



RIVERSIDE COUNTY BROADBAND GAPS & OPPORTUNITIES REPORT

CONNECTING RIVERSIDE COUNTY

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The county would also like to thank its partners, stakeholders, and community organizations for contributing to the development of this report.

EXECUTIVE SUMMARY

Across the nation, governments are working tirelessly to close the digital divide by expanding access to high-speed internet for all residents. For Riverside County, ensuring widespread availability of high-speed internet, particularly for the 67,244 households currently without a home internet subscription, is a key priority to ensuring long-term prosperity.¹



67,244 households are currently without a home internet subscription

Table 1: Broadband Subscriptions at a Glance

77% Percent of households **with a wired (cable, fiber, DSL) home internet subscription plan**

23% Percent of households **without a wired (cable, fiber, DSL) home internet subscription plan**

The COVID-19 pandemic highlighted that the digital world is here to stay, meaning that those without access to high-speed internet will increasingly be left behind.

High-speed internet enables many services that have migrated online, from remote learning to remote work, telehealth, and many others. While the internet enables convenience and opportunities at the touch of a fingertip, it is also capable of further fueling inequities faced by members of groups that already face systemic barriers and that are disproportionately without internet access. Expanding broadband access to all will not only benefit unserved and underserved communities but will help the county as a whole to achieve many of its economic development strategies—from increasing access to high paying jobs, to providing a world-class education, and enhancing safe and healthy communities.² Additionally, as Riverside County continues to grow, broadband will be a key tool in tackling many challenges by addressing critical infrastructure needs, dealing with a lack of diversification in job growth, increasing levels of education, and improving economic outlooks for communities with pockets of extreme poverty.³

This report is a preliminary step in building off previous initiatives to comprehensively address the county's infrastructure and digital inclusion needs. The intent of this report is to investigate and understand Riverside County's current broadband landscape and identify opportunities to design and implement a plan for universal broadband access. To develop solutions to address the digital divide, Riverside County examined the current state of broadband through a lens which considers three key pillars: availability, affordability, and adoption. Using a variety of data sources, as well as conversations with key stakeholders, the county identified several major gaps as well as significant opportunities to address these gaps. Taken as a whole, this information will be used to update the Riverside County Broadband Master Plan that will detail strategies and solutions to address the digital divide.

One of the major challenges for the county is connecting the 9% of households who do not currently have a home internet subscription plan.⁴ While the county's broadband subscription rate (91%) is above

¹ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)

² County of Riverside, [Comprehensive Economic Development Strategy](#)

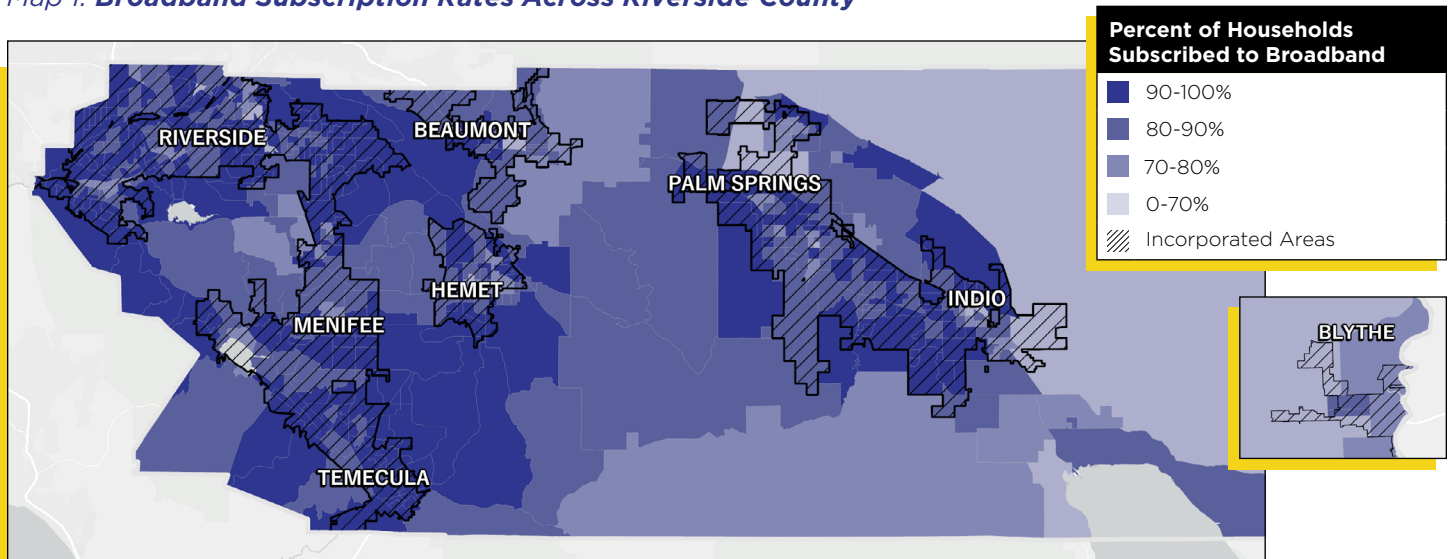
³ Ibid.

⁴ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)



the national average (87%), this still amounts to a significant number of households—67,244—that are impacted.⁵ As **Map 1** indicates, many of these households are located in unincorporated communities along with portions of incorporated areas such as Riverside, Hemet, San Jacinto, Desert Hot Springs, Indio, and Blythe. Leaving these households disconnected prevents members from fully participating in the digital economy and restricts access to remote work, continued online education for students, telehealth, and other services. Furthermore, while 91% of Riverside County residents are connected to an internet subscription, only 77% have a home wired internet connection such as fiber optic, cable, or DSL; the rest rely on alternative technologies, such as dial-up, cellular data plans, and satellite which do not offer reliably high speeds.⁶ This means that 23% of households do not have internet subscriptions that can consistently handle online activities requiring high bandwidths such as work or health-related video calls, streaming, and uploads of large file sizes.⁷ Ultimately, this raises the need for strategic broadband investments in technologies that can consistently and reliably offer broadband speeds to account for the growing bandwidth required by much of our online presence.

Map 1: Broadband Subscription Rates Across Riverside County⁸



In order to connect residents that do not have reliable internet access, the county is also faced with the challenge of addressing the digital divide in Riverside County. Ultimately, many residents that do not have a home broadband subscription face one or more socioeconomic barriers such as a low household income, poor educational outcomes, language barriers, disabilities, or residence that is far from urban centers with critical infrastructure. These groups also typically struggle with poor digital literacy, or knowledge on how to maximize the full use of the internet and accompanying digital devices. Altogether, the lack of a home internet subscription plan and the inability to use the internet to its full benefit can further exacerbate outcomes for communities that already face socioeconomic challenges. In order to close the digital divide, the county must be strategic in its approach to increasing broadband adoption and target its digital equity efforts on key populations that together make up 9% of disconnected households.

While lower broadband subscription rates can be attributed to affordability challenges and poor digital literacy, it can also be explained by the inadequate amount of fiber infrastructure throughout the county. Currently, Riverside County contains over 31,000 locations, or structures that allow for a broadband connection, that lack internet service that meets the Federal Communications Commission's (FCC) definition of broadband.⁹

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)

⁹ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)

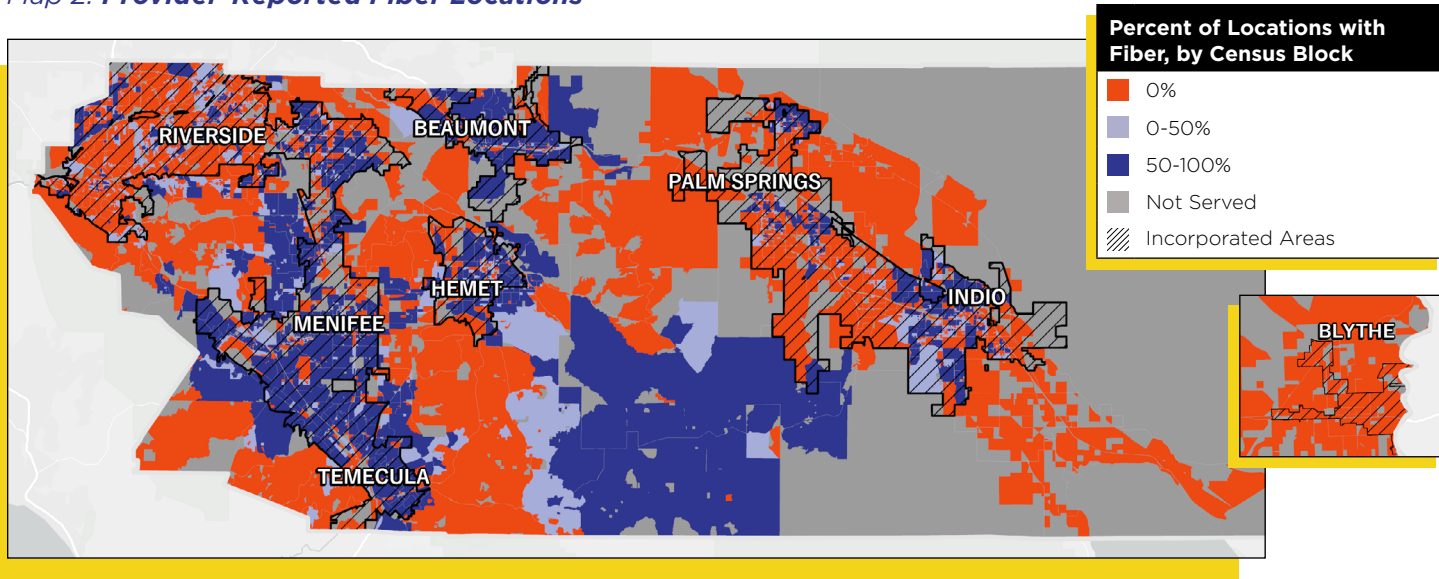
EXECUTIVE SUMMARY

As of 2023, the FCC defines broadband as internet service that delivers at least 25 megabits per second (Mbps) of upload speed and 3 megabits per second of download speed.¹⁰ The National Telecommunications and Information Administration (NTIA) considers those receiving less than 25/3 Mbps broadband speeds to be unserved whereas those who receive above 25/3 Mbps but below 100/20 Mbps are deemed underserved. In order for households to be properly served by speeds reflecting the increasing speed and bandwidth requirements of modern life, they must have access to at least 100/20 Mbps.

Table 2: NTIA Definition of Service

Unserved	Below 25/3 Mbps
Underserved	Greater than 25/3 Mbps, below 100/20Mbps
Served	100/20 Mbps

Map 2: Provider-Reported Fiber Locations¹¹



When considering feasible broadband technologies, fiber is the most equipped to reliably offer the highest internet speeds. Currently, about 46% of households across the county lack access to fiber service.¹² As **Map 2** illustrates, many of these communities are located in unincorporated areas throughout the county, Blythe, scattered areas in cities located in the northwest region, and portions of municipalities in the Coachella Valley such as Indio, Palm Desert, La Quinta, and Rancho Mirage. Unsurprisingly, these areas also tend to correlate with communities experiencing relatively lower rates of broadband subscription.

Despite the availability of high-speed internet plans, many county households face affordability challenges that prevent them from maintaining a home internet subscription. Within Riverside County, as many as 360,000 households face affordability challenges, impacting their ability to pay for an internet subscription, as well as the devices needed to take advantage of that connectivity.¹³ A pricing analysis shows that across the county, high-speed fiber broadband plans average \$94.18 per month, whereas the lowest-cost subscriptions are cable-based plans that typically offer low-speed service at an average of \$50. Understandably, monthly subscription costs can cause low-income households to pass up on the utility that may seem like a luxury despite the growing reliance on the internet. While there are challenges to overcome, Riverside County has identified numerous opportunities to address the barriers keeping residents from getting connected. Riverside County has launched a large, multi-year endeavor

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ This figure represents the number of households eligible for the Affordable Connectivity Program (ACP), a federal program providing internet plan discounts for households earning less than 200% of federal poverty guidelines or enrolled in one of a variety of government-assistance programs.

that requires significant financial investment and extensive stakeholder participation. Developments in federal and state broadband policy have resulted in a number of funding opportunities becoming available to the county and its partners. Many of these programs will fund construction and pre-construction activities and prioritize last-mile infrastructure that delivers fiber-to-the-home connections. Federal funding opportunities which the county can pursue include the Broadband Equity Access and Deployment (BEAD) program, ReConnect Loan and Grant Program, the Distance Learning and Telemedicine Program, and Rural Digital Opportunity Fund (RDOF), among many others. Furthermore, the State of California has a series of programs funded by the California Advanced Service Fund (CASF) which are available for broadband infrastructure expansion, as well as the newly implemented Last Mile Federal Funding Account which can be used to meet the needs of unserved and underserved communities. Many of these programs prioritize the use of fiber infrastructure projects over alternative technologies, meaning that the county must promote a fiber-first approach wherever it is financially and technologically feasible.

