format. This type of network is commonly referred to as an ALERT system. ALERT system sensors are event driven and transmit data in real-time to base station computers at a centralized location. Event driven real-time transmission, means that transmission of data occurs immediately as data are collected at field sites. Data collected by the ALERT system will be used to assist in issuing flood watches and warnings and to provide an early warning system for the Acadiana Region. This funded project is an integral component of the Acadiana SMART Region.

ACADIANA REGIONAL GIS PROGRAM

In 2017, the Acadiana Planning Commission received a grant from the Economic Development Administration (EDA) to establish and build out a geographic information system (GIS) for the Acadiana region. The overarching purposes of the grant were to both develop a regional repository of data for stabilizing economic development in communities affected by the August 2016 flood event and to provide immediate and effective data to intergovernmental and public/private entities to mitigate future property damage and

save lives during disaster situations. This grant allowed for a unique partnership between the seven Parish Assessors, the University of Louisiana at Lafayette, and the Acadiana Planning Commission. The Acadiana Planning Commission's role was especially critical because it provided both the nexus and impetus for not only disaster-related data needs, but for broader regional GIS collaboration.

In addition to the necessary disaster-related information, obtaining regional GIS data allowed for the organization, maintenance, and development of informational assets such as road elements and conditions and economic indices for both current and future economic activity and recovery. Creating a regional repository was necessary to build a consistent platform for connecting existing and future GIS assets. This provided a strong foundation for obtaining imagery moving forward. These assets and their connection to pre-disaster planning were foundational features of the Acadiana region's abilities to become more resilient and sustainable and formed the base data sets for the SMART region initiative.

IMPROVING THE FLOW OF GOODS AND SERVICES

The establishment of regional fiber optic rings are essential for the next generation of broadband-based business and is necessary for both retaining existing and attracting tomorrow's businesses. The flow of goods and services within a region is often hindered by traffic congestion at particular choke points. Traffic congestion can be mitigated through smart technologies such as adaptive signaling or adaptive traffic control systems (ATCS).²⁴³ An adaptive traffic control system (ATCS) is a traffic management strategy in which traffic signal timing changes, or adapts, based on actual traffic demand.²⁴⁴ ATCS systems are heavily dependent upon real-time communications between signaling points and remote sensors. This is accomplished by using an adaptive traffic control system consisting of both hardware and software that is heavily reliant upon broadband technologies such as fiber to make their connections to the larger signal network. Therefore, adaptive signaling is another example of a regional technology that will benefit from the deployment of a regional fiber backbone.

Regional ATCS systems aid in business attraction and retention by improving the efficiency for the movement of goods over the regional transportation networks. The Acadiana region is fortunate in that it has two interstates running through the region, several state highways, ports, and airports. However, some parishes have had difficulty attracting and retaining manufacturing and distribution businesses due to traffic congestion and travel delays. In 2019, freight bottlenecks from highway congestion cost the U.S. economy more than \$42 billion.²⁴⁵ In Louisiana that cost was estimated to be \$980 Million. ATCS systems have been shown to reduce travel and transportation times by reducing traffic congestion. Almost 73% of the value of domestic freight is shipped via truck and the value of truck shipments is expected to more than double by 2045.²⁴⁶

Funded by and in coordination with the Acadiana Metropolitan Planning Organization, which is housed within APC, Lafayette Consolidated Government (LCG) began work on a \$7 Million ATCS system within Lafayette Parish in the fall of 2018.²⁴⁷ All the traffic signals within this project are connected to the LCG fiber optic network (LUSFiber) and are communicating with the LCG ATMS-Now system. In total, 56 LADOTD owned/LCG Maintained and 20 LCG owned and maintained signalized intersection locations are included within the Adaptive Traffic Signal network. Most of these have been located along or feeding into major state highways in Lafayette.

Strategically deployed fiber rings would facilitate the expansion of the Lafayette ATCS system out from Lafayette to build a regional ATCS network that reduces traffic congestion and travel delays. This would make the entire region more competitive to both attract and retain businesses that are heavily dependent upon the movement of goods and cargo. For example, the Acadiana Regional Airport and its business park, both of which are in Iberia Parish along US HWY 90 corridor, lie just outside the optimal travel time from I-10. The Acadiana Regional Airport, a former Naval Air Station, has an 8,000-foot runway capable of receiving cargo flights from South and Central America. However, highway transportation route along US HWY 90 is heavily signalized between I-10 and the business park/airport. Expansion of Lafayette's ATCS would decrease the projected travel time from the Airport to

I-10 sufficiently to make both this business park and the airport competitive for distribution and manufacturing business looking for a site to which they could locate. Working with APC, LUSFiber was awarded a \$3.1 million grant to run the first leg of the proposed fiber network along this route. Having fiber in this corridor can eventually support a future build-out of the first leg of a regional ATCS network.²⁴⁸

An added benefit of a regional ATCS system as part a SMART REGION is that it can help facilitate hurricane evacuations by providing a regional approach to traffic control and monitoring during the event. Combined with the regional gauge network, the system has the potential to be able to re-route traffic to avoid areas that are flooding or could be flooded by the time that the traffic arrives at a location.

FACILITATING DEPLOYMENT OF NEXT GENERATION WIRELESS CELLULAR DATA – 5G AND BEYOND

5G mobile networks will significantly affect both the wireless side and the wireline side of the global network infrastructure. In fact, 5G's formidable network performance goals are heavily predicated on the availability of fiber, and lots of it, to cell sites.²⁴⁹ However, 5G deployment in Louisiana and in Acadiana is significantly slower than other regions of the nation. Within Louisiana, the bulk of 5G deployment has occurred in the New Orleans area, which has the most fiber optic support infrastructure for the major providers such as AT&T.²⁵⁰ Constructing regional fiber rings promotes the establishment of a regional 5G cellular network by providing a higher density of access points than is currently available today from incumbent broadband service providers. Improved 5G service, in turn, provides a bridge service that can fill wired broadband service gaps in more remote areas until a full regional FTTH build-out can be achieved. Within the framework of a SMART Region, 5G networks provide broadband and cloud access when wired connections are impossible or impractical.

SUPPORTING LOCAL BUSINESSES

The COVID pandemic has created a paradigm shift in how businesses operate. When brick-and-mortar retailers closed their doors, many found themselves without the proper systems in place to serve customers they could no longer meet face-to-face. However, those with an established and reliable data management strategy were able to pivot to new models.²⁵¹ For example, during the lock-down periods, a national supermarket chain augmented their existing cloud-based inventory management system to build out services so they could fulfill customer orders online. This meant leveraging digital resources to give them near real-time, global insight into data across their business that was instrumental to their revenue growth in 2020. With limited broadband access, however, this task is all but impossible.

Building regional fiber optic rings could provide access to e-commerce solutions and global markets for local businesses. For example, in December of 2020, Amazon announced the company will open its first Louisiana fulfillment center in Lafayette Parish.²⁵² The company is making a \$100 million capital investment and creating 500 direct jobs with an annual payroll of more than \$16 million. Louisiana Economic Development estimates the project will also result in 982 new indirect jobs, for a total of more than 1,400 jobs in Acadiana and surrounding regions. The fulfillment center will be near the junction of Interstates 10 and 49 and provide optimal access to Louisiana markets. In the new 1 million-square-foot fulfillment center, Amazon associates will pick, pack, and ship bulky or larger-sized items, such as patio furniture, outdoor equipment and rugs.

With this announcement, APC staff reached out to Amazon representatives to learn more about how they interact with small businesses to buy, sell, and distribute through their platform. Through these conversations we learned that more than half (52%) of the units sold on Amazon are from independent sellers.²⁵³ Through

these programs, goods produced by third parties are delivered to the fulfillment center for sale and delivery to the end customer. Coordination of these activities is through web-based applications that require access to reliable, high-speed broadband. Construction of regional fiber optic rings that connect Acadiana's manufacturing base will improve access to this new facility and also promote efficiency through other SMART region technologies such as the ATCS network.

STRENGTHENING ACADIANA'S AGRICULTURAL ECONOMY

"Precision Agriculture" is an emerging concept that refers to managing farms using technologies like the Internet of Things (IoT), robotics, drones, and AI to increase the quantity and quality of products while optimizing the human labor required by production.²⁵⁴ Farmers have already begun employing high-tech farming techniques and technologies in order to improve the efficiency of their day-to-day work. For example, sensors placed in fields allow farmers to obtain detailed maps of both the topography and resources in the area, as well as variables such as acidity, soil moisture, and temperature. They can access climate forecasts to predict weather patterns in the coming days and weeks. Farmers can use their smart devices to remotely monitor their equipment, crops, and livestock, as well as obtain stats on their livestock feeding and produce. They can even use this technology to run statistical predictions for their crops and livestock. Drones have become an invaluable tool for farmers to survey their lands, perform field analysis, and generate real-time data.

A SMART region built around a fiber ring enables the connection of all these devices, provides access to real-time regionally deployed gauges and sensors (like the gauge network), and permits real-time data archiving through cloud-based storage while connecting all of these data resources to real-time market information so that the next generation of farmers can make the best decisions that maximize the price for their crops. To support precision agriculture in the Acadiana region, APC is currently working with Louisiana State University at Eunice to prepare a workforce development grant application to the Delta Regional Authority's (DRA) Workforce Opportunity for Rural Communities (WORC) Grant Program.²⁵⁵ The proposed application proposes creation of an innovative workforce development program creating a pathway for certification that supports precision agriculture and licensing for agricultural drones. Additionally, precision agriculture in the Acadiana region will benefit from a future ATCS network allowing farmers' to coordinate delivery of their crops to markets or regional producers of value-added agricultural products in a manner that both increases efficiency and reduces costs.

To be more competitive Acadiana ought to engage partners from public, private, and non-profit organizations. Pulling together a regional strategy will maximize the current and pending funding sources in order to effectively leverage various state and federal grant programs. The following section explores various partnership frameworks, impediments, and strategies currently underway for broadband expansion.



Rice farming in Acadia Parish

ACADIANA BROADBAND PATH FORWARD

FRAMEWORK FOR BROADBAND PARTNERSHIP

The first step toward building better broadband in the region is to assure that all stakeholders are present to discuss any barriers. The concept of public private partnerships could be a promising solution to work towards resolving these issues. Several successful models have arisen across the country, resulting in the following main types of concepts ranging from full municipal broadband to full private broadband:

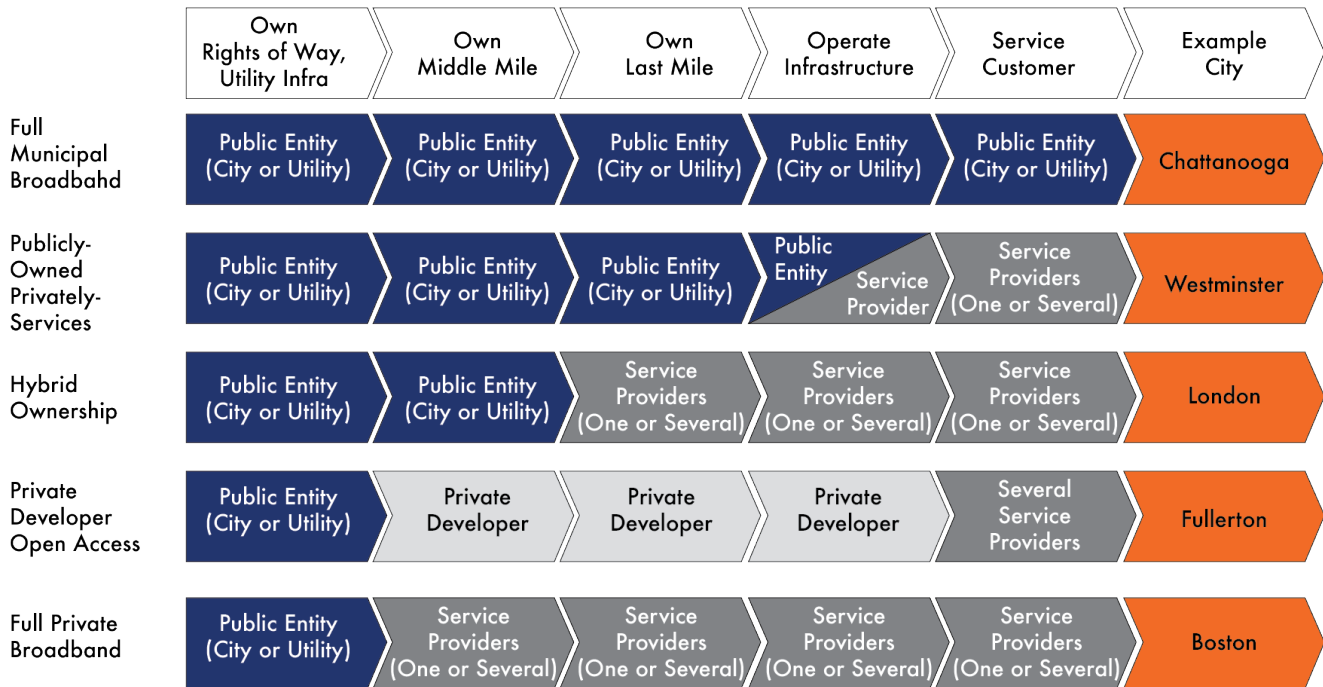


Figure 58: City Main Business Model Options for Broadband Expansion

Note: Private Developer is defined as private company that builds, owns, and operates the network infrastructure and offers open access to –it to several retails SPs that provide service on the top.

Each of these options has its appropriate application, depending on the available funding, infrastructure, possible partners, and local buy-in. In a study of over 1,000 municipal broadband models, about 68% of cities built out the infrastructure and manage the network on their own.²⁵⁶ However, there has been a recent trend toward partnership with the private sector to result in service delivery or ownership of certain parts of the infrastructure, at 17% and 15% of cities, respectively.²⁵⁷

There are contrasting thoughts, however, on the best fitting model from a broad perspective. Some suggest that broadband should be considered a fourth utility.²⁵⁸ A survey from Consumer Reports cited that 80% of people think broadband is just as important as the

more traditional utilities of water and electricity.²⁵⁹ In addition, Congress has even considered the concept; the CARES (Coronavirus Aid, Relief, and Economic Security) Act noted, “the term ‘covered utility payment’ means payment for a service for the distribution of electricity, gas, water, transportation, telephone, or Internet access for which services began before February 15, 2020.”²⁶⁰ By classifying broadband as a telecommunications service, there are a number of implications, specifically as it relates to Title II of the Communications Act.²⁶¹ Such a designation would allow the FCC to provide oversight more in line with regulation of public utilities.²⁶²

The opposition’s concerns come, however, from the restrictions which stem from the telephone companies’ previous monopolies.²⁶³ The problems center around the regulation of cost and the possibility of increased taxes.²⁶⁴ Other concerns involve being unable to stop service in places where providers do not find business to be fruitful.²⁶⁵ While the future of broadband could lie with its designation as a utility, there could be some

potential hurdles along the way. In the meantime, partnerships might be a more successful endeavor.

When taking a closer look at the varying models for broadband referenced previously, a thorough evaluation by the involved municipality must be conducted to guide the path forward. US Ignite and Altman Solon developed the following chart which can assist municipalities in their evaluation process.

Table 21: Assistance Chart for Municipalities in their Evaluation Process

KEY DECISION FACTORS	OPTIONS	DEFINITION	IMPACT ON MY DECISION
Capital Availability	Good Access to Capital/ Funding	There’s sufficient financing sources to fund significant part of the build	Good capital availability should push city own/fund larger part of the project without bringing in private ISPs
	Poor Access to Capital/ Funding	There’s limited capital/ funding availability, seeking commercial capital will be required to fund	
Existing Infrastructure	Good Existing Infrastructure/ Capabilities	There’s existing public utility with conduit/infrastructure and operating capabilities	Presence of existing infrastructure and/or capabilities should push city to take more control over project, provides a “bargaining” chip with ISPs
	Poor Existing Infrastructure/ Capabilities	There’s no existing utility or there is but infrastructure and operating capabilities are poor	
Partnership Options	Visible ISP Partner(s)	City has attractive demographics or good value proposition for third party ISP	Lack of viable ISP partnerships limits city options to those models that require significant involvement from the ISP
	No Partner Options	City is too small, too remote, or otherwise unattractive for 3rd party ISP	
Objective and Risk Tolerance	Community Benefits	Using the broadband infrastructure to create innovation and benefit community in non-financial ways	Strong public support towards anchoring project around community benefits should push city to seek more control/ownership over infrastructure
	Meeting Financial Goals (High Risk)	Using the broadband infrastructure to meet measurable financial goals while maximizing broadband availability	Focus on meeting financial goals/targets should push city to more predictable financial models(e.g. 3rd party driven) ²⁶⁶
	Meeting Financial Goals (Low Risk)		

In Acadiana, the range of providers includes LUS Fiber, one of the “first fiber to the home networks built out in the U.S.”³⁰³ and Louisiana’s “only 100% municipally owned broadband fiber network”³⁰⁴ and a number of national and local private service providers such as

AT&T, Cox, and others. With both ends of the Internet service provider spectrum present, municipalities should be able to make broadband decisions and partnership decisions that are appropriate based on their respective situations and the demands of their constituents.

CHALLENGES IN LOUISIANA FOR PUBLIC PRIVATE PARTNERSHIPS

While other states have had success with public private partnership in the broadband realm, Louisiana law is relatively limited in who is allowed to partner for this work. For example, local governments are prohibited from partnering with any Internet service provider in order to seek services for their constituents. Formally found in Louisiana Revised Statutes 45:844.40 through 45:844.54, the Act itself originated from the American Legislative Exchange Council which opposed allowing municipalities to venture into the telecommunications business.²⁹⁸

Broadly, the Act prohibits a “local government” from providing “covered services” to subscribers and limits them from the ability to “purchase, lease, construct, maintain, or operate any facility.”²⁹⁹ “Local government” is further defined as “any parish, municipality, or other political subdivision of the state and any utility authority, board, branch, department or other unit thereof.”³⁰⁰ “Covered services” generally includes anything remotely related to telecommunications services, but are specifically defined as “telecommunications services, advanced services and cable television services, individually and collectively, and regardless of the technology use to provide those services [...]”³⁰¹

Even more narrowly, a local government is considered to be providing a covered service if it is done “directly or indirectly,” “by itself,” “through a partnership or joint venture,” or “by contract, resale, or otherwise.”³⁰² The breadth of the definitions of “local government,” “covered services,” and acts falling under “provid[ing] a covered service” makes it difficult for a local government to do much of anything relating to telecommunications without being subject to the Act.

There are certain ways in which local governments might otherwise be able to play a positive role in building out better broadband in Louisiana. For example, local governments could partner with Internet service providers to utilize existing rights of way where new broadband lines can be laid. By leveraging the cost for the use of the rights of way, the Internet service provider will likely not have as great of a cost to build out their services as it would without that partnership. This is just one example of the benefits of public private partnerships. To better understand how local governments can be involved it is imperative to mention the origination and implications of the Local Government Fair Competition Act.

ORIGIN AND REQUIREMENTS OF THE LOCAL GOVERNMENT FAIR COMPETITION ACT

In the 1990’s, LUS established the beginnings of a fiber network in Lafayette, Louisiana.²⁶⁷ This began with a single fiber ring which was later built out to include several times the original amount of fiber strands deployed, at approximately 20% more than the intended proposed costs.²⁶⁸ At the time, private telecommunications providers in the area had refused offers by the city of Lafayette to utilize the LUS fiber ring for the area’s constituents, while also declining to build out Fiber-to-the-Home infrastructure due to cost

limitations.²⁶⁹ Over the next decade, the fiber ring was expanded by LUS and the data services were offered to Lafayette’s city government for competitive pricing with faster service than other area providers.²⁷⁰ By 2004, the City Council proposed a feasibility study analyzing the possibility of utilizing those same services external to the city government.²⁷¹

Simultaneously, The Local Government Fair Competition Act was passed in Louisiana’s legislative session.²⁷² This

Act essentially required that any government-owned broadband network interested in duplicating the efforts that LUS was performing would first have to employ a feasibility study while also being limited from utilizing cross-subsidies to build out the infrastructure needed for the network.²⁷³

Lafayette completed its feasibility study and submitted it to the City Council; it was then used to support a vote for the sale of revenue bonds to cover the costs of the build-out.²⁷⁴ This issue was then placed before the residents of Lafayette, resulting in the approval of a \$125 million bond.²⁷⁵ This followed with immediate challenges from parties against the effort, placing the action before the Supreme Court of Louisiana.²⁷⁶ Eventually, the Court ruled in favor of LUS, who then issued revenue bonds in the amount of \$110 million.²⁷⁷ The buildout was initiated in 2008 and by 2009, customers began accessing the network.²⁷⁸ Today, LUS Fiber is “one of the nation’s largest municipal fiber-to-the-home networks utilizing the only technology capable of delivering symmetrical speeds up to 10 Gigabits per second to the end user.”²⁷⁹

Simultaneously, the Local Government Fair Competition Act is still in place and essentially requires a local government to perform the following in order to consider expanding into the municipal broadband arena: conduction of a feasibility study, participation in the referendum process, restriction from cross-subsidization, and imputation of avoided expenses.

FEASIBILITY STUDY

To determine when a local government can appropriately participate in the telecommunications business, a feasibility study must occur. Initially, there must be a “preliminary public hearing” following which a “feasibility consultant” must be hired “if the local governing authority elects to proceed.”²⁸⁰ The feasibility consultant is then tasked with completing the feasibility study itself, submitting the final results and a one-page summary within three months of hiring, and attending all of the public hearings required to “present the feasibility study results” and to “respond to questions from the public.”²⁸¹ These public hearings include two additional public hearings following the receipt of the feasibility study results; they must be held within 60 days of that receipt and at least seven days

apart.²⁸² Advertisement of the public hearings must also be made at least one time a week for three weeks, with the third notice being at least three days prior to the first hearing.²⁸³

REFERENDUM PROCESS

If the local governing authority wishes to further pursue participating in the telecommunications business after the feasibility study, it must then “call an election on whether or not the local government shall provide the proposed covered services, before engaging or offering to engage in providing such services.”²⁸⁴ This process involves following the appropriate timing for an election as provided by Title 18 and the language provided on the ballot must include: “Shall the [name of local government] be authorized to provide [cable television service or telecommunications or advanced service]?”²⁸⁵ Upon a majority vote, the ballot’s proposition can take effect.²⁸⁶ More detailed information on the full referendum process can be found at Louisiana Revised Statute 45:844.50.²⁸⁷

CROSS-SUBSIDIZATION RESTRICTIONS

Once a local government has been approved by referendum to provide covered services, there are additional steps to be taken regarding the fund needed to continue forward. Under La. R.S. 45:844.51, a “communications services enterprise fund” must be established.²⁸⁸ This fund accounts for the operation of the services that the local government will be providing; in addition, separate budgets must be adopted for operating and capital budgets.²⁸⁹

Following the establishment of the fund, there are certain restrictions that the local government must adhere to regarding the general operation of the services.²⁹⁰ For example, the local government is prohibited from cross-subsidizing its services with “tax dollars, income from other local government or utility services, below-market rate loans from the local government or any other means.”²⁹¹ Along with this, the Louisiana Public Service Commission must be involved in the enforcement of the anti-cross-subsidization rules to the extent that it has jurisdiction over the party.²⁹² For those it lacks jurisdiction over, there is alternatively a set of rules to be enforced by an audit procedure with a right of judicial review.²⁹³

IMPUTATION OF COSTS

After successfully accepting the feasibility study, approving a referendum, and appropriately avoiding any cross-subsidization restrictions, the local government must also make certain to impute the costs for its services in a manner that “include[s] within its rates an amount equal to all taxes, fees, and other assessments that would be applicable to a similarly situated provider of the same services.”²⁹⁴ Examples of these types of costs include, but are not limited to: taxes, franchise fees, permitting fees, and pole attachment fees.²⁹⁵ The purpose for imputing these costs speaks to the name of the act itself; they remove any semblance

of unfair cost advantages that a local government might be able to capitalize on.²⁹⁶ However, this means that the local government must build its rate schedule to reflect costs that it may not actually incur.²⁹⁷

Overall, the many requirements of the Fair Competition Act necessitate an emphasis on public outreach, time, and money spent for a local government to step into the broadband or related service arena. Until the Act is preempted by federal law or revised or repealed at the Louisiana legislature, it still remains a hurdle for broadband build-out in Louisiana.

LEGISLATIVE HOPE - HB 648

In light of the recent American Rescue Plan Act funding allocations directly to state and local governments, the Louisiana legislature has recently moved towards working around the limitations of the Local Government Fair Competition Act.³⁰⁵ This is explicit in the language of the bill which states in pertinent part:

“B.(1) A local government may contribute funding or in-kind contributions for use on an eligible project under the provisions of this Part. The contribution of funding by local government for an eligible project under the provisions of this Part shall not be considered a partnership for providing a covered service under the Local Government Fair Competition Act.”³⁰⁶

As it stands now, the bill provides a way for local government to work with potential Internet service provider partners who are receiving grant funding through the newly established “Granting Unserved Municipalities Broadband Opportunities” (GUMBO) program. While this new bill is only the first step forward for the future of broadband in Louisiana, it could be the key to partnerships and better coordination. The hope is that this type of collaboration will continue moving forward.

In addition to this legislative proposal, the Louisiana Governor’s Advisory Council on Rural Revitalization Strategic Plan (RRSP) highlights the need for expanded broadband access and establishes a framework to address this need. Many of the goals and objectives highlighted in the RRSP are embodied in the following assessment.

ADDRESSING THE DIGITAL DIVIDE THROUGH THE STATE RURAL REVITALIZATION PLAN

In February 2020, Louisiana Governor John Bel Edwards released an Executive Order (JBE 2020-3)³⁰⁷ establishing the Governor’s Advisory Council on Rural Revitalization. A major charge for this council was to address the growing digital divide in Louisiana’s rural communities. The council was divided into nine subcommittees that included Broadband as one of its focus areas. Its mission was to identify and advise the governor on the most prominent industry issues relative to rural Louisiana, and develop effective solutions based on best practice methods, stakeholder buy-in, and resource availability. This section will describe how the Louisiana Governor’s Advisory Council on Rural Revitalization Strategic Plan³⁰⁸ addresses broadband and the digital divide. As part of this plan, The Council identified four key themes and one of these priorities focused on expanding broadband access across the state, while three other themes contained goals designed to address the rural digital divide. The policy recommendation made by every subcommittee of the Governor’s Rural Revitalization Council (RRC) was to expand broadband access across the state. They recognized that high-speed Internet connectivity is a vital utility for the 21st century. Additionally, the ability to access high-speed Internet facilitates educational opportunities, economic endeavors, and improved healthcare outcomes. They concluded that increasing broadband access is cornerstone to the rural revitalization of Louisiana.³⁰⁹

BROADBAND SPECIFIC GOALS AND OBJECTIVES IN THE RURAL REVITALIZATION PLAN

- Building on the work of the Broadband for Everyone in Louisiana (BEL) Commission, the Broadband Subcommittee identified three critical focus areas: access, adoption, and affordability. Each focus area has specific goals that are further outlined in

Table 22.

Table 22: Broadband Specific Goals and Objectives in the Rural Revitalization Plan

ACCESS	ADOPTION	AFFORDABILITY
<ul style="list-style-type: none"> Develop and Maintain a Broadband Map Assist providers with needed information and data 	<ul style="list-style-type: none"> Promote online use 	<ul style="list-style-type: none"> Increase access to affordable Internet

The Access (Availability) focus area centers first on developing and maintaining a statewide broadband map and second making this information available by providing technical assistance to potential broadband grant applicants. The current broadband assessment described in this report advances both of these goals within the Acadiana Region. The first goal centers on developing and maintaining a statewide broadband map that identifies served, unserved, and underserved areas as defined in the Broadband for Everyone in Louisiana State Plan.³¹⁰

The second goal is to assist potential broadband providers with needed information and data to ensure more successful applications for federal grant funding. As part of this goal the plan seeks to identify barriers and encourage solutions by identifying incentives and promoting collaboration among all stakeholders; identify and support a public-private partnership model for broadband expansion in Louisiana; reassess and modify The Local Government Fair Competition Act (La .RS 45:844.41) to align with current and future needs of all rural communities; and update the current Broadband for Everyone in Louisiana State Plan to meet and exceed the telehealth needs for each community.

The third goal under Adoption in the plan seeks to promote online use. As part of this goal, every Louisianan, young and old, will be encouraged to participate in some way online where they were not before. This will be accomplished by actively encourage efforts to promote online use for activities, including—but not limited to—economic development, healthcare, education, and recreation.

The fourth goal under the plan seeks to increase access to affordable broadband Internet in Louisiana. To accomplish this goal the plan seeks to identify or create federal and state programs to assist and/or subsidize low-income families to be able to access available services for telehealth, education, e-commerce, and recreation. To accomplish this goal, the state legislature recently passed Act 477 that creates the GUMBO grant program to fund broadband expansion in Louisiana.

Other sections of the Rural Revitalization Plan also highlight the importance of broadband Internet. Broadband-related goals found in other sections are summarized in **Figure 62**.



Education: Extend broadband access to every community in Louisiana.



Healthcare: Provide universal broadband access throughout all of Louisiana. It is essential for telehealth. With universal broadband services, the healthcare wellbeing of rural citizens will greatly improve.



Workforce Development: Create innovative service delivery strategies to improve broadband access for distance learning.