To that end, deploying the necessary infrastructure to adequately service Riverside County residents is not something that the county can do alone. Deploying the needed amount of infrastructure will require significant financial investment and organizational capacity. Consequently, this endeavor will require the participation of private internet service providers (ISPs) to fill the gaps in service. To draw investment in the county, Riverside County intends to leverage broadband funding in partnership with ISPs to support broadband expansion projects within the county. Furthermore, the 533-mile stretch of middle-mile fiber that will be deployed throughout Riverside County by the State of California's 10,000 middle-mile fiber deployment project may strengthen the case for ISPs to build out last-mile connections that can tap into the open-access network. Additionally, partnerships with municipal governments within the county and the regional bodies that Riverside County is a member of can help it leverage existing assets, minimize digging, and coordinate simultaneous project plans to maximize impact in the areas with the greatest needs. Developing a workforce of trained

professionals to build, operate, and maintain broadband infrastructure will not only be necessary to close the digital divide but also provide high-quality job opportunities for residents throughout the region.

To address the county's affordability challenges, Riverside County can continue to further scale its efforts to increase county-wide enrollment in the FCC's Affordable Connectivity Program (ACP), which provides up to \$30 in monthly internet plan subsidies per household and \$100 discounts on devices such as laptops and tablets. While 360,000 households in the county are eligible to receive ACP benefits, fewer than 40% of these households have enrolled in the program as of February 2023.¹⁴ Improving awareness of ACP and increasing enrollment can help address affordability barriers for many residents. In addition, Riverside County can look to improve device ownership rates among its residents. Future federal and state funding programs such as the Emergency Connectivity Fund may be used to provide additional financial assistance to equip residents with the devices needed to take full advantage of their connectivity.

To establish a holistic approach to broadband adoption, Riverside County must also address the digital divide through programming for the socioeconomic groups that experience lower rates of adoption. This can come in many forms, from digital literacy training to hotspot loans and device giveaway programs. Existing county programs can be further scaled to meet the need of the population and funded by a host of federal and state digital equity programs. Workforce development efforts can work in tandem to upskill residents through digital literacy and access to broadband connections as well as providing training for the broadband jobs that are required for the infrastructure deployments needed in the county.

Overall, these ongoing and future broadband actions will help Riverside County achieve successful and sustainable economic growth and aid our community in closing the digital divide.

¹⁴ CA.gov, Broadband for All, [Affordable Connectivity Program enrollment tracker](#)



METHODOLOGY

The approach employed for this report centers around three key pillars related to addressing the digital divide:

BROADBAND AVAILABILITY

Examined the availability of high-speed internet for county residents and businesses through broadband infrastructure.

BROADBAND AFFORDABILITY

Evaluated the affordability of broadband subscription plans throughout the county and the costs associated with getting connected to fast, reliable internet.

BROADBAND ADOPTION

Identified the rate with which county residents connect to and use the internet to its full benefit, as well as the factors that influence whether residents are connected.

The Broadband Team divided analyses into four main factors which relate to one or more of these three pillars. These factors were used to identify key gaps and opportunities for broadband in Riverside County. They are:

1

Existing broadband legislation and policy at the federal, state, and regional levels that impact Riverside County. The report includes a review of key legislation that has reshaped the broadband landscape, including the American Rescue Plan Act, the Infrastructure Investment and Jobs Act, California Senate Bill 156, and existing and new broadband funding programs that arose from these developments. Through this analysis, the county can better understand its current broadband landscape and what state and national trends in the broadband field will ultimately mean for its planning efforts.

2

The socioeconomic factors that affect broadband adoption. This report considered the many demographic variables that are proven to be closely correlated to broadband adoption. This analysis provides insight into where the digital divide exists within the county and will ultimately inform an approach to spur greater adoption and more equitable outcomes for residents.

3

Existing and planned infrastructure and digital equity assets that informs broadband availability throughout the county. The county evaluated its broadband infrastructure assets, long-haul, middle-mile, and last-mile fiber, wired, and wireless infrastructure to determine where service gaps may be and how existing infrastructure can be leveraged to deploy broadband infrastructure projects.

4

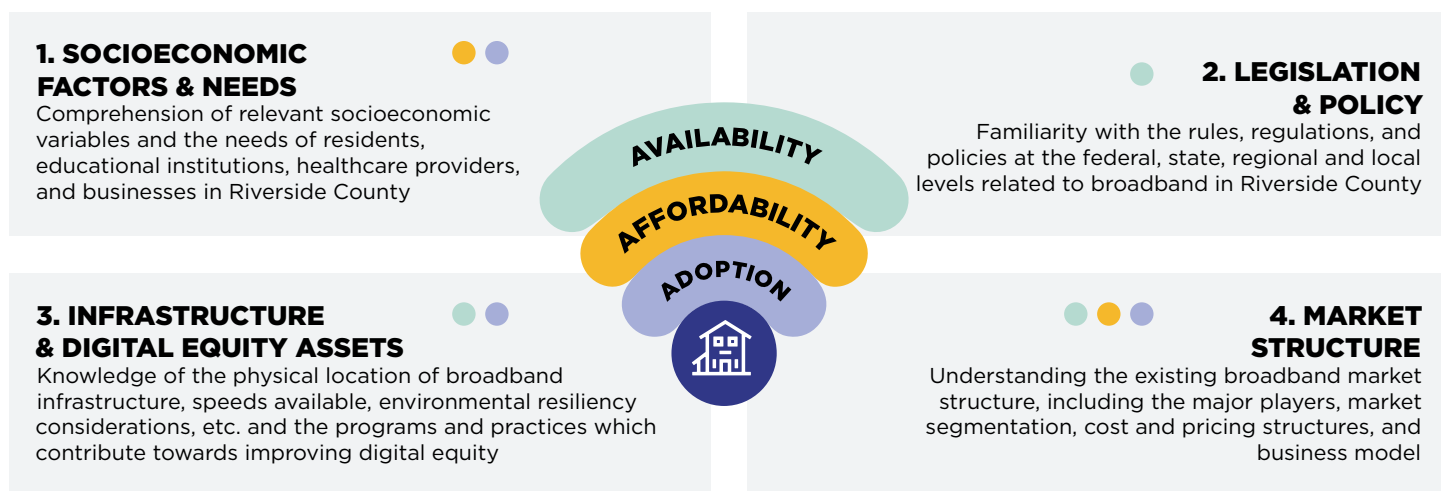
The current market landscape for internet service in the county. This includes an overview of the ISPs operating in the county, the speeds they provide to residents and businesses, and affordability of their internet subscription plans.

By evaluating broadband through each of these factors, the Broadband Team was able to understand the current state of broadband in Riverside County through the lens of each of the three key pillars of closing the digital divide.

Figure 1 below depicts this approach:



Figure 1: Overview of Approach Utilized in this Report



As part of this process, the county used a wide variety of geospatial data inputs, which are included in **Table 3** below.

Table 3: Overview of Data Sources Used to Identify Gaps and Opportunities

Data type	Data point	Data source
Availability data	Provider-reported service offerings at individual locations	FCC Broadband Data Collection
	Speed test data	Ookla
Population characteristics	Device ownership rates	U.S. Census Bureau, American Community Survey
	Broadband subscription rates	
	Income and poverty data	
	Racial demographics	
	Age and disability rate data	
	Educational attainment rates	
	Urban and rural areas	
Infrastructure data	Cellular towers	Riverside County GIS portal
	Middle-mile infrastructure	CPUC
	Community anchor institutions and county sites	Riverside County GIS portal
Other	Terrain data, population, land use, political and municipal boundaries, roads and highways	Riverside County GIS portal

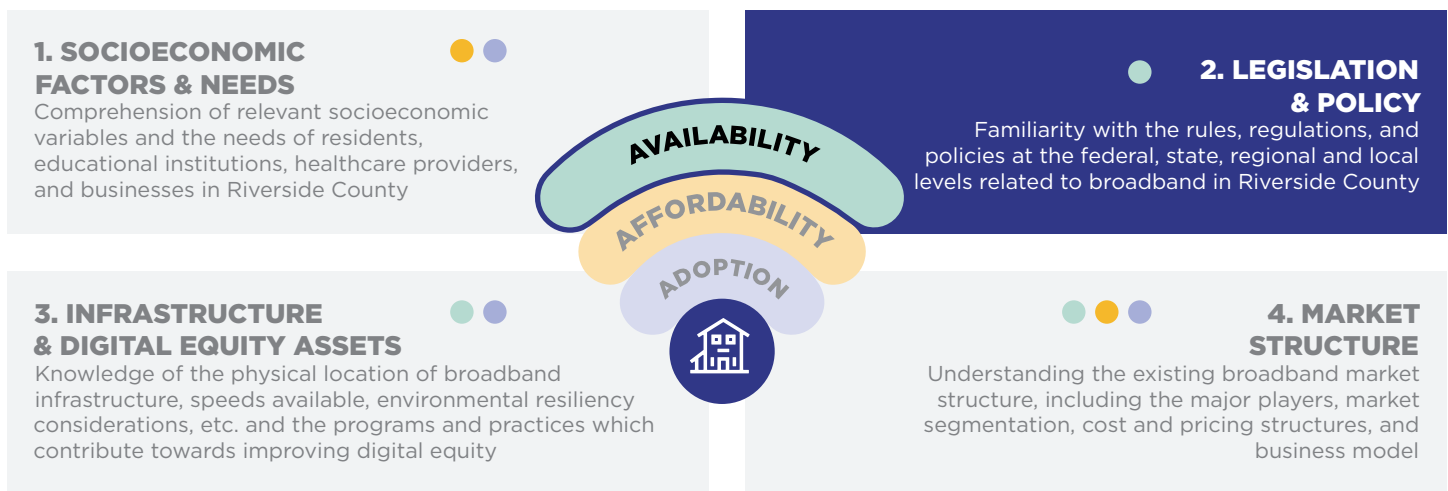
In addition, interviews with various stakeholders, including Riverside County departments and agencies, regional and planning bodies, and local governments formed a greater understanding of the needs and opportunities in the county. More details on the stakeholder engagement process can be found in the stakeholder engagement section of this report.

This report is part of a greater effort that will include two more stand-alone documents: a stakeholder engagement report detailing information gathered from internal and external stakeholders and a funding report which describes the overall broadband funding landscape and identifies specific programs of interest for Riverside County. These three reports will be utilized to update the Riverside County Broadband Master Plan.

LEGISLATION AND POLICY ANALYSIS

In recent years, both federal and state governments have implemented programs and regulations to support universal access to affordable broadband services. Efforts to provide accessible broadband began in the early 2000s, but the significant digital divide laid bare during the COVID-19 pandemic has newly invigorated officials to develop efficient and innovative ways to deploy broadband infrastructure and improve equitable access to broadband speeds for all Americans. Current efforts are focused on promoting broadband infrastructure deployment in unserved and underserved areas. As **Figure 2** below indicates, this legislative and policy action is a critical part of the framework for expanding broadband as it directly impacts broadband availability.

Figure 2: **Legislation and Policy Impacts Broadband Availability**



Broadband policy has evolved to meet changing needs and demands

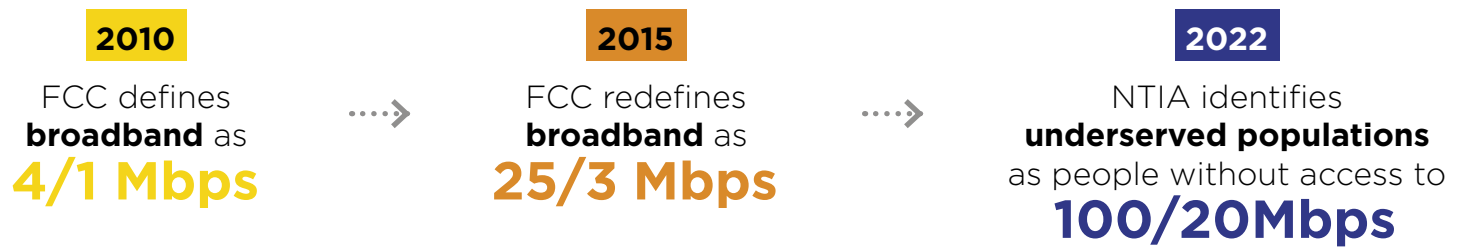
FEDERAL LEGISLATION AND POLICY

The Federal Communications Commission (FCC), which regulates internet service providers, defines broadband as internet access that provides download speeds of at least 25 megabits per second (Mbps) and upload speeds of at least 3 Mbps, or a 25/3 Mbps speed standard.¹⁵ This definition has evolved to meet technological advances and consumer demand over time, as **Figure 3** shows. The FCC's National Broadband Plan initially defined this term in 2010, when the agency recommended a speed threshold of 4 Mbps for download and 1 Mbps for upload.¹⁶ In 2015, the FCC raised the minimum speed for broadband to the current threshold.

¹⁵ Broadband USA, [How fast is broadband?](#)

¹⁶ Broadband Now, [The FCC Definition of Broadband: History and Analysis](#)



Figure 3: *Evolution of the Broadband Definition*

This definition has important implications for policy and regulation. The FCC uses this definition to determine which areas are eligible for federal funding to support broadband expansion and deployment efforts. Furthermore, this definition is relevant for regulations that govern ISPs and their obligations to provide adequate broadband services to consumers.