Figure 59: Other Focus Area Goals Related to Broadband in Louisiana Rural Revitalization Plan

STATEWIDE PARTNERSHIPS AND MAPPING

LAPDD

The association of Louisiana Planning and Development Districts (LAPDD) through a partnership with LADOTD has secured additional funding from the US Economic Development Administration for a statewide broadband planning effort. The LAPDD will build upon the DRA mapping initiative by informing community members on the significance of the speed test data. APC, as a member of LAPDD, anticipates building upon the work contained within the Acadiana Assessment as part of the statewide effort. This statewide mapping effort is geared towards collecting a large enough sample size so that FCC form 477 broadband coverage data may be challenged in future funding opportunities. Furthermore, LAPDD will conduct a series of educational campaigns fostering a general understanding of the broadband pillars – infrastructure, service levels and speed, and economic survivability.

OFFICE OF BROADBAND

In February of 2021, Governor John Bel Edwards established the Office of Broadband Development & Connectivity and appointed a State Director to coordinate broadband expansion to unserved and underserved areas in the State. The newly created office is housed in the Louisiana Division of Administration and is singularly tasked to leading efforts in eliminating the Digital Divide by 2029. (ConnectLAToolkit)

The office is authorized under La. R.S. 51:2370.1 – 2370.16 to administer the Granting Unserved Municipalities Broadband Opportunities (GUMBO) grant program, which aims to facilitate technical assistance in the deployment of broadband service to unserved and underserved areas of the state. APC worked closely with the Office of Broadband and local stakeholders to reassess and modify the Local

Government Fair Competition Act³¹¹ to align with current and future needs of all rural communities. These revisions are embodied as a tenant of the State’s Rural Revitalization Plan and are reflected in the recently adopted ACT 477 that created the state GUMBO program. APC will continue to work with the state office of Broadband through the GUMBO program to help expand broadband service to areas identified as unserved or underserved in Acadiana.

DRA MAPPING

In 2020, Governor John Bel Edwards’s designee to the Delta Regional Authority championed the development of statewide broadband mapping. The DRA region, especially rural areas, lacks adequate digital infrastructure to support access to critical services such as healthcare, distance learning, and remote work. In response to these challenges, DRA launched the Delta Broadband Mapping Project. (source: <https://dra.gov/research/broadband-mapping/>) Through an innovative online crowd-sourcing platform, users can test their Internet speeds and bandwidth capabilities.

DRA MAPPING AS A PATH FORWARD

Plans are underway to utilize the DRA Broadband Mapping Project to inform decision-making at the local, regional, and state level. Acadiana Planning Commission in coordination with other Planning and Development Districts throughout the State of Louisiana will perform multiple broadband speed test campaigns to encourage broad participation in the speed test. Data collected will be used to identify actual speeds received by consumers and validate the speeds reported to the Federal Communications Commission (FCC).

SPEED TEST LINK

dra.gov/research/broadband-mapping/#speedtest

SPEED TEST RESULTS

expressoptimizer.net/projects/DRA/speedtestmap.html



CONCLUSION AND FINAL RECOMMENDATIONS

CONCLUSION

Broadband expansion within the Acadiana Region is vital to the regional economy and the future growth and prosperity of the Region's rural communities. Lack of access to broadband has far reaching implications for community viability, businesses, schools, and health care. The Acadiana Regional Broadband Assessment identified numerous limitations in existing broadband coverage throughout the region. These include:

COMMUNITY VIABILITY

- Poor broadband access is statistically linked to outmigration, where residents from small rural communities are moving to larger urbanized areas where access to affordable and reliable broadband access is improving.
- Broadband access is worst in Acadiana's most rural parishes (Evangeline, St. Landry, Acadia, and Vermilion), however poor broadband access is not limited by political geography with adjacent areas in other parishes (St. Martin and Iberia Parishes) also experiencing poor access.
- Outside of Lafayette Parish, almost half of all residents report broadband speeds that fall below the current FCC definition of 25Mbps download and 3 Mbps upload.
- Poor broadband access is not limited to the most rural areas. Most of Acadiana's downtowns and main streets lack access to affordable and reliable broadband.

BUSINESS IMPLICATIONS

- As much as 1/5 of the region's businesses are located in areas that the FCC considers unserved. As a consequence, many are unable to perform basic business functions such as running credit card machines or placing/fulfilling orders through e-commerce platforms.
- Significant clusters of businesses in the Acadiana Region lack access to reliable and affordable access to broadband services.
- Areas such as Evangeline Parish and St. Landry Parish have experienced a net job loss that can be statistically attributable to limitations in broadband access.

SCHOOLS AND HEALTH CARE IMPLICATIONS

- During COVID 19, K-12 school systems and postsecondary institutions had access to excellent broadband speeds at their facilities, yet many of their students were unable to connect at home due to lack of access to broadband or high cost for service.
- Rural healthcare providers had good access to broadband at their clinic, but difficulty connecting with rural patients who lacked broadband for telehealth visits.



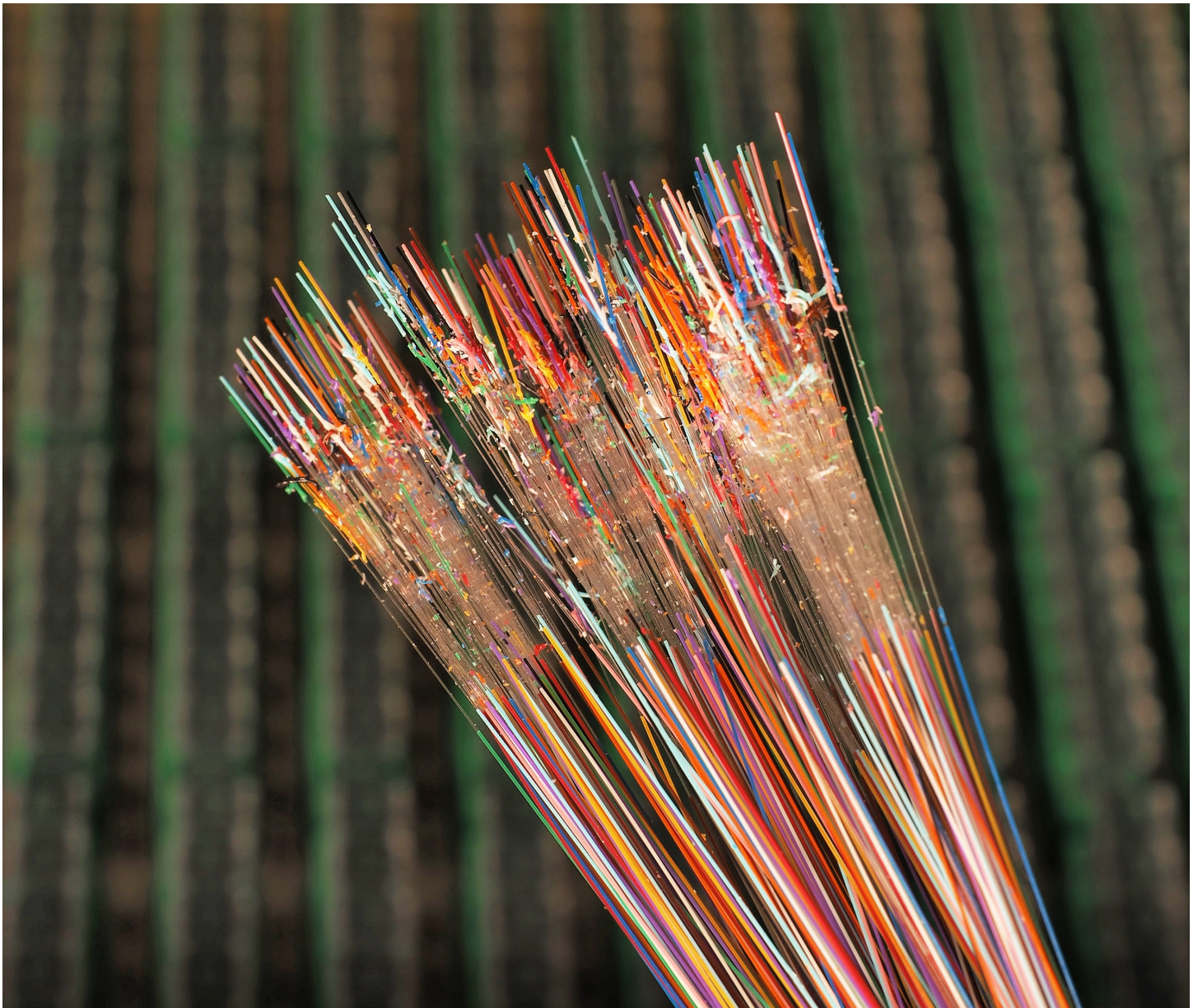
There are challenges to addressing broadband expansion in Acadiana. Access to broadband is far worse than is represented by FCC form 477, yet data from this form are used to guide public efforts to expand broadband. In most rural areas in Acadiana there are limited consumer options for broadband service. In practice, highly localized monopolies exist that limit competition and drive up costs for consumers.

The analysis revealed several opportunities for the next steps to improve broadband in Acadiana. Evaluation of available broadband technologies reveal that future broadband expansion should be based on fiber optic networks with fiber-to-the-home as a regional priority. Broadband expansion is a necessary precursor

to implementing SMART region strategies that will help Acadiana's rural communities become more competitive in the future.

The Acadiana Planning Commission is currently working with regional stakeholders to identify partners to form a regional consortium for the coordinated expansion of broadband service throughout the Region. Concurrently, APC is working on planning efforts to develop the Acadiana Region into a SMART Region in order to better take advantage of broadband expansion for future regional economic growth.

For further research and a list of broadband deployment funding options, see **Appendix D**.



ACKNOWLEDGMENTS AND CREDITS

USDA ACKNOWLEDGMENTS

USDA's vision is to provide economic opportunity through innovation, helping rural America to thrive; to promote agriculture production that better nourishes Americans while also helping feed others throughout the world; and to preserve our Nation's natural resources through conservation, restored forests, improved watersheds, and healthy private working lands. Funding for this project is provided through a US Department of Agriculture Rural Business Development Grant program.

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Anonymous Participants in the Acadiana Broadband Speed Test

Fiber-To-The-Home Economic Development Roundtables – April 6, 2021
Distance Learning Stakeholder Engagement Meeting – March 16, 2021
E-Commerce & Business Stakeholder Engagement Meeting – March 23, 2021
Telemedicine Stakeholder Engagement Meeting – April 28, 2021

APPENDIX A: EVOLUTION OF BROADBAND

PRECURSORS TO BROADBAND TECHNOLOGIES

Over the last 100 years, waves of technology including electric services, telecommunications, internet, and now broadband have dramatically molded our economy. Telephone and telegraph service providers were the earliest predecessor of today's broadband technology. These providers began commercial operation in the last half of the nineteenth century and the copper-line technology that they deployed form the bulk of the support infrastructure for DSL service today. This was followed by the development of the cable TV industry which began just after World War II and is based upon coaxial cable which a slightly different type of wired connection.³¹³ Cellular/Wireless telecommunications,

starting in the 1970's, is the final technological innovation that would have an impact on future broadband service that is based upon wireless cell towers. Other technologies, such as wireless wi-fi and satellite broadband, have also evolved but only serve a small portion of broadband customers. Over the period spanning the last 30 years, technologies and services began to converge into the modern broadband market where the bundling of phone, internet, and television services by a single provider using similar hybrid technologies has become the norm.

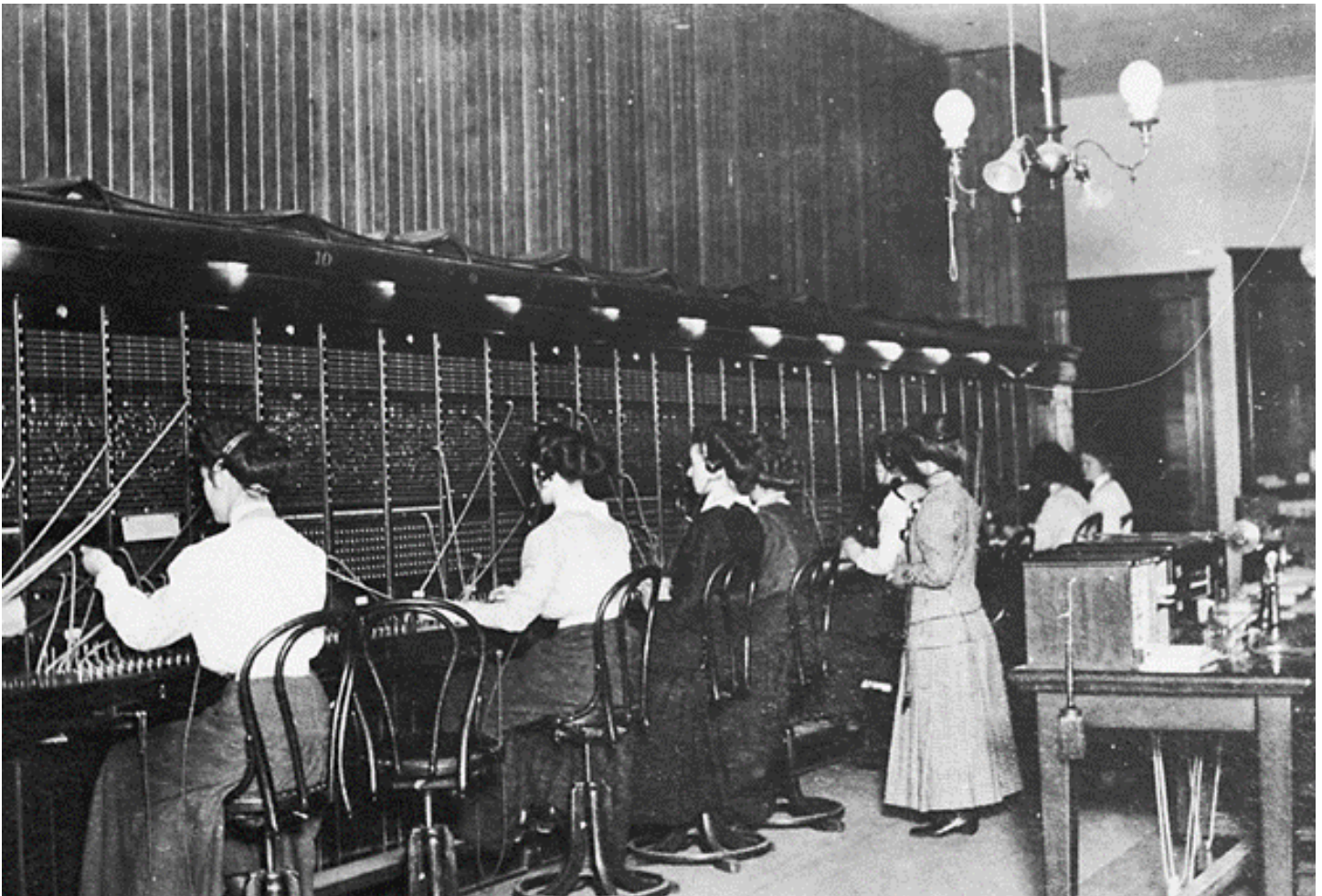


Figure 1: Early telephone system exchange. The last-mile copper line infrastructure that is currently being used by most telephone companies has changed little since their original installation.³¹²

PHONE-BASED CARRIERS

The foundation and infrastructure for the phone-based service providers have their roots in the independent telephone industry that began to develop in the 1890s. During that period, the predecessor of the modern phone industry was supported by the emergence of both manufacturing and service organizations who turned to the rural market where many mutual or cooperative telephone systems were formed throughout rural America. By 1912 there were more than 3,200 rural telephone systems, and before the economic collapse of the great depression, these numbers swelled to more than 6,000.³¹⁴ During the Depression, many of these rural phone systems went bankrupt while the surviving systems consolidated their operations. In the 1930s the Federal Communications Commission (FCC) was established as part of the by the Communications Act of 1934 with the goal of making available a rapid, efficient, nationwide, and worldwide wire and radio communication service with adequate facilities at reasonable charges. The founding of the FCC and the later entry of USDA's rural utilities program helped to expand rural access to telephone services, often by local providers. In the 1960s telephone companies entered the cable TV business in both construction and operations. While telephone companies initially deployed copper lines to support growth in the analog telephone industry, the emergence of new communication modes such as cellular data and the internet led to a decrease in demand for landline phones. To respond to increased competition, telephone companies pivoted into becoming Internet Service Providers (ISPs) and repurposed copper lines to deliver high-speed broadband.³¹⁵

In order to compete with the cable industry in the delivery of television services, phone carriers began to look at alternative signal delivery methodologies. In the early 1980s researchers at Bell Laboratories proposed to unevenly allocate bandwidth between download and upload speeds. Now known as Asymmetrical DSL, this technology significantly eliminates electrical interference in copper lines.³¹⁶ ADSL permitted phone companies to boost data speeds at a fraction of the cost to upgrade to fiber or cable. At the same time, telecom companies did not have to invest in replacing their copper line infrastructures with other expensive but faster alternatives. The ADSL technology, however, was not widely adopted until the birth of the internet in the early 1990s.