The FCC further distinguishes between unserved, underserved, and served populations. An unserved area is defined as an area that does not have any access to an internet subscription plan or an area that has access to a subscription plan that does not meet the current broadband threshold of 25/3 Mbps.¹⁷ An underserved area is an area that has access to 25/3 Mbps subscription plans but does not have access to 100/20 Mbps speeds.¹⁸ A served area is an area that has access to 100/20 Mbps speeds and above.¹⁹

Since 2010, the federal government has implemented several key pieces of federal legislation to expand broadband access and deliver high speeds to Americans. These include the National Broadband Plan, the Broadband DATA Act, the American Rescue Plan Act, and the Infrastructure Investment and Jobs Act (IIJA). Each of these have played a role in shaping how the federal government approaches issues of digital equity.

National Broadband Plan, 2010²⁰

The National Broadband Plan is the FCC's comprehensive approach to providing affordable broadband speeds to all Americans, regardless of geographic location or income. The plan's goals include expanding broadband access to all Americans, improving broadband speeds, promoting competition in the broadband marketplace, and promoting digital literacy and broadband adoption. To achieve these, the National Broadband Plan outlines several recommendations including modernizing the Universal Service Fund to support broadband deployment and promoting the development of broadband infrastructure through public-private partnerships.

American Rescue Plan Act (ARPA), 2021²¹

The American Rescue Plan Act was signed into law in 2021 to provide economic relief to address the impact of the COVID-19 pandemic. Among other allocations, ARPA provides \$7.6 billion to support efforts to expand broadband infrastructure

and promote greater access to high-speed internet services, particularly in rural and underserved areas. This funding includes \$3.2 billion for the Emergency Broadband Benefit program, which provides subsidies to low-income households to help cover the costs of broadband services. This program also includes provisions to support digital literacy training and devices, such as laptops and tablets. ARPA has \$300 million in funding for the National Telecommunications and Information Administration's (NTIA) Broadband Infrastructure Program, which provides grants to support broadband infrastructure deployment in unserved and underserved areas. The program aims to promote the development of high-speed internet services in areas where commercial providers may be hesitant to invest due to cost considerations. Additionally, ARPA created the Capital Projects Fund (CPF) and the State and Local Fiscal Recovery Funds (SLFRF). CPF and SLFRF have flexible expenditure guidelines, allowing recipients to allocate additional funding for increasing broadband access.

¹⁷ NTIA, [Infrastructure and Investment Jobs Act, BEAD Program](#)

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Federal Communications Commission, [National Broadband Plan](#)

²¹ The White House, [American Rescue Plan Act](#)



Infrastructure Investment and Jobs Act (IIJA), 2021²²

Through the IIJA, Congress allocated roughly \$65 billion to build new infrastructure, improve existing infrastructure, and increase broadband affordability for low-income households. Funding from the IIJA is broken into several different programs, which are described below.²³

Broadband Equity, Access, and Deployment (BEAD)

The biggest program in the IIJA package is the Broadband Equity, Access, and Deployment (BEAD) Program. This formula-based program sets aside \$42.45 billion for activities such as broadband planning, data collection infrastructure deployment, and digital inclusion activities.²⁴ Each state will receive a minimum payment of \$100 million, with additional amounts to be determined through a formula using FCC's updated service availability data. The state of California will have the ability to allocate funding to local entities, such as Riverside County.



Digital Equity Act (Planning, Capacity, and Competitive Grant Programs)

IIJA enacted the Digital Equity Act (DEA), which allocates \$2.75 billion over five years to implement state-led digital equity plans. The DEA created three grants administered by NTIA, including the Digital Equity Planning grant, the Digital Equity Capacity grant, and the Digital Equity Competitive grant. These grants can be used to advance broadband efforts through workforce development, digital literacy training, and device access programs, among other measures to increase digital inclusion.²⁵ Riverside County's internal efforts align with the goals of these grants, making the county a likely recipient of these funds.

ReConnect Program

Administered by the Rural Utilities Service at the Department of Agriculture, IIJA allocates \$1.926 billion to the Broadband Reconnect Program through grants and loans towards construction, equipment, and improvement costs needed to expand broadband in rural areas.²⁶

The Affordable Connectivity Program (ACP)

The ACP offers \$30 discounts monthly (\$75 for those on tribal land) towards a broadband subscription and up to \$100 towards a digital device. While \$14.2 billion was initially appropriated for the program in 2021, its funding has not been renewed and is expected to run out by late summer 2024.

Additional IIJA Programs

Additionally, the IIJA allocated another \$1 billion through 2026 for the Middle Mile Grant Program, an additional \$2 billion for the Tribal Connectivity Program, and \$74 million for broadband loans through the Distance Learning, Telemedicine, and Broadband Program.

Federal legislation: Looking Forward

In February 2023 the Senate introduced S.341, the Broadband Grant Tax Treatment Act (BGTTA). This bipartisan bill would make certain broadband deployment and infrastructure funds, including IIJA and ARPA dollars, tax-exempt. Under the Tax Cuts and Jobs Act of 2017, grant money is taxable as income, meaning current recipients must return up to 20% of grant money in taxes. For example, this would leave the recipient of a \$1 million grant award with a net award of just \$800,000.²⁷ The changes proposed by the BGTTA would benefit grantees such as Riverside County by allowing them to allocate the full amount of grant funds received towards their respective projects and programs rather than having to budget for taxes as part of their award spending.

22 CalSTA, [IIJA Implementation](#)

23 Congress.gov, [H.R.3684 – Infrastructure Investment and Jobs Act](#)

24 BroadbandUSA, [Broadband Grants Overview](#)

25 The White House, [Building a Better America: A Guidebook to the Bipartisan Infrastructure Law for State, Local, Tribal, and Territorial Governments, and Other Partners](#)

26 USDA, [ReConnect Loan and Grant Program](#)

27 Thomson Reuters, [Bipartisan Bill Exempting Broadband Grants Reintroduced](#)



STATE LEGISLATION AND POLICY

The State of California is dedicated to promoting broadband access and adoption and has enacted several pieces of key legislation and regulatory measures aimed at addressing the digital divide.

California Advanced Service Fund, 2008

The California Advanced Service Fund (CASF) was established by the California Public Utilities Commission (CPUC) to provide funding for broadband infrastructure in unserved and underserved areas of the state. The program has provided over \$400 million in grants and loans to support the deployment of broadband access in areas where it may not be economically feasible for ISPs to invest.

California Senate Bill 156, 2021²⁸

SB 156, which Governor Newsom signed in 2021, aims to expand access to broadband services in rural and low-income areas across the state. This law requires the CPUC to establish the Rural and Urban Regional Broadband Consortia Program, which provides funding for regional broadband consortia to develop and implement plans to expand broadband access in specific areas. The CPUC also established a new Office of Broadband to coordinate and oversee these efforts across state agencies. SB 156 also made some critical changes to the CASF. These changes include redefining “unserved” as an area where no providers offer services that meet the broadband threshold and requiring funded infrastructure projects to provide speeds of 100 Mbps download and 20 Mbps upload. SB 156 also invested \$6 billion to establish the following programs.

Last-Mile Federal Funding Account

SB 156 tasked the CPUC with administering \$2 billion over three years to fund last-mile infrastructure projects through the Last Mile Federal Funding Account. These projects will connect unserved and underserved communities to local broadband networks.

Loan Loss Reserve Fund

SB 156 allocated \$750 million for the Loan Loss Reserve Fund. This program supports local governments in constructing and operating new public fiber networks. Funding can be used as collateral to secure better terms and borrowing rates for bonds funding infrastructure projects.

Middle-Mile Fiber-Optic Network

SB 156 allocated \$3.25 billion to California’s Department of Technology. This initiative will create an open-access middle-mile network, ensuring all homes, businesses, and community institutions can access internet infrastructure.²⁹ Middle-mile fiber connects the long-haul internet backbone that transports data around the world to the last-mile infrastructure which delivers service short distances to the home. This project focuses primarily on expanding broadband access in historically unserved and underserved areas by building a network that ISPs will use to offer broadband subscription options to residents and businesses. This project is being built using existing infrastructure, including highways and railways, to minimize costs. The State of California released a draft map of the project in 2022 in conjunction with GoldenStateNet, a third-party assisting California with this undertaking.³⁰ Riverside County is included in Region 5 of the map, along with San Bernardino County and San Diego County. The draft map outlines areas of Riverside County identified for construction as part of this undertaking, which include Indio, Palm Desert, and Palm Springs.³¹ This project aims to increase competition for broadband subscriptions and reduce costs for ISPs, potentially leading to more affordable and reliable options for all Californians.³² The project broke ground near San Diego in October of 2022 and is scheduled to be completed in 2026.³³

One Touch Make Ready

In September of 2022, the CPUC released a decision instituting the One Touch Make Ready (OTMR) policy. This policy is a regulatory framework that enables a streamlined process for deploying new infrastructure. Traditional pole attachment procedures dictate that multiple parties (e.g., electric, telephone, and cable companies) are required to perform sequential work on the same pole, leading to an inefficient and expensive process that disrupts existing services. Under the OTMR policy, one qualified contractor can move existing attachments on utility poles and make any necessary adjustments to install new attachments. These changes will streamline the deployment process, cut time, and reduce costs.

28 California Legislature, [SB 156](#)

29 CA.gov, Broadband for All, [California’s Middle-Mile Broadband Initiative](#)

30 Gov Tech, CA [Open-Access Middle-Mile](#)

31 CA.gov, Broadband for All, [CA Open-Access Middle-Mile Map](#)

32 California Public Utilities Commission, [California Open-Access Middle-Mile Project](#)

33 Fierce Telecom, [California kicks off construction of \\$3.8B middle-mile fiber network](#)



REGIONAL AND LOCAL LEGISLATION AND POLICY

Regional Policy

Riverside County is a member of a number of regional organizations, one of which is the Southern California Association of Governments (SCAG), a regional planning agency comprised of municipal governments and coalitions of governments in the region. To address digital equity issues that were exacerbated during the COVID-19 pandemic, SCAG adopted a Digital Action Plan in April 2023. This resolution echoed the need for broadband access in every home and prioritized building new infrastructure and updating existing infrastructure to bring broadband to unserved and underserved areas.³⁴ The Digital Action Plan includes model resolutions and policies for local jurisdictions, and guidance for pursuing new grant opportunities, forging new partnerships to aid in broadband expansion, creating working groups to explore ways to efficiently deploy broadband technology, and using broadband data and research to create effective strategies and promote an inclusive recovery strategy following the pandemic.³⁵ SCAG is also working to streamline its members' respective permitting process to speed up the process of deploying infrastructure and bringing broadband to the 191 cities across SCAG's six member counties.³⁶

Riverside County is also a member of the Coachella Valley Association of Governments (CVAG), which works to improve the quality of life in the Coachella Valley. Among other initiatives, CVAG is working to promote broadband access and adoption throughout the region. To that end, CVAG has secured over \$900,000 in Local Agency Technical Assistance (LATA) funding for new middle-mile infrastructure construction that would provide broadband speeds to currently unserved and underserved areas.^{37 38} In October 2021, CVAG reported to the CPUC that its Executive Committee had approved \$1 million for the design of a broadband middle-mile along the CV-Sync route.³⁹ The CV-Sync project, which is connected to the middle-mile infrastructure build-out, is aimed at synchronizing traffic signals and establishing a "smart region" framework throughout the Coachella Valley.⁴⁰

CVAG is working to promote broadband access and adoption throughout the region.



34 SCAG, [Broadband Resolution](#)

35 SCAG, [Broadband](#)

36 Ibid.

37 California Public Utilities Commission, [LATA Funding Resolution](#)

38 CVAG, [General Assembly](#)

39 California Public Utilities Commission, [Order Instituting Rulemaking Regarding Broadband Infrastructure Deployment](#)

40 CV-Sync, [Keeping the Coachella Valley Moving](#)



Local Policy

Among the recent federal, state, and regional initiatives to increase broadband access, Riverside County has also taken a number of steps to address the digital divide.

Riverside County identified broadband as a key aspect of growth and economic development in 2015, which led to multiple important steps regarding broadband and digital equity. RivCo Connect, the largest multi-jurisdictional broadband project in the United States at its inception, was established by the county in conjunction with its 2016 Broadband Master Plan.⁴¹ RivCo Connect has several key priorities:

1

Digital Equity: Riverside County's Information Technology team is working with Community Action Partnership (CAP), the Department of Public Social Services (DPSS), and the Economic Development Agency (EDA) to bring computers and trainings to residents through the Digital Equity Program (DEP).

2

Broadband: RivCo Connect advocates for broadband services to be available in all 87 incorporated and unincorporated communities and throughout tribal lands. This work includes a commitment to bringing reliable and affordable broadband services to all communities.

3

Digital Literacy Trainings: The DEP is also working in conjunction with local school districts as well as other local government entities and non-profit organizations to offer trainings on computers and provide other digital literacy programming. This training includes the use of tools such as Microsoft Office and the safe navigation of the internet.⁴²

Riverside County published a Broadband Master Plan in 2016.⁴³ The plan includes a detailed analysis of existing broadband infrastructure and identifies unserved or underserved areas in the county. It also includes recommendations for expanding broadband access and adoption in the region. The plan outlines Riverside County's intention to forge public-private partnerships to bring reliable broadband speeds to the nearly 100,000 households that did not have access at the time the plan was published. Through the plan, the county also emphasizes the importance of working collaboratively with tribal nations, cities, and special districts, as well as key government agencies, to accomplish the common goal of closing the digital divide.

The Broadband Master Plan also includes the Riverside County Broadband Policy, which declared broadband to be an essential service. It further dubbed broadband "green technology," defined as technology that will "reduce negative impacts on traffic and the environment by reducing the need for vehicle use, thereby decreasing the use of resources and saving energy."⁴⁴ The policy also describes the county's desire to implement strategies related to land use and smart infrastructure, public services and digital inclusion, innovative housing, digital literacy, and workforce development, as well as designating a countywide broadband leader, ensuring interagency cooperation, and continually seeking new opportunities for broadband deployment, grant funding, and community partners.⁴⁵

⁴¹ RivCo Connect, [Welcome to RivcoConnect](#)

⁴² RivCo Connect, [About Us](#)

⁴³ County of Riverside Data, [Riverside County Broadband Master Plan](#)

⁴⁴ RivCo Connect, [Riverside County Broadband Policy](#)

⁴⁵ Ibid.



The Riverside County Board of Supervisors has passed three separate resolutions regarding broadband and digital equity within its jurisdiction.

The Riverside County Board of Supervisors has passed three separate resolutions regarding broadband and digital equity within its jurisdiction. The first resolution from September 2016 supported the deployment of gigabit fiber services to all institutions, homes, and businesses within Riverside County via the passing of the Riverside County Broadband Master Plan.⁴⁶ In response to the COVID-19 pandemic, in December 2020 the Board of Supervisors passed a second resolution that recognized the importance of broadband and outlined support for broadband related COVID-19 responses from the federal government, FCC, and California government. The resolution described efforts to bring reliable and affordable broadband services to Riverside County residents to prepare them for continued success as the world increasingly moves to virtual means of work and education.⁴⁷

The Riverside County Board of Supervisors passed another resolution in May 2022. This new resolution expanded upon the previous one and addressed action items identified by the Riverside County Broadband Policy.

1

Officially designated the Chief Data Officer for Riverside County, Tom Mullen, as Riverside County's Broadband Leader and established a Broadband Committee with participants from departments including the Department of Public Social Services, Transportation Land Management Agency, and Housing and Workforce Solutions, among others.

2

Allowed for the development and release of a request for proposal for a consultant to assist the county with its broadband planning and implementation, one of the outputs of which is this Gaps & Opportunities Report.

3

Called for continued monitoring of state middle-mile projects that would directly impact Riverside County.

4

Requested the review of current policies and regulations for opportunities that would promote inclusion of broadband infrastructure into the construction of public buildings.

5

Outlined the county's intention to use ARPA funding for broadband access and adoption expansion projects.

6

Reiterated the county's commitment to seeking out new partnerships with ISPs, including exploring opportunities for them to participate as an "anchor tenant."⁴⁸

⁴⁶ County of Riverside Data, [Riverside County Broadband Master Plan](#)

⁴⁷ RivCo Connect, [2020 Board Resolution](#)

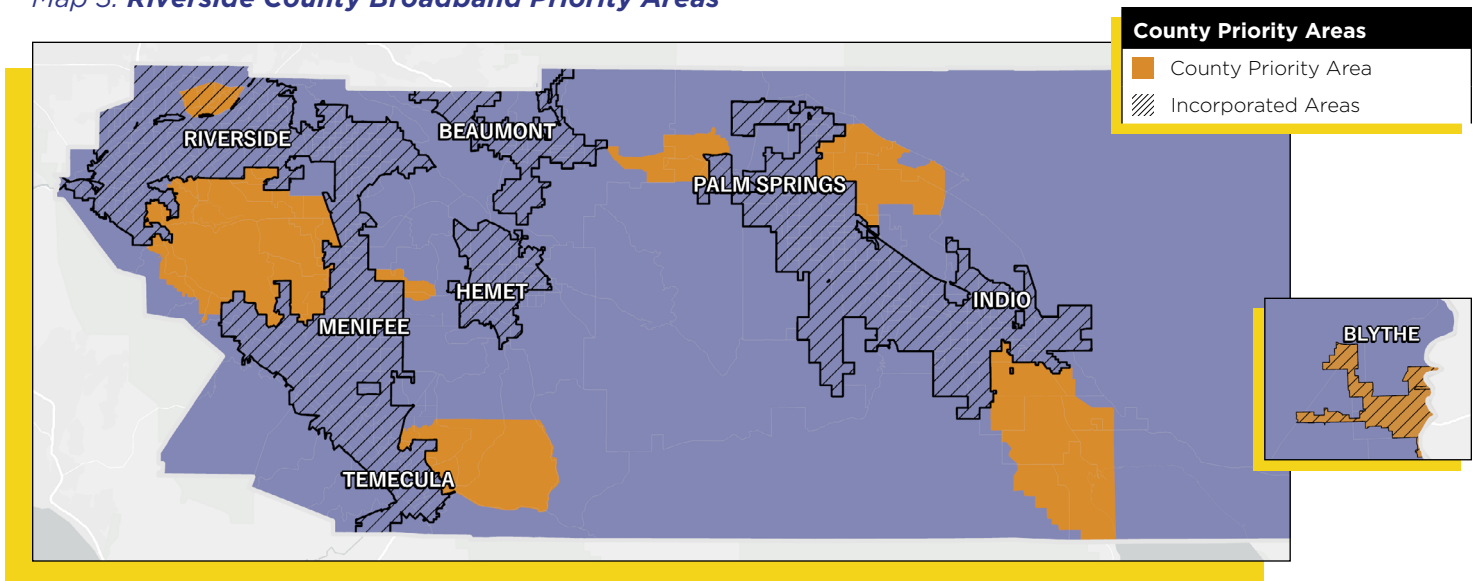
⁴⁸ RivCo Connect, [Riverside County Board Resolution 2022](#)





One action taken since the May 2022 resolution has been to identify several broadband priority areas based on feedback provided by constituents to the Riverside County Board of Supervisors, their offices, and other officials. These eight areas include several unincorporated portions of the county, along with portions of the Cities of Blythe and Jurupa Valley and are shown in **Map 3** below.

Map 3: Riverside County Broadband Priority Areas





KEY TAKEAWAYS

LEGISLATION AND POLICY ANALYSIS

Due to the growing need for high-speed internet, exacerbated by the COVID-19 pandemic, recent policy developments have occurred at federal, state, and local levels to respond to evolving broadband needs. Additionally, ongoing regional broadband initiatives can be leveraged to coordinate efforts between regional partners in Riverside County and throughout Southern California. Riverside County can make use of these opportunities to fund and deploy broadband infrastructure, ensuring every home, business, and community institution has access to affordable high-speed internet.

GAPS

1 The FCC's definition of broadband as 25/3 Mbps precludes many households with inadequate speeds from eligibility for some federal grants for improved infrastructure.

While some government programs, including those from the State of California, now require 100/20 Mbps as the standard for broadband service delivery, the FCC still defines broadband speed as 25/3. Service speeds above 25/3 Mbps but below 100/20 Mbps are increasingly becoming insufficient for modern tasks, however, this leaves many households with inadequate service as ineligible for the federal grant programs that use that speed as the standard for broadband.

2 Funding for the Affordable Connectivity Program (ACP) is not sufficient to fully address American's affordability concerns, and the program will soon run out of funding if not reappropriated.

Current projections estimate that ACP funding will be depleted by late summer 2024, which will cause the 141,654 households currently enrolled in ACP in Riverside County to lose their broadband service subsidies.⁴⁹ Ending the ACP without a replacement would leave these households without a viable option to afford a broadband subscription.

OPPORTUNITIES

1 New federal and state policies have established significant funding opportunities that can be leveraged to expand broadband, promote digital equity, and bridge the digital divide.

Bridging the digital divide and bringing affordable, reliable broadband speeds to all residents is a goal shared by public and private entities. Riverside County can identify and pursue many options for funding new projects and forging new partnerships. Federal and state grants offer opportunities for local governments to develop and execute robust broadband deployment plans in their areas and even in conjunction with neighboring areas. Additionally, changes in legislation and the streamlining of processes, all done with the common goal of expanding broadband access, have alleviated some of the burden caused by red tape on broadband deployment projects. Permitting is a prime example of a process that has been adjusted to simplify the process of building new and upgrading existing infrastructure.

2 Although ACP funding is likely to run out soon unless reappropriated, there are additional funds available that can address some of the residents' affordability challenges.

Additional federal funds are available to meet needs for affordable broadband and digital devices, including through the Emergency Connectivity Fund and Lifeline.

⁴⁹ CA.gov, Broadband for All, [Affordable Connectivity Program enrollment tracker](#)



...ongoing regional broadband initiatives can be leveraged to coordinate efforts between regional partners in Riverside County and throughout Southern California.



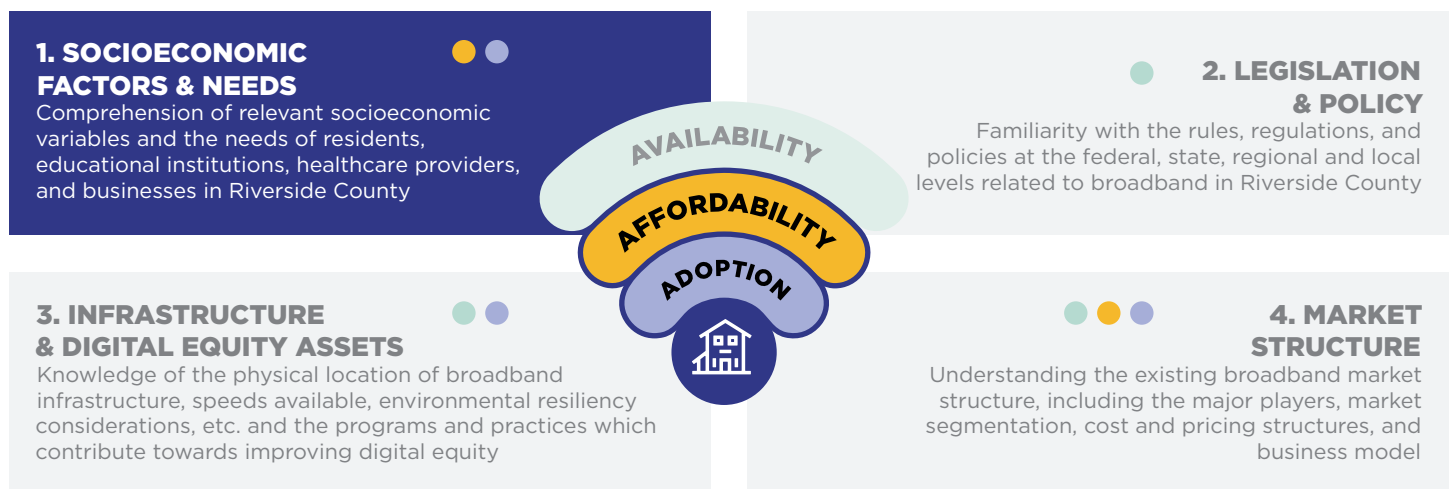
SOCIOECONOMIC FACTORS

Consideration of socioeconomic conditions is critical for assessing the state of the digital divide in Riverside County, as such analysis can provide important insight into particular groups' rates of broadband adoption and can help identify existing gaps. For example, socioeconomic factors and associated systemic barriers can contribute to a household's ability to:

- **Access broadband service** at the speeds they need,
- **Afford monthly payments** for broadband plans and digital devices,
- **Successfully navigate** signing up for broadband subscription plans, and
- **Maximize the benefits of the internet** for professional, educational, and healthcare needs.

Multiple socioeconomic variables were considered to understand regional and household trends related to broadband. Using data from the American Census Survey's 2021 five-year estimates, Riverside County conducted a socioeconomic analysis using variables with a known correlation to broadband adoption. The county then geospatially mapped this data to better understand the state of these socioeconomic variables across the county and identified specific geographic areas that may be affected more than others. Through this type of analysis, the county can better understand which populations or demographics are falling behind in the digital divide, which areas of the county may be struggling more than others, and how to address the county's socioeconomic needs through equitable considerations. As such, this analysis will not only help the county promote broadband adoption but will also promote equitable outcomes. **Figure 4** below demonstrates how socioeconomic factors and needs impact both broadband adoption and affordability.

Figure 4: Socioeconomic Factors Fit into the Larger Approach of this Report



SIX SOCIOECONOMIC VARIABLES WERE IDENTIFIED TO ASSESS BROADBAND ADOPTION ACROSS RIVERSIDE COUNTY

Research has shown that certain socioeconomic variables can be a determinant in rates of broadband adoption. Through desktop research, the county selected the following socioeconomic variables to assess broadband adoption across Riverside County:⁵⁰



Income

In an already economically turbulent time, the cost of a broadband subscription plan can be a prohibitively high barrier for families to overcome. The county seeks to understand the extent to which its residents struggle to afford broadband subscription plans.



Education

Education can be an explanatory factory for many other outcomes, as it is closely correlated with employability, household income, and race, which all influence whether a household is able to obtain a broadband subscription plan.



Age

Age impacts residents' understanding of using digital devices and accessing the internet. Through analysis of this variable, the county intends to identify the severity of the digital divide among different age groups, with a focus on younger residents and those over the age of 65.



Health and Disability

Through this analysis, the county hopes to identify how many residents have unique needs relating to broadband resulting from their health or disability status.