Initially, dial-up internet access provided speeds that more than satisfied the demand for early internet browsing functions. As websites grew more complex and began to use more data-rich content, dial-up quickly became obsolete. At this time, phone companies were confronted with increasing competition from cable, satellite, and other broadband providers that offered faster data rates. In order to offer more competitive and faster services, they began implementing hybrid systems that combined fiber and copper phone lines. This type of hybrid service, Very High data rate Digital Subscriber Line (VDSL), utilizes a "Fiber to the Node" (FTTN) network structure. It reduces the distance of the low-bandwidth copper telephone line used to connect carrier fiber lines to customers' homes.³¹⁷ VDSL deployments are the fastest available form of DSL technology currently being provided by major phone companies today. In rural areas, regular DSL or ADSL is often the only available wired internet option.³¹⁸

CABLE-BASED CARRIERS

Cable-based telecommunications began as early as 1948 with the first subscriber-based local cable TV operators. In 1962 cable signal was improved with the introduction of shielded coaxial cable with an aluminum shielded distribution cable with a foam dielectric core, forming the basis for the technology that is still being used for the “last-mile” by most cable broadband providers.³¹⁹ Cable service providers rapidly expanded through the 1970s and 1980s. By 1985, cable systems served more than 41.5 million households, or nearly 50 percent of homes.³²⁰

In 1992, large Cable providers began to deploy a hybrid fiber-coax (HFC) network architecture with a fiber-to-the-node (FTTN) design. This type of architecture typically serves 500-600 homes per node who share that nodes bandwidth capacity.³²¹ In 1995, interest in the internet took off. Between 1996 and 2000,

\$36 billion was spent by the Cable Industry upgrading its infrastructure of hybrid fiber and coaxial cable to provide increased broadband services. Between 1996 and 2004, cable capital expenditure for expansion of HFC networks reach \$95 billion.³²² This type of network architecture continues to be the dominant form for broadband service by cable providers today in 2021.

The Telecommunications Act of 1996 was the first major overhaul of telecommunications law in the 62 years following the Communications Act of 1934. Recognizing the convergence of multiple technologies, its goal was to let any communications business compete in any market against any other – including local and long-distance telephone service, cable programming and other video services, broadcast services, internet services, and services provided to schools.³²³ Its regulation remains in effect today.



96-bill-signing.png

Table 2: Data transmission requirements for common consumer broadband-based services³²⁴

ACTIVITY	REQUIRED DOWNLOAD SPEED PER INSTANCE
Video chatting/teleconference software	0.1 Mbit/s
Skype video call	0.5 Mbit/s
Skype video call (HD)	1.5 Mbit/s
Listening to online radio	0.2 Mbit/s
Smart Speakers (Amazon Alexa/Google Assistant) when idle ³²⁵	1.0 Mbit/s
Watching YouTube videos (basic quality)	0.5 Mbit/s
Watching YouTube videos (720p HD quality)	2.5 Mbit/s
Watching YouTube videos (1080p HD quality)	4 Mbit/s
Smart home devices (Nest Cam, Nest Thermostat, Ring Doorbell, etc.)	1 to 4 Mbit/s ³²⁶
Accessing Remote Desktop	1.5 to 15 Mbit/s ³²⁷
On Demand Streaming Services (standard definition)	1.5 Mbit/s
On Demand Streaming Services (high definition)	5 Mbit/s
On Demand Streaming Services (4K UHD)	25 Mbit/s
Remote Learning	5 to 25 Mbit/s
Telemedicine	50 to 100 Mbit/s ³²⁸
Augmented Reality Applications	100 Mbit/s to >1 Gbit/s ³²⁹
IoT-enabled smart manufacturing ³³⁰	1 Gbit/s to 10 Gbit/s ³³¹



TRANSMISSION MEDIA USED IN FIXED BROADBAND NETWORKS

Broadband networks typically consist of three components: transmitter, receiver, and the transmission medium between them. The communication is established using either EM (Electro-Magnetic) waves or pulses of light. In wired broadband networks, EM waves or light waves are guided using solid physical medium such as copper wires or fiber optic cables. Both media are considered a “guided” media. Common copper wires may be further classified into two categories: twisted pair or coaxial cable. By contrast, transmission of a broadband signal through the atmosphere and outer space is considered to be an “unguided” delivery media and forms the basis of wireless communications.

COPPER WIRE

For data communication, copper as a medium offers a variety of advantages. In general, copper wire supports low delay, medium bandwidth, and varying path loss. In the telecommunications industry, copper wire comes in two configurations: twisted pair, which is commonly used in the telephone industry; and coaxial cable, which is commonly used by the cable TV industry.

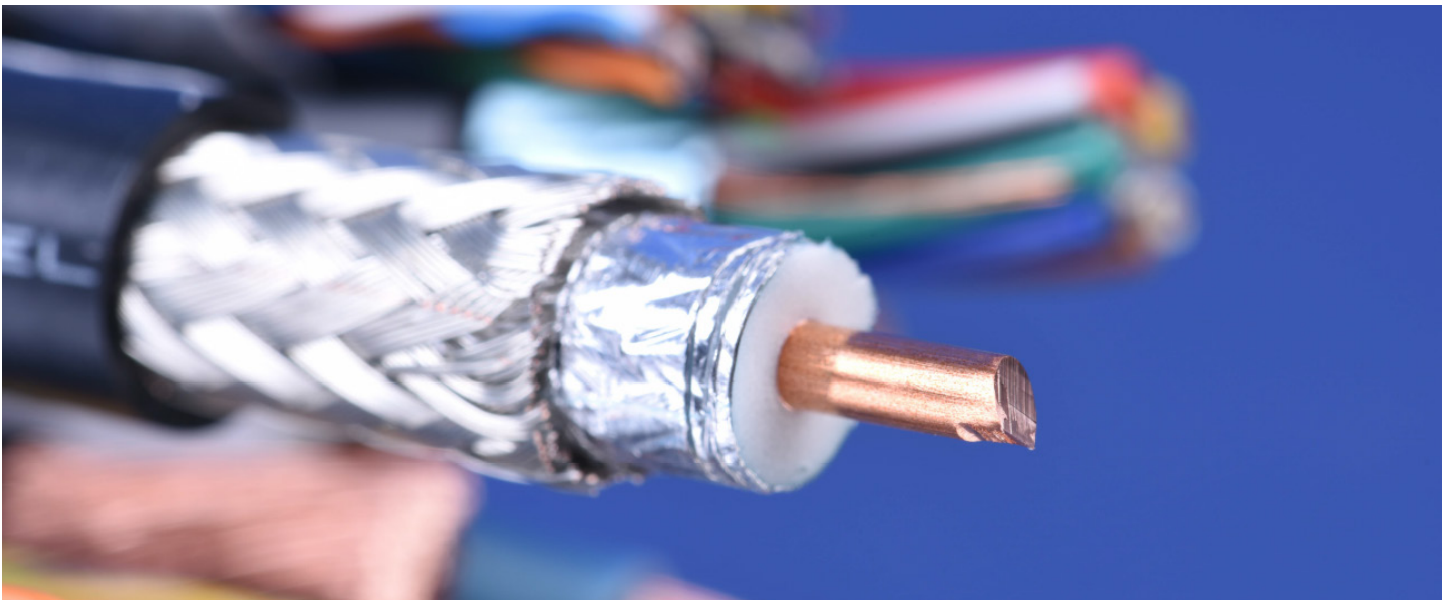
TWISTED PAIR

In twisted pair, copper wires can be twisted into a spiral shape to reduce noise and crosstalk between adjacent wires or bundles. Advantages of twisted pair cable are numerous. It is inexpensive, often available in existing phone systems, and it is well tested and easy to get. However, its major limitations make it less-desirable for high-capacity broadband applications. Twisted pair cable is more susceptible to Radio Frequency Interference (RFI) and Electro-Magnetic Interference

(EMI), they are not as durable as coaxial cable or fiber optic bundles, and they cannot support higher broadband speeds like other media.

COAXIAL CABLE

Commonly used by the cable TV Industry, coaxial cable is an improved version of twisted pair which consists of conductors shielded and insulated from each other then enclosed in a polyethylene jacket. The gauge of the copper wire used in coaxial cables is typically greater than is found in twisted-pair bundles, thus decreasing signal degradation due to increased electrical resistance. Coaxial cable has several distinct advantages over twisted pair. It is resistant to RFI and EMI, supports faster data rates, and is more durable than twisted pair cable. However, coaxial cable can still be affected by strong interference, it costs more, and is bulkier and more rigid than twisted pair.³³²



FIBER OPTIC

The fiber optic cable transmits modulated light over flexible hair-like threads of glass and plastic. They are not susceptible to interference caused by electrical devices, are difficult to tap, and are therefore the best choice for a secured network. The fiber optic cables can be used to transmit television, voice, and digital data signals by light waves. Fiber optic cables consist of thousands of clear glass fiber strands with the thickness of a human hair. These cables consist of a thin glass center core where light travels, an outer cladding surrounding the core which reflects light back into the core, a plastic coating which protects fiber from damage and moisture, a strength member that is used to protect the core against damage and moisture, and an outer jacket that is the outermost layer of the fiber cable used to protect multiple bundled cores.

Advantages of fiber optic systems include that it is highly secure, is not affected by RFI and EMI, offers the highest bandwidth available compared to other technologies, and is very durable. While fiber was once believed to be burdened by disadvantages such as cost to produce and service and complexity of layout and design, these hurdles have been greatly reduced as fiber has become more widely available and used. Today, when durability, lower maintenance costs, and lifespan are factored into costs, fiber networks are no more costly to deploy, maintain, and operate than their copper-based counterparts.

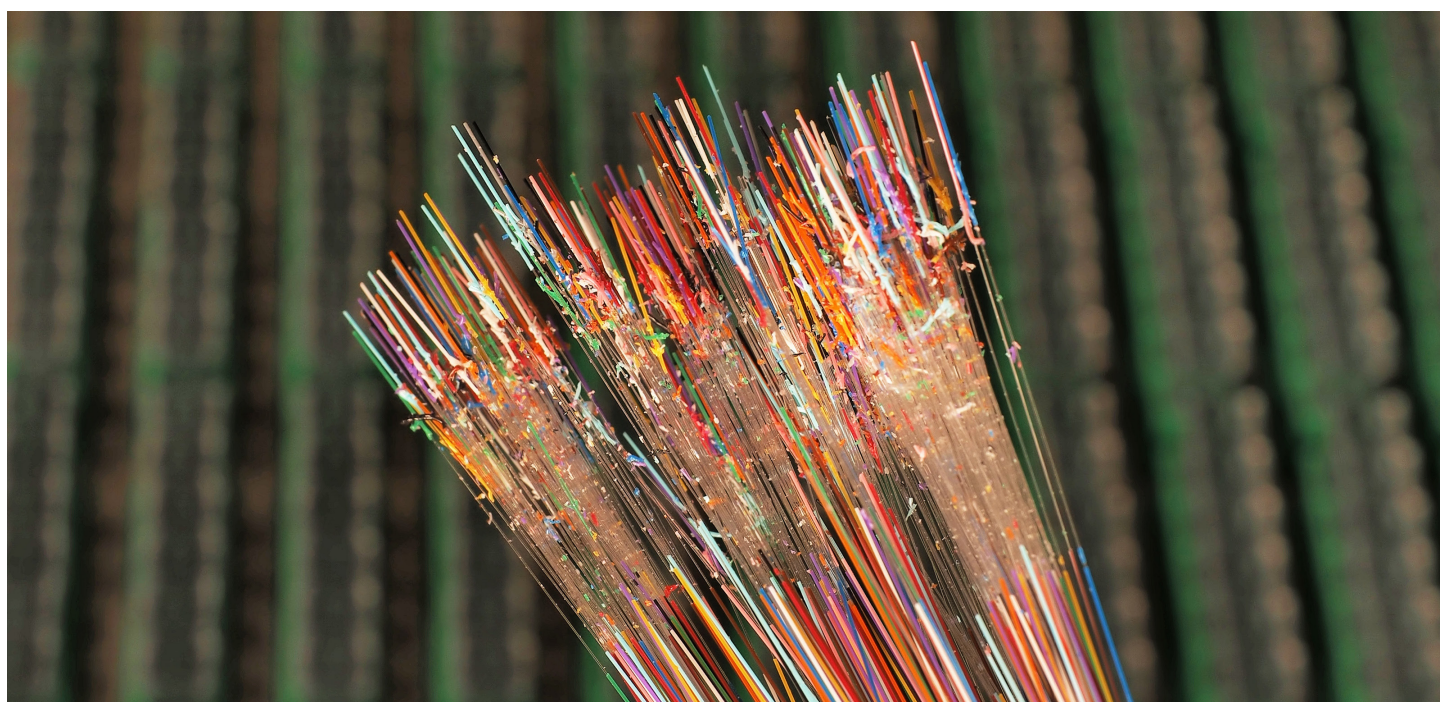
ANALYSIS

Copper cables were first strung on poles at a time when the telephone was the newest way to connect. The underlying copper-technology predates the internet by more than a century. Simply put, copper “networks” were never built with the internet in mind. Electrical transmission over a copper wire, the basis of signal transmission, is subject to the physical limitations of the materials and manner of signal. Copper line, the physical media for broadband transmission, resists the flow of electricity through the media. This resistance increases as the length of the wire increases or with the decrease in the diameter of the wire. In physics, this relationship is described by Ohm’s Law.³³³ For electronic signals that contain data, wired copper media are prone to signal interference and degradation due to electrical resistance the further an end user is away from the transmitting source. Therefore, copper offers limited bandwidth, slower speeds, and greater signal degradation over long distances. Whether used by the telephone or cable TV industry, many cable internet connections today are still made on copper wiring that are part of legacy networks.³³⁴