Race and Language

Riverside County is exceptionally diverse, consisting of residents from many backgrounds. Due to this, the county intends to understand whether groups of a particular race adopt at lower rates and where populations that don't speak English well may be disproportionately impacted.

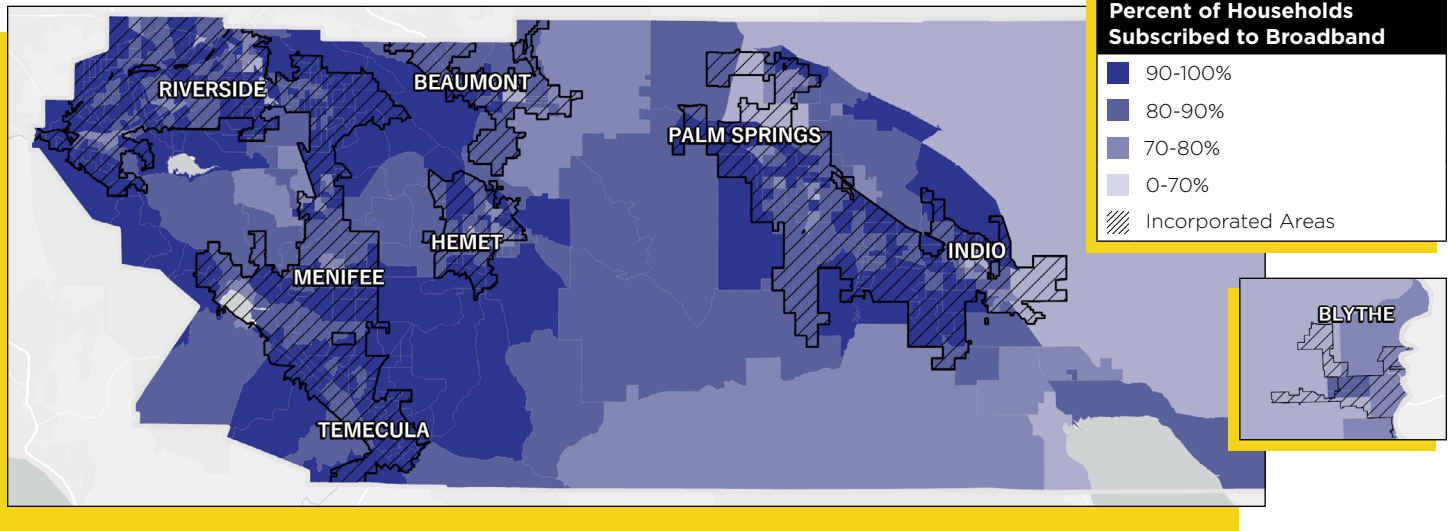


Rural Areas

Rural areas typically have less widely available broadband infrastructure, and often struggle with slow or entirely lacking internet service relative to their urban counterparts. Through assessment of this variable, the county seeks to understand how deep the rural-urban divide is as it relates to broadband adoption.

Broadband adoption rates vary across the county, with many areas seeing over 90% subscription, however, some areas lag behind with only 70% or fewer of households subscribed. Areas with low subscription rates include census tracts in the desert, northern and southern portions of the Coachella Valley, and scattered tracts across the major cities of western Riverside County, as shown in **Map 4**. All together, these factors can provide deeper insights as to what considerations may impact whether residents adopt broadband into their daily lives and how to strategically focus solutions on areas lagging behind across the county.

⁵⁰ National Center of Biotechnology Information, [Determinants of broadband access and affordability: An analysis of a community survey on the digital divide](#)

Map 4: **Broadband Subscription Rate by Census Tract**⁵¹

Income is closely correlated with broadband adoption, with low-income households much less likely to adopt than their wealthier counterparts

Broadband subscription plans can often be expensive, especially in areas where broadband infrastructure is sparse and available internet speeds are poor. Further increasing the cost of connectivity are the costs of computers and other digital devices necessary to access the internet. Consequently, household income often drives families' decisions on whether to obtain a broadband subscription.

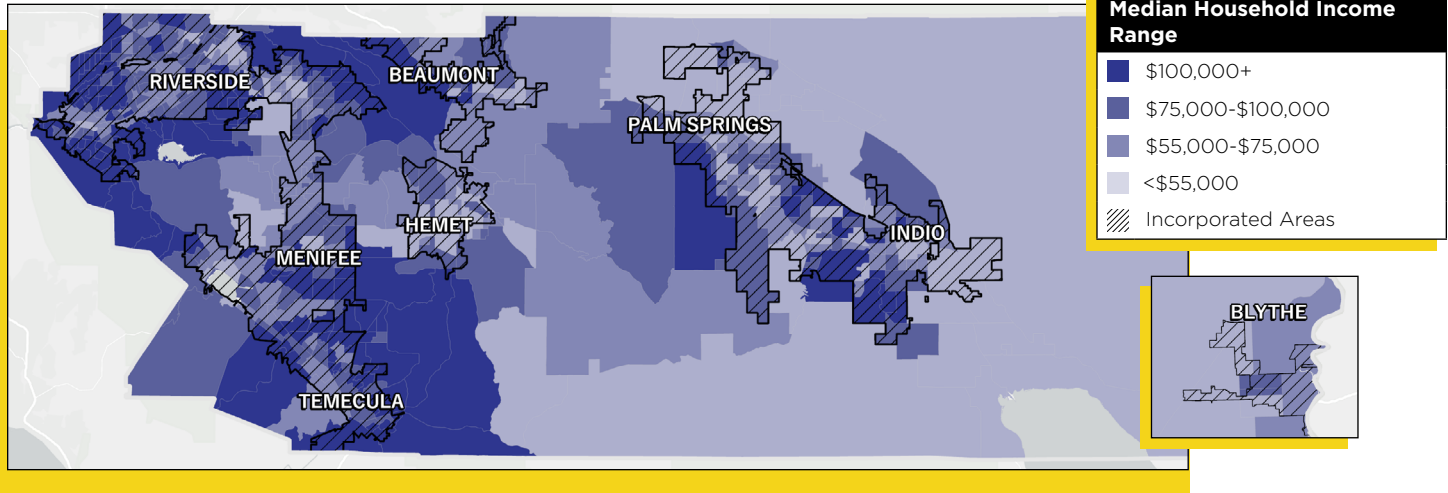
In Riverside County, lower household income is a strong predictor of lower rates of broadband adoption. As the table below indicates, 96% of households in the county with household income over \$75,000 are subscribed to a broadband service plan whereas just 74% of households with household income under \$20,000 have broadband connectivity. These figures, shown in **Table 4**, suggest that in order to increase widespread household broadband adoption across the county, investing in broadband infrastructure to make faster broadband speeds more accessible is not an all-encompassing solution. Currently, 67,244 households in Riverside County do not have an internet subscription plan, and many of these households simply find broadband subscription plans too expensive. Consequently, affordability barriers must be addressed in order to allow families to squeeze broadband into already tight household budgets.

Table 4: Broadband Subscription Rates Vary by Household Income⁵²

Household income	Percent subscribed to a broadband plan
Less than \$20,000	74%
\$20,000 - \$74,999	89%
\$75,000 +	96%

Areas with low household income have especially significant affordability challenges. These include areas at the southern edge of the Coachella Valley and along the Salton Sea, including portions of the cities of Indio and Coachella, along with the unincorporated communities of Thermal, Mecca, Oasis, Vista Santa Rosa, Valerie, Martinez, Desert Camp, Mortmar and North Shore. The cities of Blythe and Hemet also see low median household incomes. In addition, portions of major cities in northwestern Riverside County such as Riverside, Moreno Valley and Jurupa Valley contain low income areas. This data is highlighted in **Map 5**, which shows median household income by census tract.

⁵¹ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)
⁵² Ibid.

Map 5: Median Household Income by Census Tract⁵³

Educational attainment levels can also impact broadband adoption, with 15% of residents without a high school degree lacking a broadband subscription

Assessing broadband adoption through the lens of educational attainment is valuable for a few reasons. Firstly, it provides insight into the use case for different age groups, especially school aged children and college students who must access the internet to continue their instruction outside of the classroom. Additionally, educational attainment provides another perspective into whether adults without educational credentials experience disparities in broadband adoption relative to residents with educational degrees. Educational attainment and broadband adoption have been closely linked, with high levels of education often associated with greater access to and use of broadband. The CPUC found that across California “census tracts where at least 30% of the households hold a bachelor’s degree have an adoption rate close to 84%, compared to only 57% for those census tracts where less than 10% of the households hold a bachelor’s degree.”⁵⁴

Table 5: Broadband Subscription Rate by Educational Outcome⁵⁵

Educational attainment	Percent subscribed to a broadband plan
Residents with less than a high school degree	85%
Residents with some college or associates degree	92%
Residents with bachelor’s degree or higher	96%

In Riverside County, broadband adoption appears to be heavily influenced by educational attainment, as shown in **Table 5**. In the county, 96% of residents with a bachelor’s degree or higher are subscribed to a broadband plan, whereas 85% of residents with less than a high school degree have a subscription. This is an important trend to consider as it can perpetuate outcomes leading to the very inequities that result in disparate educational attainment. Broadband access opens the door for remote learning, training, upskilling, and the ability to search and apply for employment. Individuals with lower levels of educational attainment can greatly benefit from access to broadband to help close the gaps they experience compared to individuals with greater educational attainment.

As a result of this variation in broadband subscription rate based on educational attainment, areas with low educational attainment may face particularly strong broadband adoption and affordability challenges. In Riverside County, areas with high rates of residents aged 25 and older who do not have a high school diploma include

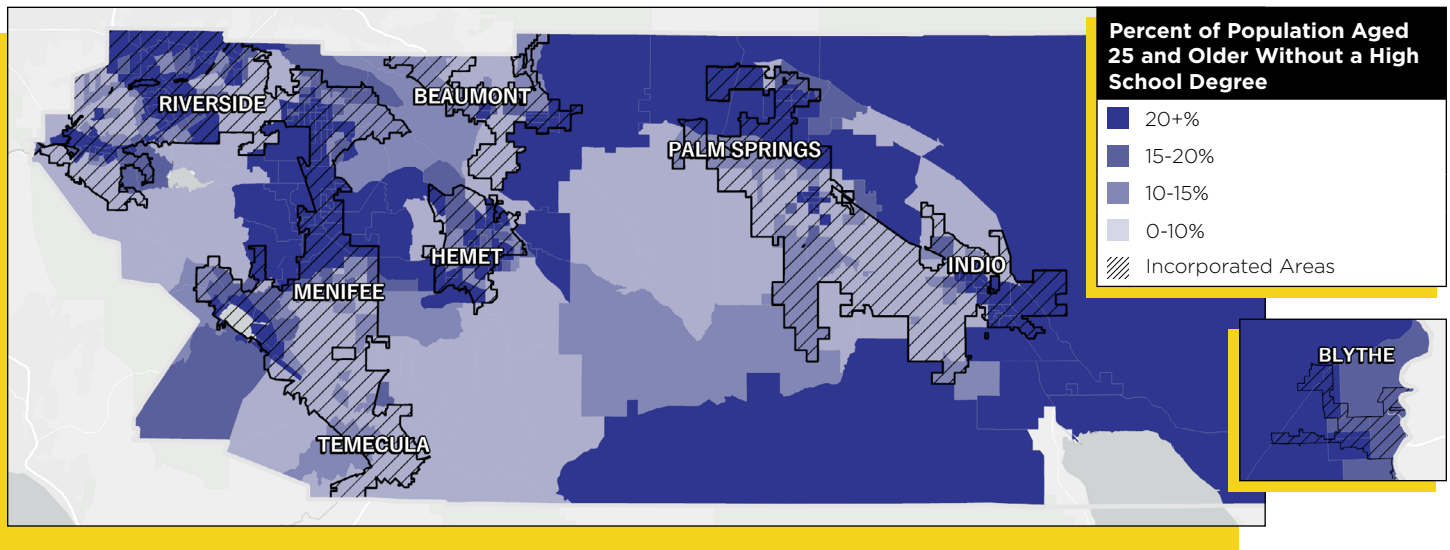
⁵³ US Census Bureau, [ACS Table S1903: Median Income in the Past 12 Months, 5-Year Estimates 2017-2021](#)

⁵⁴ California Public Utilities Commission, [Broadband Adoption Gap Analysis](#)

⁵⁵ US Census Bureau, [ACS Table S2802: Types of Computers and Internet Subscriptions by Selected Characteristics, 5-Year Estimates, 2017-2021](#)

portions of northwestern Riverside County (including parts of the cities of Jurupa Valley, Riverside, Corona, Moreno Valley, Perries, and nearby unincorporated areas). In addition, portions of the Coachella Valley, including the cities of Desert Hot Springs and Coachella, along with unincorporated communities such as North Palm Springs, Sky Valley, Desert Edge, Thermal, Mecca, Oasis, Vista Santa Rosa, and others all see high percentages of residents without a high school degree. This information is further shown in **Map 6** below.

Map 6: Percent of Population Aged 25 and Older without a High School Degree⁵⁶



Students need access to the internet once they are off campus or at home to be as successful as possible.

One of the benefits the county offers is the numerous colleges and universities, including, but not limited to, the University of California, Riverside (UCR), California Baptist University (CBU), La Sierra University, the desert campus of California State University San Bernadino (CSUSB), the three colleges of the Riverside Community College District, Palo Verde College, and the College of the Desert. Across the county, roughly 43% of people aged 18-24 are enrolled in college or graduate school.⁵⁷ Reliable internet access is critical to ensuring successful educational outcomes for students that complete homework, classwork, and exams through a connection to the internet. While campuses often provide Wi-Fi access, students need access to the internet once they are off campus or at home to be as successful as possible.

Across the nation, students face adoption issues stemming from affordability challenges. The American Psychological Association cites that over 31% of students struggling with internet access come from low-income backgrounds.⁵⁸ At UCR, students from low-income backgrounds make up the majority of the student body, representing 53% of the campus's enrollment.⁵⁹ Poor access to broadband makes accessing schoolwork at home extremely difficult, with negative implications for students' educational outcomes. Broadband subscription plans are critical for college students, as well as school-aged children who now, more than ever, rely on home internet access to complete schoolwork and continue their learning beyond the classroom. While internet

⁵⁶ US Census Bureau, [ACS Table S1401: School Enrollment, 5-Year Estimates 2017-2021](#)

⁵⁷ Ibid.

⁵⁸ American Psychological Association, [Many college students struggle to have their basic needs met](#)

⁵⁹ UC Riverside, [Low-Income Students and UCR](#)



access can promote learning and success, lack of reliable internet can set students back and further deepen educational disparities between students that have the means to access internet at home and those that do not.

The digital divide is evident among age groups, as 14% of Riverside County residents over the age of 65 do not have a broadband subscription plan

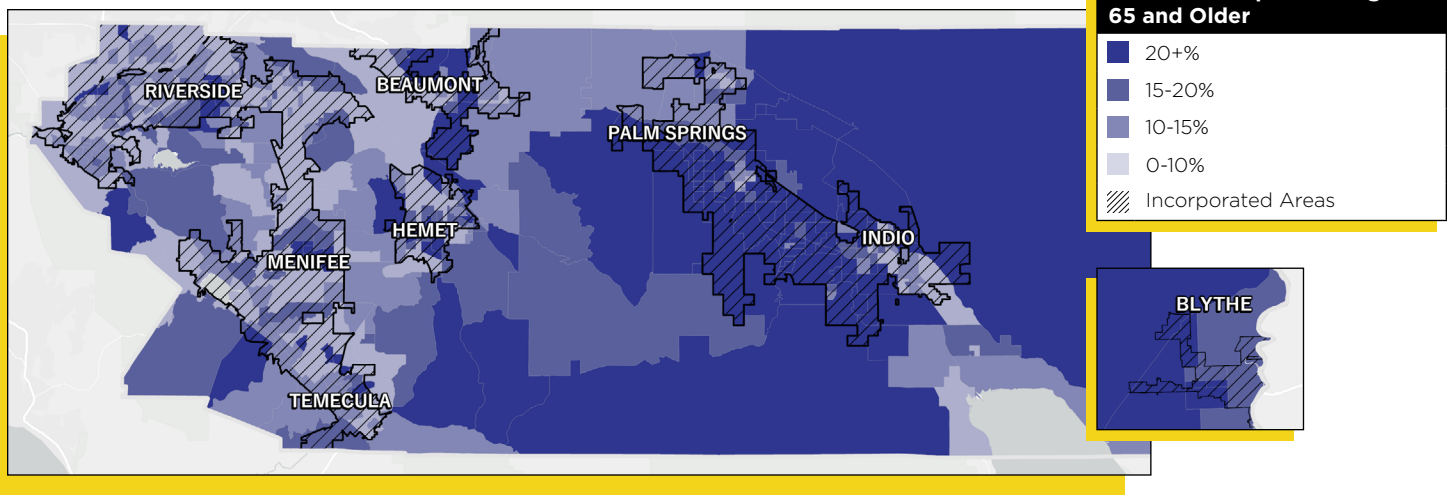
As modern demands for internet use continue to evolve, digital devices and the internet itself seem to be constantly changing. For younger, more tech-savvy users, these may be welcome evolutions that provide better and faster services. However, to someone that struggles with using digital devices, this progression may be an intimidating barrier. The Pew Research Foundation found that as of 2021, younger Americans (18 to 29-year-olds) are more likely to have broadband subscription plans despite having lower income on average than older Americans.^{60 61} The California Emerging Technology Fund also found that 1 in 4 Californians aged 65 and older are unconnected or under-connected, whereas households with school-aged children continue to be more likely to be more connected.⁶² This trend holds true for Riverside County as **Table 6** below shows. In Riverside County, only 6% of residents aged 18-64 lack a broadband subscription compared to 14% of those aged 65 and older. Addressing the digital divide within the county's senior population to increase broadband adoption within this particular demographic can bring about benefits that can significantly improve their quality of life. With proper use, residents aged 65 and older can use the internet for telehealth, social connectivity, and other online services that can benefit those with reduced mobility such as online shopping and grocery delivery.

Table 6: Broadband Subscription Rate by Age Group⁶³

Age	Percent subscribed to a broadband plan
Under 18	95%
18-64	94%
65+	86%

The significantly lower rate of broadband subscription among seniors means that areas with large populations of the elderly face significant adoption challenges. In Riverside County, areas with large concentrations of senior citizens (at least 20% of the population aged 65 and older) tend to be found in the Coachella Valley, including cities like Palm Springs, Palm Desert, Cathedral City, Rancho Mirage, and Indian Wells. In addition, unincorporated areas in the southern portion of Riverside County such as Anza and Aguanga also contain large concentrations of seniors. These areas are highlighted below in **Map 7**.

Map 7: Percent of Population Aged 65 and Older⁶⁴



60 Pew Research Center, [Broadband Internet](#)

61 Tax Foundation, [Average Income Tax By Age](#)

62 CET Fund, [Statewide Survey on Broadband Adoption 2021](#)

63 US Census Bureau, [ACS Table S2802: Types of Computers and Internet Subscriptions by Selected Characteristics, 5-Year Estimates 2017-2021](#)

64 US Census Bureau, [ACS Table DP05: ACS Demographic and Housing Estimates, 5-Year Estimates 2017-2021](#)

While inadequate digital literacy provides an explanation as to why older residents adopt at lower rates than their younger counterparts, affordability is also be a significant barrier. Nationwide, nearly 9 out of every 10 adults over 65 receive Social Security benefits.⁶⁵ Consequently, many older adults that are on a fixed income can find it challenging to allocate funds to purchase devices and broadband subscriptions. Approximately 14% of the population of Riverside County is over the age of 65. Consequently, connecting senior residents is critical to closing the digital divide countywide. It is also worth noting that many of these areas more densely populated by seniors are in or near rural communities. This highlights the intersectionality of the digital divide as meeting the needs of older residents can also greatly benefit rural residents who struggle with reliable and affordable internet access.

While residents from all racial groups adopt at a higher rate than the national average, racial disparities in broadband adoption rates still exist within the county

The Public Policy Institute of California recently found disparities between race and broadband adoption rates, stating “home broadband access has been increasing across most demographic groups, but racial/ethnic gaps persist: 80% of Latino households and 83% of Black households reported having broadband in 2020, compared to 87% of white households.”⁶⁶ While all Riverside County residents are subscribed to a broadband subscription plan at a rate above the 87% national average, slight disparities still exist by racial group, as shown below in **Table 7**. Those identifying as Asian alone adopt at the highest rates, while Hispanics and Latinos, American Indian/Alaska Native, Black/African American, and other races not listed in the American Census Survey trail behind.

Table 7: Broadband Subscription Rate by Racial or Ethnic Group⁶⁷

Race	Percent subscribed to a broadband plan
Asian alone	96.5%
Two or more races	94.9%
Native Hawaiian/Pacific Islander alone	93.5%
White alone (Not Hispanic or Latino)	93.4%
White alone	92.8%
Black/African American	92.1%
Hispanic or Latino origin (of any race)	92.1%
American Indian/Alaska Native	91.9%
Other race alone	91.6%

Broadband access is a critical issue for racial and ethnic minorities who are often disproportionately impacted.

Broadband access is a critical issue for racial and ethnic minorities who are often disproportionately impacted. Broadband access has a range of benefits for individuals and communities that can be leveraged to help reduce inequitable outcomes. For example, broadband access improves access to education and employment for individuals who already face systemic barriers to such opportunities.

⁶⁵ Social Security Administration, [Social Security Facts](#)

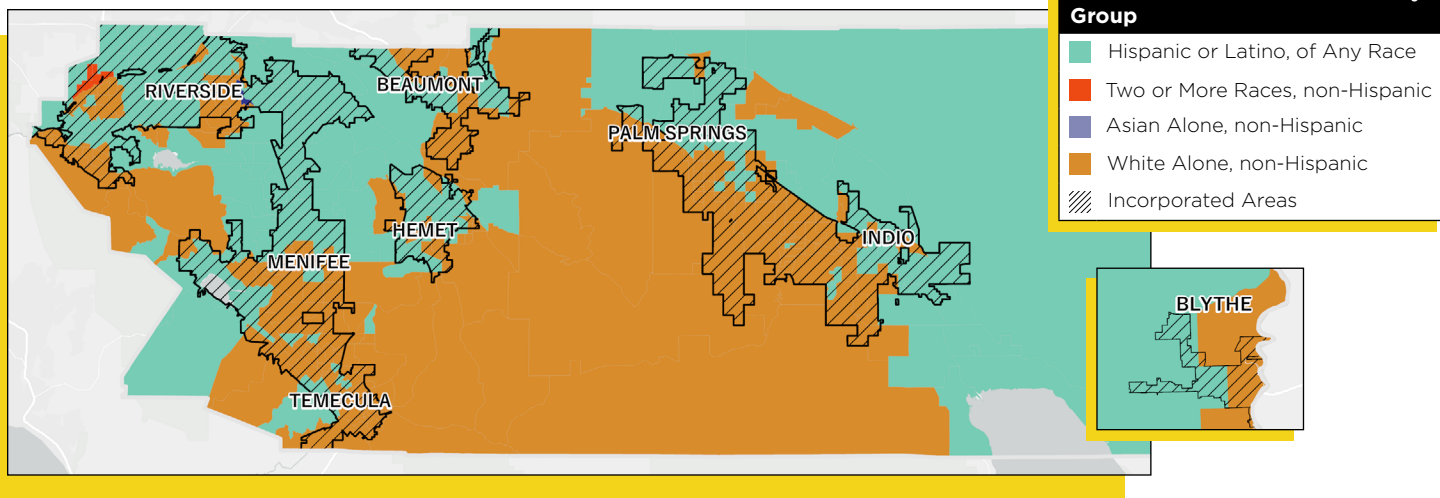
⁶⁶ Public Policy Institute of California, [California's Digital Divide](#)

⁶⁷ US Census Bureau, [ACS Table S2802: Types of Computers and Internet Subscriptions by Selected Characteristics, 5-Year Estimates, 2017-2021](#)



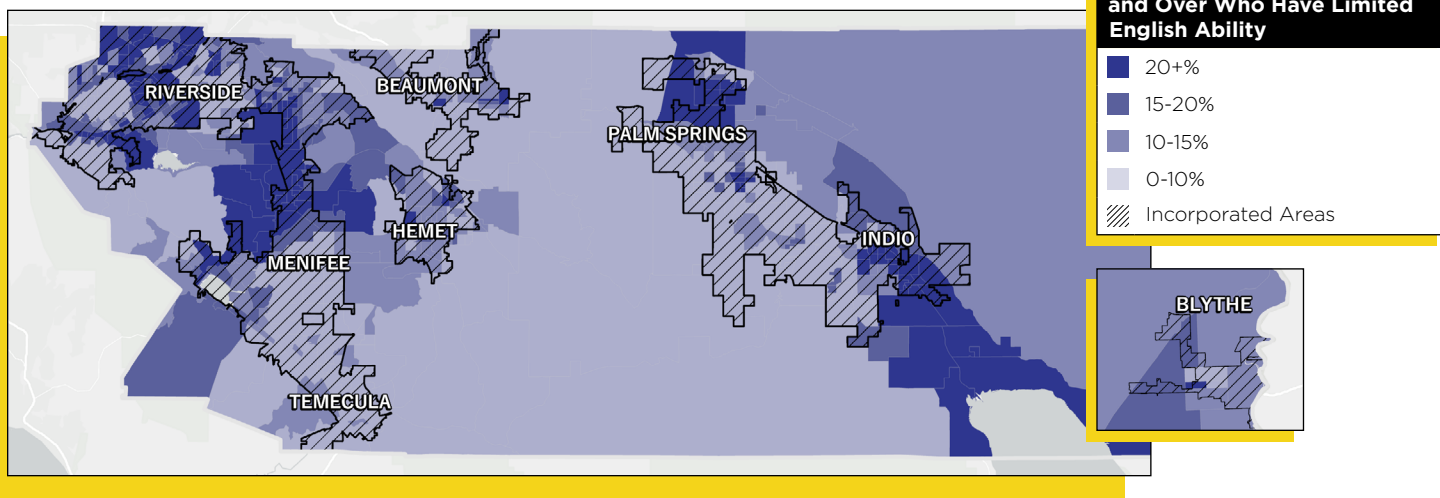
In Riverside County, Hispanic or Latino and non-Hispanic White are the two largest racial groups, with one of the two making up the largest group in census tracts across the county. Areas where Hispanic or Latino residents, who have slightly lower subscription rates than non-Hispanic White residents, may have particularly strong needs. These areas are found across the county, except for the parts of northwestern Riverside County such as Riverside, Jurupa Valley, Moreno Valley, Perris, Hemet, and some surrounding unincorporated areas as shown in **Map 8**.