Because light is not subject to resistance through fiber, as a broadband transmission material fiber is able to provide faster speeds, less signal degradation over distances, and is more resilient. Unlike copper lines that are prone to electrical resistance, fiber optic cables are able to transmit data at the speed of light. Fiber is, therefore, able to provide service to remote rural locations as effectively as it does to urban areas a short distance from the switching centers of the service provider. Fiber is a more secure transmission media and offers a better alternative to copper in a world with very real cybersecurity concerns. Because fiber has become more widely adopted, the cost to deploy fiber has become comparable to copper. Fiber is a technology that was designed to support high-speed data transmission. Many Internet Service Providers have adopted hybrid models that now incorporate fiber as part of their network. However, these fiber networks are limited by their legacy technologies. A full discussion of the different types of hybrid networks follows this section. True fiber-to-the-home (FTTH) infrastructure brings the fiber network directly to businesses and homes rather than limiting access to the network with a copper connection.³³⁵

Table 3: Difference between copper and fiber as transmission media in data communication³³⁶

SPECIFICATIONS	COPPER WIRE	FIBER OPTIC
Transmission Signal	It uses electrical signal for transmission.	It uses optical form of signal for transmission.
Distance	100 meters @1000 Mbps	> 40 Km @10,000 Mbps
Capacity or bandwidth	Moderately high, 10 Gbps	Very high, > 10 Gbps and goes up to 69 Tbps i.e. Unlimited
Repeater spacing	1 to 10 Km	10 to 100 Km
Attenuation or path loss	Low	Very Low
Life cycle	5 years	30 to 50 years
Energy consumed	>10 Watts per user	2 Watts per user
Weight	Heavier	Lighter
Handling	Heavy and thick in diameter, Strict pulling specifications	Light and thin in diameter, strong pulling strength
Noise immunity	Susceptible to EMI/RFI interference, crosstalk and voltage surges	Immune to EMI interference
Security	emits electro-magnetic (EM) waves which interfere with other systems connected nearby. Moreover it is easy to tap the signal being transported through copper wire. As a result copper wires offer less security.	It is hard to tap the signal being transported. As a result, fiber cables offer high security.
Cost	Lower	Higher
Spark Hazard	Hazardous	No spark hazard
Durability	Lower, it can be improved with light jacketing	High
Types	STP (Shielded Twisted Pair), UTP (Unshielded Twisted Pair), Coaxial cable	Single mode fiber and Multi-mode fiber
Voice channels	24	32,000 +



COMPARISON OF AVAILABLE BROADBAND TECHNOLOGY

Broadband generally refers to high-speed internet access that is always on and faster than the dial-up access. Broadband includes several high-speed transmission technologies each with their own limitations. Types of broadband technologies include: Digital Subscriber Line (DSL), coaxial cable/cable modem, fiberoptic or fiber, wireless, satellite, and broadband over powerlines (BPL).³³⁷ This section will explore the merits and limitations of each of these alternatives and examine the capabilities of each type of technology to meet the future needs of the Acadiana region. It is important to note that many broadband service providers use a combination of technologies to deliver service to their subscribers. In networks with blended or hybrid technologies, quality of service for the consumer often devolves to that of the lowest quality technology in the network.

DIGITAL SUBSCRIBER LINE (DSL)

DSL is a wireline transmission technology that transmits data faster over traditional copper telephone lines already installed to homes and businesses. Major advantages of DSL – based services include: the ability to deploy over extensive existing telephone networks and the relatively low cost to expand beyond the existing network. DSL-based broadband provides transmission speeds ranging from several hundred thousand bits (Kbps) to millions of bits per second (Mbps). The availability and quality (speed) of DSL service is often heavily dependent on the distance from

a home or business to the closest telephone company facility. DSL service is delivered simultaneously with wired telephone service on the same copper wires that deliver traditional telephone services. DSL uses higher transmission frequencies for data transmissions than are used for voice transmissions on the same line. Additionally, DSL is subject to signal degradation due to increasing electrical resistance from the copper line over increasing distances. Because the DSL frequency range overlaps with FM radio frequency bands, DSL is prone to signal degradation due to interference from FM radio stations.³³⁸

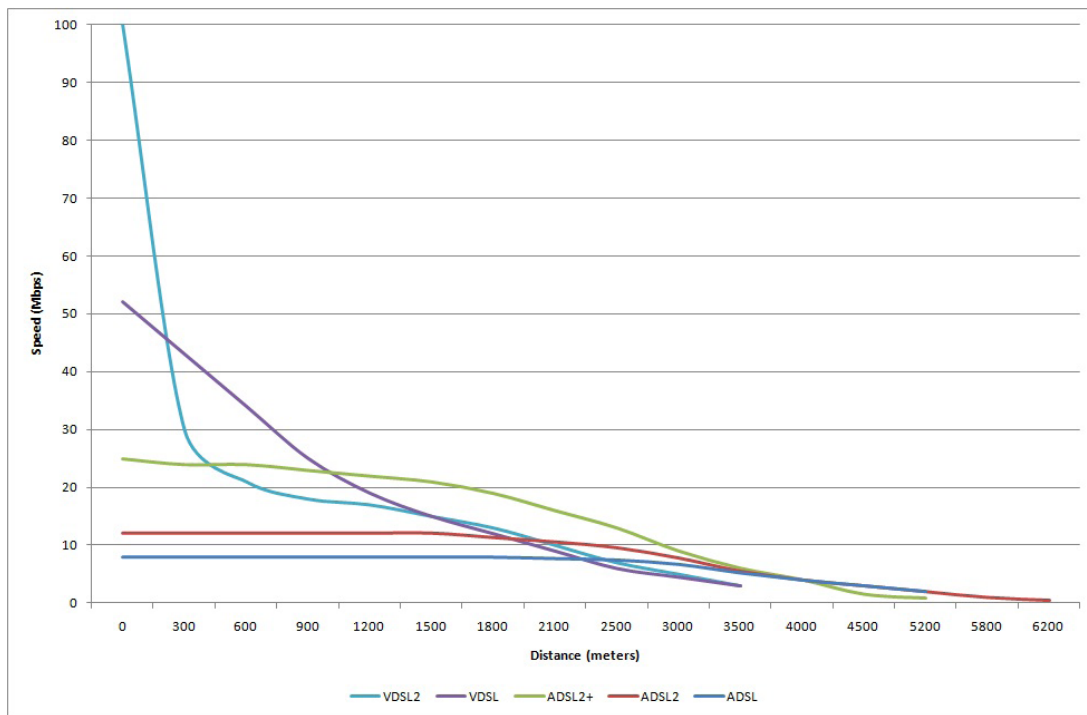


Figure 4: Relationship between line length and download connection speeds for different types of DSL Connections.³³⁹

The following are sub-types of DSL transmission technologies:

ASYMMETRICAL DIGITAL SUBSCRIBER LINE (ADSL)

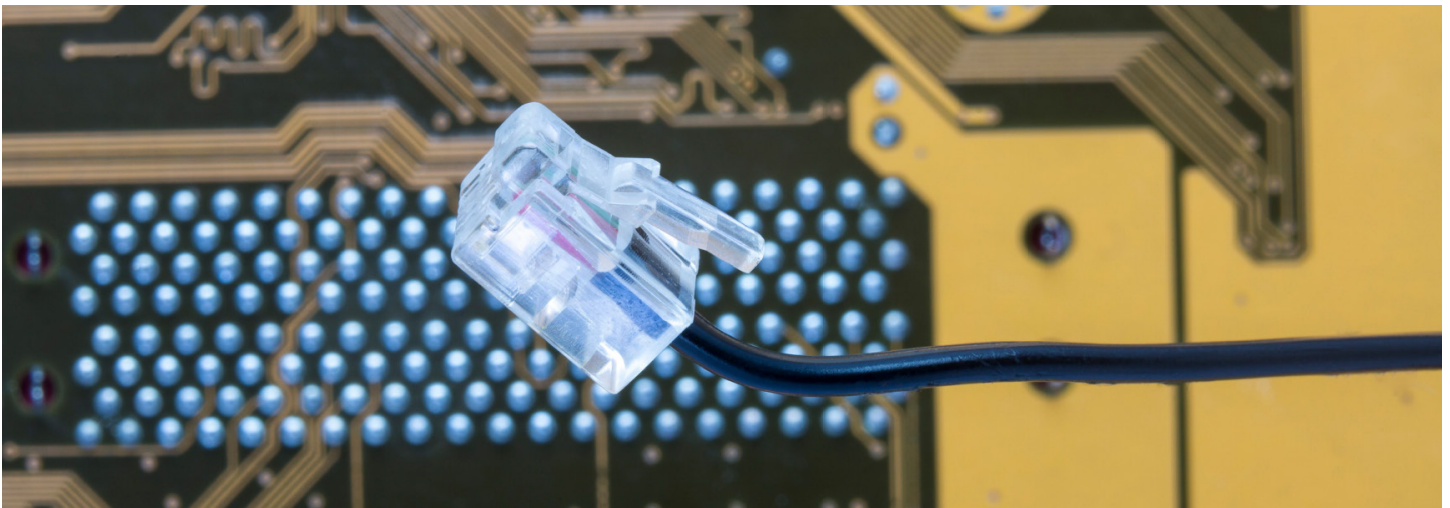
ADSL is the most common form of DSL that is used primarily by residential customers who receive more data than they transmit. In technical terms, ADSL typically provides faster speed in the downstream direction than the upstream direction. Using a variety of software-based data compression, ADSL allows faster downstream data transmission over the same line used to provide voice service, without disrupting regular telephone calls on that line. ADSL is typically capable of supporting speeds up to the 8 Mbps range. It relies on a single twisted-pair combination over regular phone lines and is subject to decreasing performance the further the end user is away from a switching or relay station.³⁴⁰ As mentioned earlier, ADSL uses asymmetric signal delivery to reduce signal interference caused symmetric signals over copper lines.

SYMMETRICAL DIGITAL SUBSCRIBER LINE (SDSL)

SDSL is typically used by businesses for services such as video conferencing, web and email hosting where significant bandwidth both upstream and downstream are required. SDSL is a proprietary technology that was never standardized and has not been widely adopted.

HIGH DATA RATE DIGITAL SUBSCRIBER LINE (HDSL)

High-bit-rate Digital Subscriber Line, is a modulation technology similar to Asymmetric Digital Subscriber Line (ADSL) that uses a group (up to 3 pairs) of existing copper twisted-pair subscriber telephone lines to transmit data at higher speeds.³⁴¹ HDSL operates in the same way as ADSL except that it is always symmetrical consequently, the maximum bandwidth for HDSL transmissions is less than for ADSL. HDSL transmission rates vary from 668-Kbps (T1 Speeds) full-duplex transmission over a single unconditioned, unshielded copper twisted-pair phone line up to 2.048-Mbps full-duplex transmission (E1 speed) over three unconditioned twisted-pair (phone) lines. Like ADSL, HDSL can carry both voice and data over a single link. The maximum distance for HDSL transmission is generally 3700 meters (2.3 Miles) when running over unconditioned copper twisted-pair wiring. HDSL is more commonly used for connecting bridges, routers, and telephone equipment such as Private Branch Exchanges (PBXs) over a campus. It can also be used for private data networks, connections between points of presence (POPs), and other services. It is not widely implemented at the customer premises level, which uses the more common ADSL.

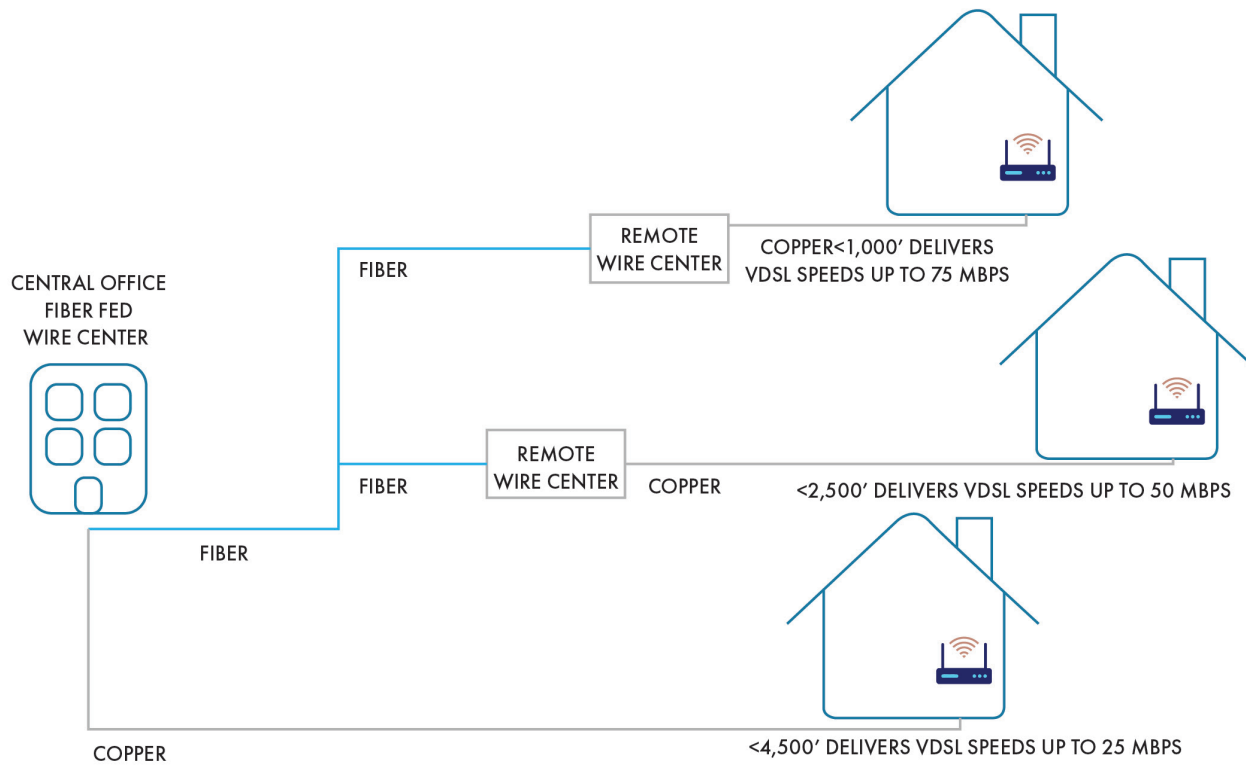


VERY HIGH DATA RATE DIGITAL SUBSCRIBER LINE (VDSL)

VDSL is a hybrid technology that improves transmission speeds by reducing the length of the standard twisted-pair cable (copper phone line) by installing an optical node near the subscriber's location. The connection between this optical node and the service provider is done through fiber optics, while the connection between the node and the user's home is done using standard

telephone wires. This type of network configuration is often referred to as Fiber to the Node (FTTN). It is similar to the configuration used the cable TV industry to provide internet service, except cable TV broadband service providers use coaxial cables instead of telephone wires. VDSL download and upload speeds theoretically top out at 100 megabits per second (Mbps). Newer VDSL2 technology is theoretically capable of data rates of up to 200 Mbps.³⁴²

Figure 5: VDSL Networks – Similar to ADSL, The greater the distance the end user is from the node, the slower the connection. Fiber to the node (FTTN) nominally improves connection speeds over ADSL, however the benefit decreases with increasing distance between node and subscriber which are serviced by copper phone lines.