Map 8: Most Prevalent Racial or Ethnic Group by Census Tract⁶⁸



There are 335,103 residents that speak English “less than very well” residing in Riverside County. Language barriers can make it challenging for residents to find and understand information about broadband subscription plan options, available service discounts and how to navigate the enrollment process. As such, it is critical that the unique needs of these residents are addressed. Key communities that face these language barriers include portions of the cities of Riverside, Jurupa Valley, Perris, Palm Springs, Desert Hot Springs, Indio, and Coachella, along with the unincorporated communities such as Thermal, Mecca, Oasis, Vista Santa Rosa, Valerie, Desert Camp, and Mortmar. These are shown in **Map 9** below.

Map 9: Percent of Population with Limited English Ability by Census Tract⁶⁹

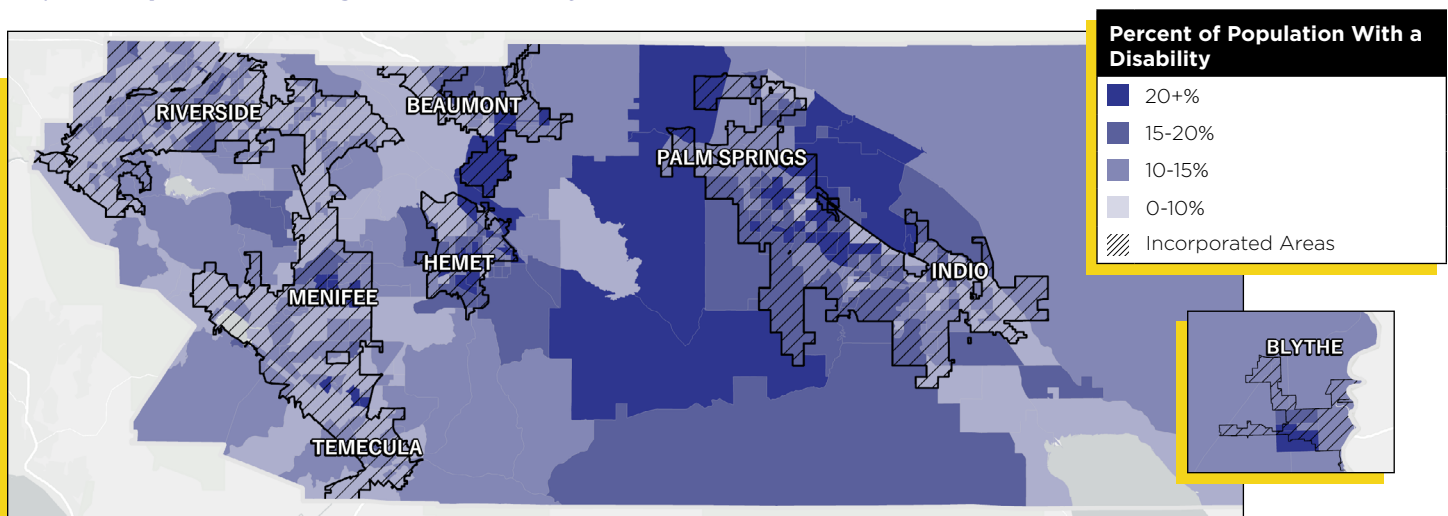


68 US Census Bureau, [ACS Table DP05: ACS Demographic and Housing Estimates, 5-Year Estimates 2017-2021](#)
 69 US Census Bureau, [ACS Table DP02: Selected Social Characteristics in the United States, 5-Year Estimates 2017-2021](#)

Broadband can greatly benefit the 11% of Riverside County residents living with disabilities

The benefits of broadband can be of great value to residents with disabilities of any kind, particularly those with limited mobility. Access to the internet and digital devices allows those with disabilities to easily access medical services through telehealth and use services that simplify everyday tasks like shopping, driving, or cleaning. In Riverside County, approximately 11% of residents, or 275,000 individuals, live with a disability. Areas with high disability rates may have particular needs for digital literacy services in order to allow residents to take advantage of the internet. Furthermore, broadband access and adoption is especially important in these areas, as in-person tasks may be more challenging for residents. Areas with high disability rates include census tracts in the San Jacinto Mountains and Coachella Valley, including parts of cities such as Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, and unincorporated areas such as Pine Cove, Fern Valley, Mountain Center, Sky Valley, Desert Edge, and Thousand Palms. Other cities such as Menifee, Murrieta, and San Jacinto also have tracts with high rates of disability. These areas are shown in **Map 10** below.

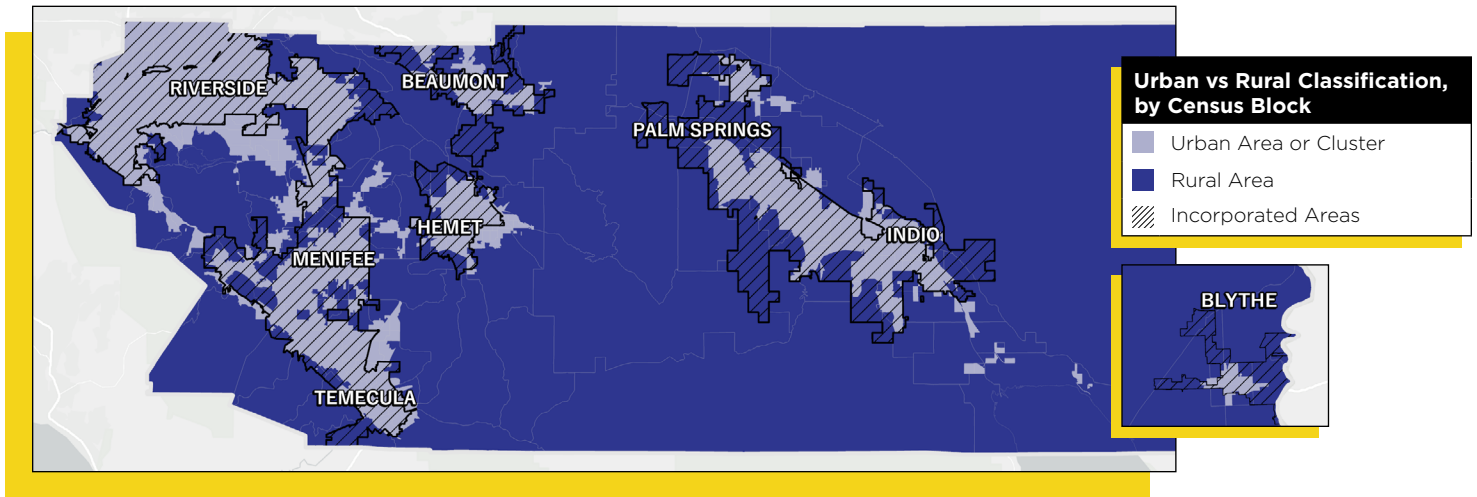
Map 10: **Population Living with a Disability**⁷⁰



Rural-urban digital divide is present within Riverside County

Currently, more than 22% of Americans living in rural areas lack access to 25/3 Mbps speeds, whereas this is true for just 2% of Americans in urban areas.⁷¹ As a result, residents of rural areas experience barriers to a wide range of services and activities reliant on fast and reliable internet, including simply staying in contact with distant friends and family. Additionally, rural areas that already have limited access to medical services would benefit greatly from expanded broadband service, allowing otherwise isolated residents to access critical telemedicine resources. Rural areas in Riverside County are shown in **Map 11**.

⁷⁰ Ibid.
⁷¹ USDA, [USDA Broadband](#)

Map 11: Urban and Rural Areas in Riverside County⁷²

These rural areas tend to generally align with incorporated areas in the county, with much of the western portion of the county classified as urban. The largest rural area in the county is the expansive desert region in the east. In addition, large rural areas also exist in the southern part of the county, between the large cities in the west along the I-15 corridor and the Coachella Valley. This area, which includes Riverside County's Wine Country region and the San Jacinto Mountains, has low population density and rugged terrain. These communities do not have many resources, and their remote nature requires residents to travel long distances to reach essential services located in incorporated cities. As a result, expanding reliable broadband in these communities is especially critical for bridging the rural-urban digital divide in Riverside County. Compared to **Map 4**, which showed broadband subscription rates across the county, many of the rural areas identified in **Map 11** see low broadband subscription rates.

Several areas were identified as having particularly high adoption and affordability needs based on socioeconomic analysis

When considering all socioeconomic drivers of broadband adoption, the county can better understand which particular areas throughout Riverside County can benefit the most from digital inclusion efforts. Bivariate analysis was conducted to geospatially consider all of the socioeconomic characteristics discussed earlier with the exception of race as well as rurality given that a significant portion of the county is considered rural and can therefore dilute insights.

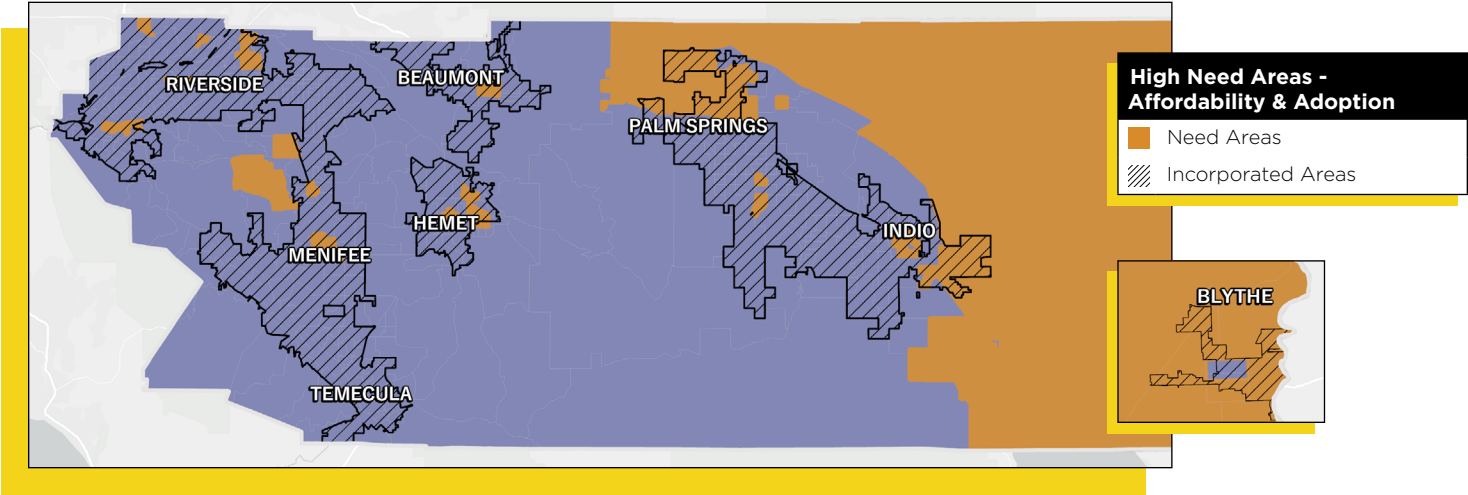
The identified high need areas experience both particularly low broadband subscription rates and at least one socioeconomic signifier of low adoption such as low household income, a high percentage of residents aged 65 and older, a high percent of residents without a high school diploma, high percent of residents with limited English proficiency, and a relatively larger population living with disabilities. As **Map 12** demonstrates, these areas are found in the following parts of the county:

- Northwestern Riverside County including portions Riverside, Jurupa Valley, and Corona
- Parts of Banning, Hemet, San Jacinto, and neighboring unincorporated areas
- Parts of Menifee, Lake Ellsinore, Perris, and nearby unincorporated areas
- Portions of the Coachella Valley and desert regions including the cities of Blythe, Indio, Desert Hot Springs, and unincorporated communities such as Thermal, Mecca, and Oasis
- Unincorporated areas in southern Riverside County such as Anza and Aguanga

⁷² US Census Bureau, [Urban and Rural](#)



Map 12: Areas with Highest Adoption and Affordability Needs



NATIONWIDE EFFORTS TO CLOSE THE DIGITAL DIVIDE PLACE EMPHASIS ON EIGHT COVERED POPULATIONS

The socioeconomic variables outlined above allow the county to evaluate broadband adoption through a socioeconomic lens to identify factors that influence broadband adoption and how to best address them. In doing so, the county has a better understanding of how to establish a strategy to close the digital divide by focusing on populations and areas that have lower rates of broadband adoption.