COAXIAL CABLE / CABLE MODEM

Cable modem service enables cable operators to provide broadband using the same coaxial cables that deliver television pictures and sound. Broadband service is provided by cable service providers via a cable modem connected to a regular coaxial tv cable. Cable download speeds usually range between 10–500 Mbps, while upload speeds range between 5–50 Mbps. Some providers offer higher speeds in

select areas. Cable Internet offers coverage to 89% of the US. Because bandwidth is generally shared with neighbors, cable Internet isn't as fast as fiber internet, and the speed will often decrease by 20-40% during "peak use" times. Transmission speeds vary depending on the type of cable modem, cable network, and traffic load. However, in most cases cable offers higher speeds & lower latency than DSL. Companies that sell cable internet are often cable TV providers.³⁴³

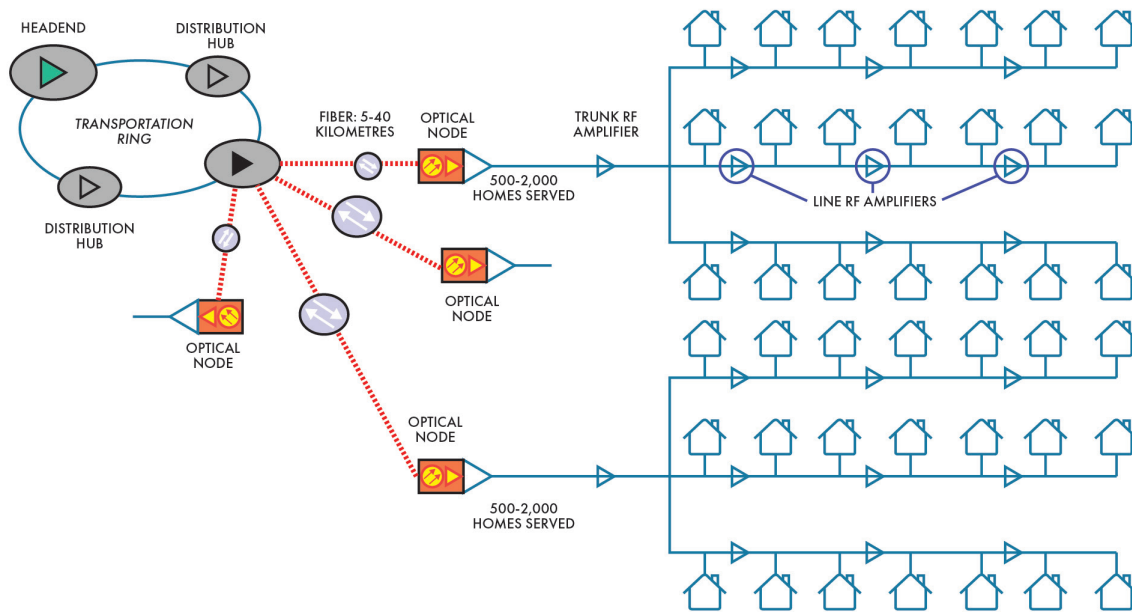


Figure 6: Hybrid Fiber Coaxial Cable Network (HFC)³⁴⁴ - The cable signal originates at a regional headend, where broadband signals are transmitted on an optical fiber cable, which is attached to utility poles or buried underground. The optical fiber trunklines fan out from distribution hubs to optical nodes that serve local neighborhoods. Here the signal from the optical fiber is translated from light beams to electrical signals carried on coaxial cable, which distribute it to the individual subscribers.

FIBER

While many major broadband service providers continue to operate hybrid fiber/copper networks, only Fiber to the Home (FTTH) can realize the full potential of fiber optics. Fiber optic technology converts electrical signals carrying data to light and sends the light through transparent glass fibers about the diameter of a human hair. Fiber transmits data at speeds far exceeding current DSL or cable modem speeds, typically by tens or even hundreds of Mbps. Depending upon the hardware deployed, fiber internet download speeds can be anywhere from 250–10,000 Mbps (or more depending on pricing plans and network hardware). Unlike cable and DSL, pure fiber network providers (FTTH or fiber to the home) usually offer “symmetrical” service. One of the major advantages of fiber is that

its high speeds make streaming high definition video to multiple devices on the same connection easy. Another advantage of fiber internet compared to DSL or cable is that it won’t slow down with increasing distance between subscriber and service provider. True fiber to the home or business (FTTH) has a network architecture composed completely of fiber-optic cables. Fiber networks are relatively easy to upgrade as technology changes, making it a “Future Proof” technology. Legacy service broadband services providers, as they modernize their network, often deploy variations of fiber technology that range from running the fiber all the way to the customer’s home or business (FTTH), to the curb outside (FTTC), or to a location or node somewhere between the provider’s facilities and the customer (FTTN).

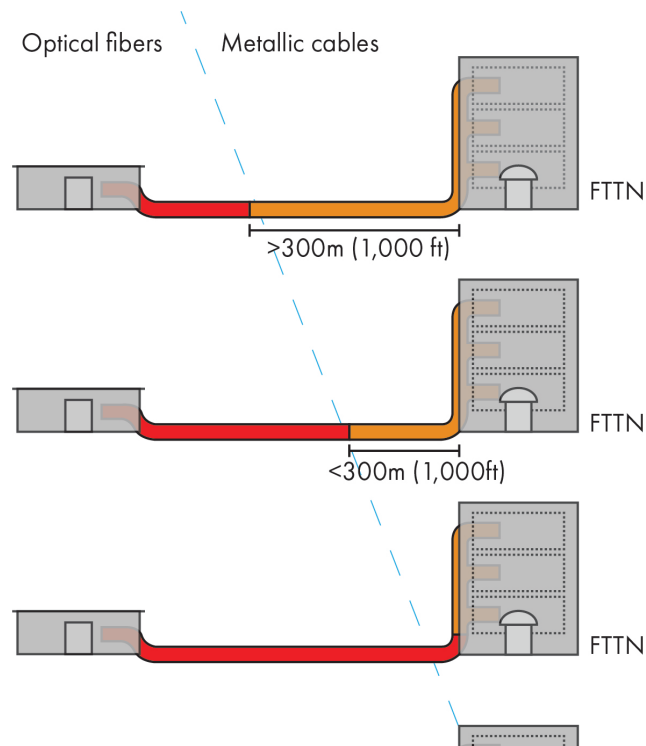


Figure 7: Fiber network Architecture configurations:³⁴⁵ How FTTX (Node, Curb, Building, Home) architectures vary with regard to the distance between the optical fiber and the end user. The building on the left is the central office; the building on the right is one of the buildings served by the central office. Dotted rectangles represent separate living or office spaces within the same building.

WIRELESS

Wireless broadband connects a home or business to the Internet using a radio link between the customer's location and the service provider's facility. Wireless broadband can be mobile or fixed. A major advantage of wireless technologies is that longer-range directional equipment can provide broadband service to remote or sparsely populated areas where fiber, DSL, or cable modem service would be costly to provide. Wireless broadband speeds are generally comparable to DSL and cable and usually require installation of an external

antenna. Wireless broadband Internet access services offered over fixed networks allow consumers to access the Internet from a fixed point and often require a direct line-of-sight between the wireless transmitter and receiver. These services have been offered using both licensed spectrum and unlicensed devices. Thousands of small Wireless Internet Services Providers (WISPs) provide wireless broadband at speeds up to 1 Mbps in rural areas not served by cable or wireline broadband networks.

FIXED WIRELESS

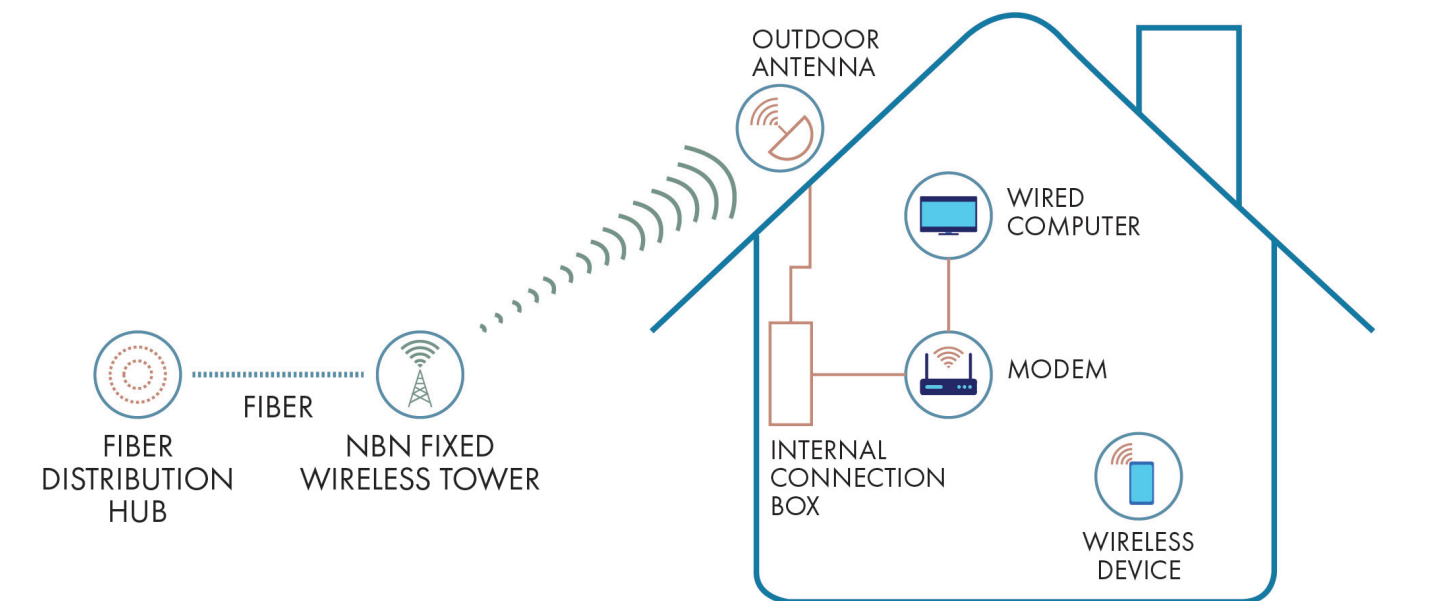


Figure 8: Fixed wireless connections are dependent upon fiber connections to the tower which then distributes an internet connection to the home receiver via radio waves.

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SATELLITE

Satellite broadband is another form of wireless broadband that has the ability to serve remote or sparsely populated areas. Satellite internet is available almost everywhere in the US. Downstream and upstream speeds for satellite broadband depend on several factors, including the provider and service package purchased, the consumer's line of sight to the orbiting satellite, and the weather. In general, satellite internet is much faster than dial-up internet service. Some plans are as fast as DSL or cable internet plans. Typically, a consumer can expect download speeds up to 500 Kbps and upload speeds up to 80 Kbps. Service can be disrupted in extreme weather conditions. Most satellite internet plans come with a limited allotment of data once the data cap is reached the ISP throttles down internet speed. Satellite broadband service is also susceptible to high latency due to the time required to transmit a signal up to a satellite and receive a response back down to a subscriber on earth.³⁴⁷

BROADBAND OVER POWERLINE (BPL)

Broadband over Power Line (BPL) is a technology that looked promising on paper: piggyback data communication signals on to existing power cables which already deliver electricity into homes and businesses. Once touted by national governments, the European Union (EU), and even the Organization for Economic Cooperation and Development (OECD) due to its apparent ease of deployment and negligible environmental impact; BPL has failed to be widely adopted due to its limited reach and low bandwidth that has not come close to matching ADSL, and other mobile broadband services.³⁴⁸ BPL is tied to the delivery of broadband service over existing low- and medium-voltage electric power distribution network. A major advantage of BPL is that it can be provided to homes using existing electrical connections and outlets. BPL is available in very limited areas.



ANALYSIS

Though Hybrid Fiber Copper (HFC) networks are able to offer higher broadband speeds than their pure copper cousins, HFC deployments have currently reached their capacity and have limited reliability for the majority of customers served by hybrid networks. Even in high demand periods, fiber doesn't experience the slowdowns associated with either copper or wireless broadband technologies. With fiber, cloud access is more efficient, and files can be pushed to shared folders and drives in seconds, not hours. Fiber broadband is not susceptible to physical barriers like location, traffic, and weather. Fiber overcomes the high latency, buffering, stalling, and wasted time, to which more dated telecom systems are prone.³⁴⁹

A common myth about FTTH networks is that they have a high "cost" and that there are cheaper alternatives available. A common argument is that a fiber-to-the-home deployment costs several thousands of dollars per household, while upgrading the copper DSL line or cable line costs a fraction of the price. This argument is used to justify "cheaper" networks that prioritize government subsidies and public investments to build networks with slow speeds, but broader coverage. However, despite the appearance of lower costs, this strategy encourages government programs with an exorbitant amount of waste when the long-term

operation and maintenance costs are included in the final financial model. When government incentivizes building fast networks for the future, not just fast-enough for today, it will save a lot of money over the long-term.³⁵⁰

Slow speed networks have limits that are hard-wired into them due to basic physics. Cable and DSL networks have reached their maximum bandwidth capacity, cannot get any faster, and are deteriorating after decades of use. The capacity of copper wires to transmit data have real-world limits whereas fiber optic wires have a capacity that network technology has not even begun to reach. In cable and DSL networks, copper wires can only carry a maximum amount of data that decreases with distance. Any significant improvements in the future will involve replacing big sections of the copper cables with fiber optics. However, for pure fiber networks (FTTH), the limit on capacity isn't the cables, it's the transmitters and receivers at each end. Once fiber is deployed, it is relatively easy to upgrade these networks without having to bury new cables. Massive capacity differences lead to a "speed chasm" between legacy networks and fiber networks."³⁵¹ This is reflected in the actual costs of incrementally upgrading an old network or alternatively switching to an all-fiber network.



Examples of the growing speed chasm between the two highest speed options in broadband are illustrated through the development of cable systems and fiber-to-the-home, in the few communities that have both. In 2015, Chattanooga's EPB, the local government ISP, launched 10 gigabit download and upload networks. At the same time, cable systems were able to transition towards gigabit download speeds but with substantially slower upload speeds. While the cable system had topped out its capacity, it was still only able to offer 1/10th the service that Chattanooga's EPB was capable of offering. Additionally, it costs Chattanooga EPB minimal dollars to increase their network's capacity when new technology becomes available. All they had to do was switch out the networking hardware in their system when new devices were developed.³⁵²

While it is often argued that fiber is expensive to deploy, initial deployment costs are offset by greatly reduced maintenance costs because fiber does not degrade as quickly and therefore does not need replacement as often. This translates into reduced maintenance costs by as much as 20% per year.³⁵³ In comparison, upgrading a cable network requires replacing the cable itself, which is cost-prohibitive.³⁵⁴ Compared to fiber, fixed wireless networks are cheaper and faster to build, but

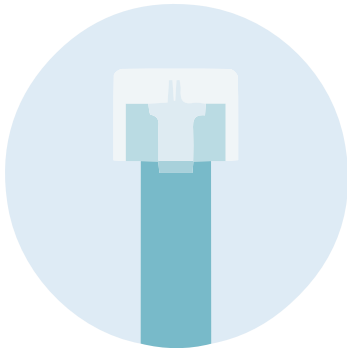
more expensive to maintain. Fixed wireless equipment must be replaced every 4-5 years, while fiber optic cables have a projected lifespan of up to 40 years. In rural areas with lower household densities, fixed wireless networks require more wireless transmitters in order to reach each customer, making the cost of replacing equipment even higher.³⁵⁵ Similarly, DSL is cheaper to deploy than either fiber or cable. As mentioned previously, DSL is transmitted through existing copper phone lines. However, increased demand during the COVID-19 pandemic has shown that both DSL and fixed wireless networks are inherently limited and are inadequate to meet the current demand. While improvements to DSL have increased download speeds, DSL still has slow upload speeds and future improvements to DSL are limited by physical properties of narrow-gauge copper telephone lines.

Fiber-to-the-Home (FTTH) networks have the fastest speeds, offer the highest quality connectivity, and are more cost effective over the lifespan of the network. Fiber-to-the-Home (FTTH) networks are the only long-term, cost effective networks that are also capable of delivering the bandwidth needed by households today and tomorrow.



BROADBAND ACCESS TYPES: HIGH-SPEED INTERNET CONNECTION METHODS

High-speed broadband can be accessed via twisted copper pairs, coaxial cables, fiber, or wireless connections. The following will overview the different benefits and drawbacks associated with different connectivity methods.



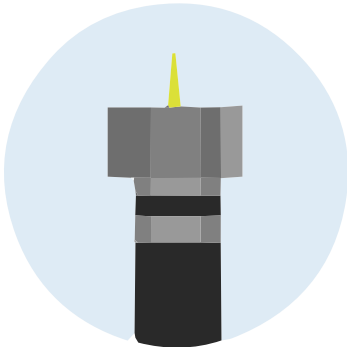
DSL

PROS:

- Low deployment costs
- Uses existing telephone cabling
- Will continue to work in case of an outage

CONS:

- Subscriber speeds attenuate the farther they are from the central office
- Copper cables require maintenance and replacement after a span of time



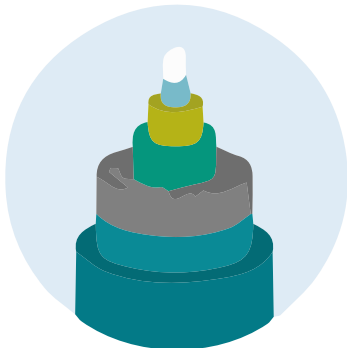
COAXIAL CABLE

PROS:

- Faster than DSL
- Low deployment costs
- Uses existing coaxial cabling

CONS:

- Will not work in the case of an outage
- Shared line architecture: Users may experience slower speeds during peak usage (but coaxial connections will usually offer higher average throughput than DSL)



FIBER

PROS:

- Faster than DSL, Coaxial Cable, and Wi-Fi
- Most future-proof medium
- Light technology makes for a noise-free networking environment

CONS:

- Intrusive to deploy
- High deployment costs



WIRELESS

PROS:

- Highly mobile
- Ideal for frequent travelers
- 2-6 Mbps

CONS:

- Coverage depends on location
- Susceptible to interference

Figure 9: Comparison of High-Speed Internet Connection Methods³⁵⁶

Table 4: Comparison of Broadband Technologies ³⁶¹

TECHNOLOGY	SUBTYPE	TYPICAL DOWNLOAD SPEEDS	TYPICAL UPLOAD SPEEDS	LIMITATIONS	TRANSMISSION LINE MATERIAL / ARCHITECTURE
DSL	ADSL	256Kbps to 24 Mbps	128 Kbps to 8 Mbps	Poor line quality and distance to switching station limit transmission speeds. Prone to Interference from FM radio signals.	Twisted-pair copper Phone lines
	SDSL	3 Mbps	3 Mbps		
	HDSL	2 Mbps	1.5 Mbps		
	VDSL/VDSL2	52 Mbps/ 80 Mbps	16 Mbps/ 80 Mbps		
Cable ³⁵⁷		10 Mbps to 500 Mbps	5 Mbps to 50 Mbps	Bandwidth generally shared with neighbors therefore transmission speed often slows 20–40% during evenings (due to bandwidth sharing)	Hybrid of fiber coaxial cable – may be FTTH or FTTC ³⁵⁸
Fiber		1000+ Mbps	1000+ Mbps	Short-term Cost	Fiber (FTTH) ³⁵⁹
Fixed Wireless		1 Mbps	1 Mbps	Speed decreases with distance from transmitter; Environmental Interference; limited number of available frequencies; Requires Direct line of sight to transmission tower; high maintenance costs	RF transmitter and receiver
Satellite		100 Mbps	3 Mbps	High latency, low data transmission caps, transmission interruption due to severe weather	Satellite Dish and Satellite
BPL		<1 Mbps	<1 Mbps	Lower achieved speeds relative to other technologies.	Electrical power lines
Cellular Data Services ³⁶⁰	3G	0.1 Mbps to 0.3 Mbps	0.1 Mbps to 0.3 Mbps	Negatively impacted as distance to tower increased; prone to environmental interference; impacted by tower density; towers require fiber connection	Cell towers / Phones
	4G	15Mbps to 150 Mbps	15Mbps to 150 Mbps		
	5G	150 Mbps to 1 Gbps	150 Mbps to 1 Gbps		

APPENDIX B: TECHNICAL APPENDIX

BROADBAND AND EMPLOYMENT GROWTH IN LOUISIANA: TECHNICAL APPENDIX

To explore the causal relationship between broadband and employment, broadband data from the Federal Communication Commission's (FCC) Form 477 are combined with employment data from the Census Bureau's Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) database. The Form 477 data, which are described in more detail in Appendix C of the "Assessment of Rural Acadiana's Broadband Infrastructure and Services" report --include every service provider in the area and the maximum advertised download/upload speeds for both consumers and businesses at the provider level. The data are collected twice per year and were first made available with advertised speeds in December 2014. Prior to this date, Form 477 data included only the number of providers that offered broadband services in pre-specified speed categories (rather than the exact upload/download speeds).

The broadband data are extremely granular because there are 204,447 census blocks in the State of Louisiana. To merge the broadband data with other economic data that might explain changes in job growth around the state, the broadband data were averaged across census block groups since block groups are the smallest geographic region for which economic data are readily available. There are 3,471 census block groups in Louisiana, so each block group consists of an average of 58.9 census blocks.

The Census Bureau's LODES database provides counts of the number of jobs located in a census block group using the physical address of the employer as reported on the Quarterly Census of Employment and Wages reports. LODES data are derived from the larger Quarterly Workforce Indicators program, so they provide counts of wage and salary private-sector and government jobs covered by unemployment insurance, approximately 95% of all jobs. The most recent LODES data are for 2018.

To estimate the relationship between broadband speed and employment, we estimate a regression equation that can be expressed as:

$$\% \Delta E_{i,j} = \alpha + \beta \% \Delta B_{i,j} + \delta CB_{i,j} + \phi P_j + \varepsilon_{i,j},$$

where $\% \Delta E_{i,j}$ is the percentage change in employment in census block group i located in parish j between 2014 and 2018. The variable of interest, $\% \Delta E_{i,j}$, is the percentage change in the maximum advertised business download speed in census block group i located in parish j between 2014 and 2018. Each census block group's business download speed is the mean of the maximum business download speeds for all the census blocks that form the block group. There is a strong correlation between maximum advertised download speeds and upload speeds for businesses, so we focus on download speeds as the key metric of broadband access. The key parameter estimated in this equation, β , measures the effect of a one percentage point change in business download speeds on the percentage change in employment.

Given that factors other than business download speeds may also affect employment growth, numerous additional variables are included in equation (1) at the census block group ($\delta CB_{i,j}$) and parish levels (P_j) that could bias the estimate of β . At the census block group level, these additional control variables include median household income in 2014 (in thousands of dollars), the percentage of housing units in 2014 that are rentals, the total number of jobs in 2014, the percentage change in jobs from 2009 to 2013, the percentage of residents with a college degree, the squared kilometers of land that are considered wetlands (and, presumably, undevelopable), and the number of active, permitted oil and gas wells in 2014.

At the parish level, the regression model includes home prices in 2014, the percentage of jobs in STEM fields in 2014, the number of active, permitted oil and gas wells in 2014, and the number of patents awarded to parish residents between 2014 and 2018. **Table 2** reports descriptive statistics and sources for the variables in the regression model.

Table 2: Descriptive Statistics for Regression Variables

VARIABLE	LEVEL	MEAN	MEDIAN	STD DEVIATION
% change in jobs, 2014-2018	block group	71.428	0.385	833.329
% change in business download speed, 2014-2018	block group	71.701	-9.319	243.743
number of jobs, 2014	block group	545.081	175.000	1285.497
home price index (parish), 2014	parish	148.794	144.870	11.973
job growth, 2009-2013	block group	223.740	-98.868	8296.932
median household income (\$000s), 2014	block group	45.637	41.917	23.333
parish wells, 2014	parish	447.335	119.000	853.491
patent awards, 2014-2018	parish	30.875	10.737	171.150
percent college graduates, 2014	block group	14.455	10.388	12.920
permitted wells, 2014	block group	7.267	0.000	41.107
rental housing unit share, 2014	block group	35.277	31.008	23.438
share of jobs in STEM, 2014	parish	6.299	6.048	1.787
wetland coverage	block group	9.124	0.539	23.259

The full sample includes 3,443 census block groups in Louisiana. The % change in jobs (2009-2013 and 2014-2018) and the number of jobs uses data from the Census Bureau’s Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) database. The % change in business download speed was constructed using the mean maximum advertised business download speed from the census block level via the Federal Communications Commission Form 477 data. Home prices are from the Federal Housing and Finance Agency. Median household income, the share of rental housing units, and the percentage of residents with a college degree are from the American Community Survey 5-year sample (2014). The number and location of active, permitted oil and gas wells is from the Louisiana Department of Natural Resources. The share of STEM jobs in the parish was constructed by applying the national Bureau of Labor Statistics industry-occupation crosswalk to employment data from the Quarterly Census of Employment and Wages.

In addition to other factors that can impact job growth, one also must be concerned about the potential for reverse causality, or simultaneity, between job growth and broadband access. In other words, does

broadband access cause greater job growth or is expanded access simply the result of greater job growth. Perhaps Internet providers are merely reacting to job growth patterns and deciding to offer more, or faster, services in census block groups that are growing.

To address the potential simultaneity between employment growth and expanded broadband access, equation (1) is estimated using two-stage least squares. Instruments for the percentage change in business download speeds include the number of squared kilometers of tree canopy coverage in the census block group (in 2001) and the number of squared kilometers of available growing space for trees in the census block group. The idea here is that greater canopy coverage imposes higher costs on broadband installation. Focusing on canopy coverage in 2001, before the initial widespread expansion of broadband, may help to explain the current spatial distribution of access and speeds around Louisiana because higher-cost installation areas may be a lower priority for providers. Tree canopy coverage and the available growing space were obtained from the U.S. Department of Agriculture’s 2001 urban forest data for Louisiana.

As expected, the two instruments are strongly negatively correlated with the percentage change in business download speeds in the first stage regression. The key identifying assumption, which allows us to make a causal claim from our regressions, is that tree canopy coverage in 2001 has no effect on the percentage change in jobs between 2014 and 2018 other than through its effect on the spatial distribution of broadband.

The results of the two-stage least squares regressions are reported in Table 3. Column (1) is the largest sample of census block groups, comprising 3,443 out of the state's 3,471 block groups. The omitted census block groups have zero employment in 2014 and 2018 (likely because they cover water). Columns (2), (3), (4), and (5) trim the sample using various methods to explore the robustness of the empirical results.

As Table 2 indicates, the standard deviation (or distribution) of job growth at the census block group level varies widely in Louisiana between 2014 and 2018. To isolate the effect of business download speeds on employment that is representative of an average census block group, columns (2) and (3) in Table 3 exclude census block groups that are considered outliers (either extremely large or extremely small) using Cook's D (column 2) and a Bonferroni test (column 3). Similarly, column (4) excludes all census block groups where job growth between 2014 and 2018 was in the top or bottom 1% in the state. Column (5) excludes all census block groups where job growth between 2014 and 2018 was in the top or bottom 2.5% in the state.

Across all models presented in Table 3, the First-stage F is never smaller than 52.3. This indicates that the instruments are strong predictors of the percentage change in business download speeds. We also report the overidentifying restrictions p-value from a Sargan test of the instruments. These results also support the validity of the instruments.

The estimated coefficient of interest, which is shaded in gray in Table 3, shows a positive and statistically significant relationship between higher business download speeds and faster job growth. The magnitude of the effect dampens as the sample size shrinks, suggesting that census block groups with extremely high or extremely low job growth over the sample may be exerting a disproportionate influence over the results in Model 1.

Models 4 and 5 are the preferred estimates in the sense that they are the most conservative. The regression results indicate that every 1 percentage point increase in the maximum advertised business download speed leads to a 0.06 to 0.10 percentage point increase in job growth, holding all other factors that could affect job growth constant.

According to the descriptive statistics in Table 2, the average census block experienced a percentage change in business download speeds of 71% between 2014 and 2018. The point estimates in Table 3 indicate that this led to higher job growth in the average census block ranging from (roughly) 4 to 7 percentage points.

VARIABLE	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
% change in business download speed	0.531 **	0.082	0.218 **	0.099 ***	0.063 ***
	(0.222)	(0.107)	(0.104)	(0.034)	(0.022)
median household income (\$000s), 2014	-2.522 ***	-0.574 **	-1.040 ***	-0.054	0.050
	(0.954)	(0.284)	(0.402)	(0.137)	(0.088)
rental housing unit share, 2014	-2.237 **	-0.239	-0.565	-0.012	-0.001
	(1.125)	(0.240)	(0.350)	(0.116)	(0.078)
number of jobs, 2014	-0.027 ***	-0.015 ***	-0.019 ***	-0.009 ***	-0.006 ***
	(0.008)	(0.004)	(0.005)	(0.002)	(0.001)
job growth, 2009-2013	0.026	0.020	0.027 ***	0.001	0.000
	(0.019)	(0.013)	(0.010)	(0.001)	(0.000)
percent college graduates, 2014	1.219	0.242	0.578	-0.085	0.018
	(1.415)	(0.409)	(0.470)	(0.193)	(0.132)
wetland coverage	0.585	-0.146	-0.162	-0.094	-0.171 ***
	(0.712)	(0.106)	(0.122)	(0.087)	(0.033)
home price index (parish)	2.059 **	0.383	1.265 *	0.635 ***	0.478 ***
	(0.962)	(0.522)	(0.660)	(0.197)	(0.120)
share of jobs in STEM, 2014	8.931	-1.780	1.660	2.326 *	1.191 *
	(6.881)	(3.048)	(2.746)	(1.257)	(0.715)
permitted wells, 2014	-0.216	-0.011	0.000	-0.028	-0.002
	(0.253)	(0.103)	(0.105)	(0.027)	(0.021)
parish wells, 2014	0.064	0.008	0.008	0.003	0.002
	(0.049)	(0.009)	(0.010)	(0.003)	(0.002)
patent awards, 2014-2018	-0.019	0.421	0.008	-0.007	-0.003
	(0.021)	(0.269)	(0.024)	(0.005)	(0.003)
N	3443	3433	3438	3373	3263
First-stage F	75.8	52.3	75.6	75.1	73.6
Overidentifying restrictions p-value	0.542	0.344	0.286	0.083	0.055

This table shows the results of regressing the percentage change in total jobs at the Census block group level from 2014-2018 on the percentage change in mean business download speeds. All models were estimated by two-stage least squares assuming the percentage change in business download speeds (from 2014-2018) is endogenous. Instruments are the squared kilometers of tree canopy coverage in the Census block group in 2001 and the kilometers squared of available green space in the Census block group for trees in 2001. First-stage F denotes the first-stage F statistic for the strength of the instruments. The row Over identifying restrictions p-value shows the p-value from the Sargan test under the null hypothesis that at least

one of the instruments is uncorrelated with the error term. N denotes the number of Census block groups in each regression. Model 1 includes all Census block groups for which we have complete data. Models 2 and 3 exclude outliers using the Cook's D (Model 2) and Bonferroni test criteria (Model 3). Models 4 and 5 exclude Census block groups in the top and bottom 1% and 2.5% of the percentage change in total jobs. First-stage F denotes the first-stage F statistic for the strength of the instruments. Standard errors clustered at the Census tract level are shown in parentheses. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level.

APPENDIX C: FORM 477

The primary source of data for broadband coverage stems from the Federal Communication Commission's (FCC) Form 477. All facilities-based broadband providers are required to file Form 477 with the FCC twice a year indicating where they offer internet access service at speeds exceeding 200 kbps in at least one direction. Fixed providers file lists of census blocks in which they can or do offer service to at least one location, with additional information about the service. Mobile providers file maps of their coverage areas for each broadband technology.³⁶²

Data reporting deficiencies and challenges reconciling multiple federal data sets reduce effectiveness of FCC Form 477 data for understanding for identifying broadband access. FCC Form 477 reporting requirements do not set an established method of reporting. Because providers self-report, the data have potential for errors and inclusion of outdated data. Some providers skip reporting and leave a void in the information the FCC uses to examine programs such as the Rural Digital Opportunity Fund (RDOF) auctions.³⁶³

An additional challenge is the spatial mismatch between federal data sets. The boundaries of census blocks and broadband study areas often do not correspond, leading to an overstatement of the availability of service providers within census blocks.

An April 30, 2021 report by BroadbandNow Research illustrates the challenges of using FCC data. The report highlights how broadband service was unavailable to 21.3 million Americans, yet the actual number without access was closer to 42 million.³⁶⁴ This disparity is reflected in the Form 477 data from Louisiana which

reports that only 580,000 residents are unserved while the BroadbandNow Research report indicates that the real number is closer to 1.18 million.³⁶⁵ These data are consistent with a study by Microsoft that was released on April 8, 2019, that found that 162.8 million people are not using the internet at broadband speeds (25 Mbps download/3 Mbps upload).³⁶⁶

Inaccurate Form 477 reporting is a common problem. For example, in 2017 AT&T falsely reported to the Federal Communications Commission that it offered broadband in nearly 3,600 census blocks spread across parts of 20 states, an error that went undetected for more than two years.³⁶⁷ In 2018 a new service provider, Barrier Communications Corporation ("BarrierFree") reported that in 2017, it provided broadband at speeds of 940 Mbps downstream to census blocks containing nearly 62 million people, which if true, would have made the company the fourth largest provider in the U.S. in terms of population coverage.³⁶⁸ Form 477 data from 2017 was the basis for 2019's broadband deployment report, and the misrepresentation was so extreme that skewed the 2017³⁶⁹ report to make it appear that there was a substantially larger deployment jump than what really occurred.³⁷⁰ Barrier's conduct was so egregious it led to the FCC Enforcement Bureau to propose the maximum allowable fine of \$163,912.³⁷¹ Both incidents provided data that were used to determine eligibility for federal funding.

Inaccurate Form 477 data has far-reaching consequences. Erroneous information about service availability at an address limits the public funding providers can receive to improve their networks in that area. The negative impacts of bad or inaccurate Form

477 fall disproportionately on rural, poor, and minority communities. For example, the General Accounting Office released a study in December 2018 stating that the FCC routinely overstates broadband availability on tribal lands, actively harming the government's ability to connect tribal populations. Using a variety of data and analytic techniques, the National Digital Inclusion Alliance (NDIA) has found that inaccurate Form 477 data has been used to obscure incidents of "digital redlining" in several major metropolitan areas that show a high correlation between neighborhoods where service providers have chosen not to deploy newer fiber technology to neighborhoods with poverty rates of 35% or more. Questionable Form 477 data makes these incidents more difficult to detect.

Owing in part to the known inaccuracy of FCC Form 477 data, in August of 2019 the FCC adopted the Digital Opportunity Data Collection Order,³⁷² a new data collection distinct from the FCC Form 477, to collect geographically precise and detailed data on broadband service deployment, which would be subject to stakeholder challenges.³⁷³ In July 2020, the Commission adopted a Second Order and Third Further Notice in this proceeding³⁷⁴ that implemented requirements of the Broadband DATA Act, enacted in March of 2020³⁷⁵ and further developed the framework and elements of the Digital Opportunity Data Collection. The Digital Opportunity Data Collection is designed to collect geospatial broadband coverage maps from Internet Service Providers, specifically aimed at advancing the Commission's universal service goals; it adopts a process to collect public input, commonly known as "crowdsourcing," on the accuracy of service providers' broadband maps; and it makes targeted

changes to the existing Form 477 data collection to reduce reporting burdens for all filers and modify the collection to incorporate new technologies.³⁷⁶

Estimating the number of people served by broadband is challenging. The estimation of unserved housing units is not the same as unserved households. Households represents the number of housing units that are actually occupied. Housing units, however, include both occupied and unoccupied address points. Unoccupied housing units would logically lack an internet connection even if one is available.

One assumption in the data is that all housing units in an unserved census block were occupied even though it is likely that their occupancy rates are comparable or slightly lower than the parish due to lack of access. Because of this assumption, the estimate of the number of unserved housing units/households inside areas considered served by FCC Form 477 is very conservative. The real numbers are likely much higher. Comparing census and FCC Form 477 data demonstrates that the FCC data overestimates of broadband coverage and that there are a significant number of households lacking broadband within areas the FCC considers "served." The unserved households in "served" census blocks have not been eligible to receive federal funding in prior funding cycles. American Community Survey data are limited to residential households. To estimate the number of businesses impacted by lack of broadband access, other data sources must be used in combination with FCC Form 477 data.

APPENDIX D: FUNDING AND DEPLOYMENT PROGRAMS

ANALYSIS

BROADBAND INFRASTRUCTURE PROGRAM (BIP)

The Broadband Infrastructure Program is a \$288 million broadband deployment program directed to partnerships between a state, or one or more political subdivisions of a state, and providers of fixed broadband service to support broadband infrastructure deployment to areas lacking broadband, especially rural areas.

<https://broadbandusa.ntia.doc.gov/resources/grant-programs/broadband-infrastructure-program>

TRIBAL BROADBAND GRANTS

The Tribal Broadband Connectivity Program was established by the Consolidated Appropriations Act, 2021. Grants will be made available to eligible Native American, Alaska Native and Native Hawaiian entities for broadband deployment as well as for digital inclusion, workforce development, telehealth and distance learning.

<https://www.grants.gov/web/grants/view-opportunity.html?oppld=333974>

5G FUND

The 5G Fund for Rural America represents the next step in the Commission's efforts to bridge the digital divide. The 5G Fund will help ensure that rural Americans enjoy the same benefits from our increasingly digital economy as their urban counterparts and would include a special focus on deployments that support precision agriculture.

<https://www.fcc.gov/5g-fund>

OTHER FUNDING

- State Last-Mile
- State Middle-Mile
- Federal Infrastructure Funding
- RDOF Phase II



USDA BROADBAND PROGRAMS

<https://www.usda.gov/broadband>

USDA BROADBAND: BROADBAND | USDA

Farm Bill Broadband Loans & Loan Guarantees Program

Authorized in 2002, and re-authorized under the 2008 and 2014 Farm Bills, this loan program funds the costs of construction, improvement and acquisition of facilities and equipment, on a technology neutral basis, in order to provide broadband service to eligible rural communities.

<https://www.rd.usda.gov/programs-services/rural-broadband-access-loan-and-loan-guarantee>

TELECOMMUNICATIONS INFRASTRUCTURE LOANS & LOAN GUARANTEES PROGRAM

The traditional loan program provides financing for new and improved telecommunications infrastructure in rural communities of 5,000 or less.

<https://www.rd.usda.gov/programs-services/telecommunications-infrastructure-loans-loan-guarantees>

DLT

The DLT program helps rural communities acquire technologies to connect teachers and medical providers serving rural residents with other teachers, medical professionals and other needed expertise located at distances too far to access otherwise. DLT grant applications are accepted through a competitive process. Applicants are required to provide a minimum 15 percent match. Awards can range from \$50,000 to \$500,000.

<https://www.rd.usda.gov/programs-services/distance-learning-telemedicine-grants>

THE COMMUNITY-ORIENTED CONNECTIVITY GRANT PROGRAM (COMMUNITY CONNECT)

This highly competitive grant program provides broadband service to significantly rural and economically challenged communities. Areas serviced by these grants must have no broadband at all (currently defined as 4 Mbps downstream and 1 Mbps upstream).

<https://www.rd.usda.gov/community-connect>

RECONNECT

The ReConnect program can be used to construct, improve, and acquire facilities and equipment needed to provide quality service in eligible rural areas. Eligible areas are rural areas with populations of 20,000 or less.

<https://www.usda.gov/reconnect>

DELTA HEALTHCARE SERVICE GRANT

<https://www.rd.usda.gov/programs-services/delta-health-care-services-grants>



Committed to the future of rural communities.

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51 The broadband data reporting download speeds by census block group are unavailable before 2014. Likewise, employment data at the census block group level are unavailable after 2018. This is the reason the empirical analysis focuses on this 5-year period.

52 It is important to note that it is impossible to determine where a person was educated from the American Community Survey microdata. One simply knows that a college-educated individual lived in, say, Ohio in 2005 and then relocated to, say, North Carolina in 2006.

53 For a discussion of the importance of education in driving innovation and growth see Jeffrey M Lacker, President of the Federal Reserve Bank of Richmond, at the 2015 Emerging Issues Forum "Innovation Reconstructed", Raleigh, North Carolina, 10 February 2015 [<https://www.bis.org/review/r150212c.pdf>].

54 Employment growth by state was formed using the annual average of the seasonally adjusted, monthly total nonfarm payroll employment figures from the Bureau of Labor Statistics.

55 As recently as March 4, 2021, a bipartisan group that included Senators Bennet, King, Portman, and Manchin urged the Biden Administration to create a modern, unified federal broadband standard that would be defined based upon 100 Mbps synchronous service. In their letter, the Senators observed that "... Over the next five years, if current trends hold, data needs are expected to increase annually by at least 25%

per year...” which would render the current definition of broadband obsolete. The current 25/3 standard was introduced by FCC Chairman Tom Wheeler in 2015 as an increase to the previous standard of 4 Mbps download, 1 Mbps upload. At the time, he justified the benchmark increase as necessary due to “advances in technology, market offerings by broadband providers and consumer demand.”

Historically, the FCC has been slow to change the definition of broadband and often lagged behind advances in technology. The FCC upgraded the minimum definition for wired broadband to 4 Mbps download and 1 Mbps upload in 2010. Prior to that, the only other major change in the broadband benchmark took place under Chairman Julius Genachowski of the early Obama administration. In their 2010 Broadband Progress Report, the FCC justified changing the broadband definition as necessary to accommodate video alongside basic browsing. Prior to the 2010 change, video streaming was widely viewed as a luxury. After the COVID-19 pandemic, this capability has become a necessity.

56 Starting in the summer of 2020, APC staff participated as user advocates in The Opportunity Project (TOP) hosted by the Census Bureau. The Opportunity Project helps companies, non-profits, and universities turn federal open data into new technologies that solve real-world problems for people across the country. As part of the TOP process, APC staff worked with the built environment sprint on developing a set of tools that examine broadband-related issues in economic development. Through discussions with developers and data gatekeepers, staff were able to generate a better understanding of broadband data sources and their limitations. From these discussions, APC was able to narrow down the options for the speed test portion of the broadband survey to the speed test conducted by M-Labs. APC has since learned that the M-labs speed test is the underlying tool for many of the other Internet speed test websites currently available. Consequently, APC selected the M-Labs platform for its broadband survey.

57 Median is a common descriptor used to express a “middle” value in a set of data. This “middle” value is also known as the central tendency. Median is determined by ranking the data from largest to smallest, and then identifying the middle so that there are an equal number of data values that are larger and smaller. While the average and median can be the

same or nearly the same, they are frequently different if more of the data values are clustered toward one end of their range and/or if there are a few extreme values. In statistical terminology, this is called skewness. In this case, the average (mean) can be significantly influenced by the few values, making it not very representative of the majority of the values in the data set. Under these circumstances, median gives a better representation of central tendency than average. Median values represent the midpoint for responses in a dataset – 50% of responses fall below the median and 50% of responses fall above the median.

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Louisiana Planning District 4

The Acadiana Planning Commission serves the public sector in the planning and implementation of Economic, Community & Transportation Development throughout the region known as Acadiana including the Louisiana Parishes of Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, and Vermilion.