In addition to these considerations, the county will place particular emphasis on eight covered populations as it begins to deploy various infrastructure expansion projects and digital adoption initiatives. Because the IIJA and its associated broadband programs all center equity considerations, much of the broadband funding available to the county through state and federal programs are tied to those guidelines. Furthermore, within IIJA, there are a number of digital equity funding programs established through the Digital Equity Act, including the Digital Equity Planning Act, the Digital Equity Capacity Program, and the Digital Equity Competitive Program. These particular programs specifically focus on promoting digital equity through digital inclusion and require that funded activities place particular emphasis on those that tend to be disproportionately impacted by low adoption. As such, the federal government established the following groups as priority populations for all Digital Equity programming funded through the Digital Equity Act:

- | | | | | | | | |
|---|--|--|-------------------------------------|-------------------|-------------------------------|--------------------------|----------|
| Individuals in households earning at or below 150% of the poverty level | Individuals who are members of a racial or ethnic minority group | Individuals who primarily reside in a rural area | Individuals with a language barrier | Aging individuals | Individuals with disabilities | Incarcerated individuals | Veterans |
|---|--|--|-------------------------------------|-------------------|-------------------------------|--------------------------|----------|

While this report’s existing framework already considers most of these groups, there are two additional groups listed above that the county plans to consider in its broadband planning: incarcerated individuals and veterans.

Incarcerated Individuals

There are 20 prisons and jails in Riverside County.⁷³ At these facilities, broadband access for inmates is often restricted due to security concerns. Still, many prisons have started to provide limited access to the internet to connect inmates with educational resources, job training programs, and other services. Utilizing broadband can help prepare inmates for reentry into society, which can ultimately reduce recidivism rates. Broadband access in prison can have a two-fold effect on workforce development for inmates. Access allows inmates to continue their education while incarcerated, improve their digital literacy, and obtain skills that can improve their employment prospects following release. Furthermore, the national push for broadband expansion means that many states and local governments are desperately seeking skilled laborers to enable the deployment of needed infrastructure, likely at a rate that exceeds supply. Jobs in the broadband workforce will be in high demand and do not require advanced educational degrees, but rather needed skills and experience, all of which can be of particular relevance to incarcerated populations.⁷⁴ An emphasis on providing broadband access and workforce development to incarcerated individuals could also greatly benefit cities with prisons such as Blythe that are struggling financially and demonstrate significant broadband needs.

**Utilizing
broadband
can help
prepare
inmates for
reentry into
society, which
can ultimately
reduce
recidivism
rates.**



Veterans

According to the Federal Communications Commission, 15% of veteran households nationwide do not have a home internet subscription.⁷⁵ The digital divide for veterans is especially compounded given that one third of American veterans also live in rural communities. Riverside County is home to 114,259 veterans who would greatly benefit from access to high-speed internet in order to access veterans' benefits and services such as telemedicine, mental health resources, as well as remote learning and training opportunities following their service.

ADDRESSING THE COUNTY'S AFFORDABILITY CHALLENGES THROUGH THE AFFORDABLE CONNECTIVITY PROGRAM

The Affordable Connectivity Program (ACP), established through the IIJA, provides \$14.2 billion to address affordability challenges preventing Americans from obtaining a broadband subscription. The program provides

⁷³ County Office, [Jails and Prisons in Riverside County](#)

⁷⁴ Brookings Institute, [Reimagining the Broadband Technology Workforce](#)

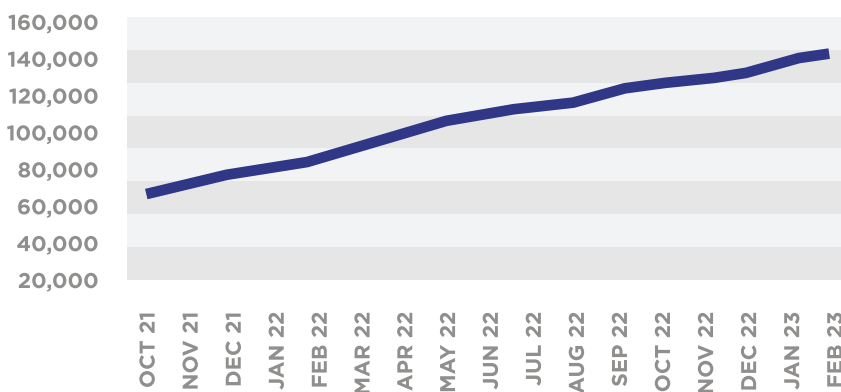
⁷⁵ American Legion, [VA Helps Bridge the Digital Divide for Veterans](#)



direct subsidies to participating internet service providers, which consumers see directly reflected in their monthly internet service bills. Qualifying households can receive a \$30 subsidy for service, and low-income households residing on tribal lands are eligible to receive \$75. The \$30 household subsidy represents a 38% discount on the median cost internet service in Riverside County, which is \$79. The ACP also provides eligible households with a one-time \$100 discount for the purchase of a digital device such as laptop, desktop computer, or tablet, with a copayment of more than \$10 and less than \$50. Eligibility for the program is established by meeting income thresholds and/or participation in other low-income benefit programs. Residents eligible for ACP include those meeting at least one of the following criteria:

- Income at or below 200% of Federal Poverty Line
- Participant in assistance programs such as Medi-Cal, CalFresh, Federal Public Housing Assistance, SSI, or WIC. Recipients of Lifeline benefits automatically qualify for ACP benefits.
- Participant in National School Lunch Program or the School Breakfast Program, including through the Community Eligibility Provision
- Recipient of a Pell Grant in the current school year
- Recipient of a Veterans' Pension or Survivors' Benefits
- Participant in Tribal specific programs, such as Bureau of Indian Affairs General Assistance, Tribal TANF, or Food Distribution Program on Indian Reservations
- Meeting the eligibility criteria for a participating provider's existing low-income program.

Figure 5: **ACP Enrollment by Month**



Riverside County has made meaningful progress in increasing ACP enrollment

As of February 2023, 360,381 out of 724,894 households in Riverside County, or 50%, are eligible for the ACP.⁷⁶ As **Figure 5** shows, as of February 2023, 141,654 households have enrolled in ACP, representing 39% of all those eligible in the county.⁷⁷ While enrollment figures indicate that there are many customers left to reach, enrollment has increased since the start of Riverside County's ACP Outreach Campaign in October 2022.

Between September 2022 and February

2023, 23,273 households enrolled in ACP.⁷⁸ The county's ACP Outreach Campaign employed a media strategy directed at those eligible but not yet enrolled in the program through television and radio advertising, billboards located on major highways, social media marketing, and a number of in-person enrollment events. Advertisements routed residents to the county's ACP call center which helped callers enroll in the program. The county's current enrollment contributes roughly \$4.2 million in federal subsidies that flow into Riverside County monthly through the ACP. Promoting enrollment in the ACP, particularly in areas with a high ACP-eligible population that has yet to enroll, continue to build on Riverside County's existing momentum.

⁷⁶ Broadband for All, [Affordable Connectivity Program Enrollment Tracker](#)

⁷⁷ Ibid.

⁷⁸ ACP enrollment figures were compiled by the California Emerging Technology Fund based on USC Professor Hernan Galperin and his team's calculations using census data. Details can be found at <https://arnicusc.org/wp-content/uploads/2022/10/Policy-Brief-2-ACP-eligibility-final.pdf>



PARTNERING WITH TRIBES CAN HELP THE COUNTY BRIDGE THE DIGITAL DIVIDE

Riverside County is home to 12 federally recognized tribes.^{79 80} Working with each of the tribes located within the county's boundaries is another opportunity for the county to facilitate broadband expansion and adoption throughout the region through stakeholder coordination. Tribal authorities are an important and trusted way to distribute information about ACP, digital literacy programming, and other initiatives that increase adoption. Due to the remote nature of most tribal lands, programs relating to telemedicine and distance learning may be of particular importance for tribal residents.

Furthermore, there are a variety of funding opportunities for broadband-related initiatives specifically designated for tribal areas. Such grant opportunities, which exist at both the state and federal level, can address both broadband adoption and broadband infrastructure issues. Of particular note is the ACP's augmented internet service available to households living on tribal land, irrespective of tribal membership or affiliation. While the base ACP subsidy is \$30 per household, residents on tribal lands qualify for up to \$75 per household. The additional subsidy for households on tribal lands means that coordination with tribal authorities is key to promoting and expanding the program. Other sources of funding with a focus on broadband expansion in tribal lands include the IJA-funded Tribal Broadband Connectivity Program and the State of California's Tribal Local Agency Technical Assistance grant. In addition to the aforementioned programs, state and local funding programs often set aside pre-allocated funding amounts for qualifying tribes.

Riverside County is home to 12 federally recognized tribes that are eligible to take advantage of tribe-specific funding opportunities to promote broadband adoption. They include:

- Morongo Band of Mission Indians
- Soboba Band of Luiseño Indians
- Agua Caliente Band of Cahuilla Indians
- Pechanga Band of Luiseño Indians
- Cahuilla Band of Indians
- Ramona Band of Cahuilla Mission Indians
- Santa Rosa Band of Cahuilla Indians
- Cabazon Band of Mission Indians
- Twenty-Nine Palms Band of Mission Indians
- Augustine Band of Cahuilla Indians
- Torres-Martinez Desert Cahuilla Indians
- Colorado River Indian Tribes (a very small portion of this tribal land is located in Riverside County, with the rest in San Bernadino County and Arizona).

There are a variety of funding opportunities for broadband-related initiatives specifically designated for tribal areas.

Looking to the future, the county looks forward to closely coordinating with local tribes to promote enrollment in the ACP as part of its existing ACP Outreach Campaign. Additionally, as tribes look to expand broadband infrastructure in their un(der)served communities, they have opportunities to leverage ongoing broadband expansion projects within the county. Working with tribes on these issues is an important step that will address each of the three pillars of closing the digital divide: access, affordability, and adoption.

⁷⁹ County of Riverside, [County of Riverside Office of the District Attorney Tribal Unit](#)
⁸⁰ California's Clean Air Project, [County List of Tribal Nations](#)



KEY TAKEAWAYS

SOCIOECONOMIC FACTORS

The digital divide impacts individuals across Riverside County, especially those who fall into the covered populations outlined by the IIJA. Without vital resources, it can be difficult for people to participate in society the same way as those with access to broadband, often creating disadvantages when accessing educational tools, looking for a job, performing a job, or staying connected to the world around them. The amount of people without some form of technological access creates a gap in accessibility that must be resolved. These resolutions can come in the form of enrolling people in ACP to reduce affordability barriers, creating programs to give out free or reduced cost devices and hotspots, and finding grants and non-profits to utilize to bring available resources to people who need them.

Ultimately, Riverside County is impacted by the digital divide, much of which falls along socioeconomic factors that contribute to inequities such as low income, low educational attainment, older age, lack of infrastructure in rural areas, disability, and language barriers. To ensure vulnerable populations are adopting broadband at similar rates as their better resourced counterparts, the county will have to focus its digital inclusion efforts in the following areas:

- Northwestern Riverside County including portions Riverside, Jurupa Valley, and Corona,
- Parts of Banning, Hemet, San Jacinto, and neighboring unincorporated areas,
- Parts of Menifee, Lake Elsinore, Perris, and nearby unincorporated areas,
- Portions of the Coachella Valley and desert regions including the cities of Blythe, Indio, Desert Hot Springs, and unincorporated communities such as Thermal, Mecca, and Oasis,
- Unincorporated areas in southern Riverside County such as Anza and Aguanga.

Riverside County is impacted by the digital divide, much of which falls along socioeconomic factors that contribute to inequities such as low income, low educational attainment, older age, lack of infrastructure in rural areas, disability, and language barriers.



GAPS

- 1 The extent of the digital divide closely follows socioeconomic factors which may exacerbate existing inequities.** Many of the socioeconomic factors evaluated demonstrated a divide between groups in each category. This highlights that the digital divide persists in the county and can lead to larger inequitable outcomes. Promoting broadband adoption for key groups that are un(der) connected is needed to bridge this divide.
- 2 Broadband subscription plans are too expensive for many Riverside County households to afford.** Lower household incomes strongly correlate to lower rates of broadband subscription. This demonstrates that broadband subscription plans are too expensive to afford without additional assistance. Low rates of broadband adoption within low-income communities present missed opportunities to promote equitable outcomes.
- 3 Digital literacy programming is needed to assist residents with linguistic and/or technological barriers.** Disparities in socioeconomic factors evaluated such as race, language, and age demonstrate that lack of digital literacy could play a factor in lower rates of broadband adoption within these groups. While getting residents connected to the internet is the first step, it is important to ensure that all residents are able to maximize the full benefit of broadband.

OPPORTUNITIES

- 1 Broadband planning can be tailored to address unique needs of residents throughout the county's geography and utilize a targeted approach.** Riverside County can leverage geospatially plotted census data and ACP enrollment data evaluated in this assessment to ensure that its efforts to promote broadband adoption are deployed in particular communities with the highest need to have the most impact.
- 2 Riverside County can leverage its ACP Outreach Campaign to increase internet plan subsidies available to residents.** While the county can not in itself control prices of broadband subscription plans, the county can leverage ACP to increase enrollment, particularly for those where affordability is a barrier. The county's Outreach Campaign can also use a strategic approach to its media strategy by focusing on areas with a high count of eligible households. Furthermore, the county can leverage its relationship with other county agencies that coordinate benefit programs that auto-qualify residents for ACP to increase its messaging to eligible populations.
- 3 The county can leverage its resources to deploy digital literacy programming.** The county can work with local agencies that provide workforce development and job training to incorporate digital literacy as part of their curriculum.

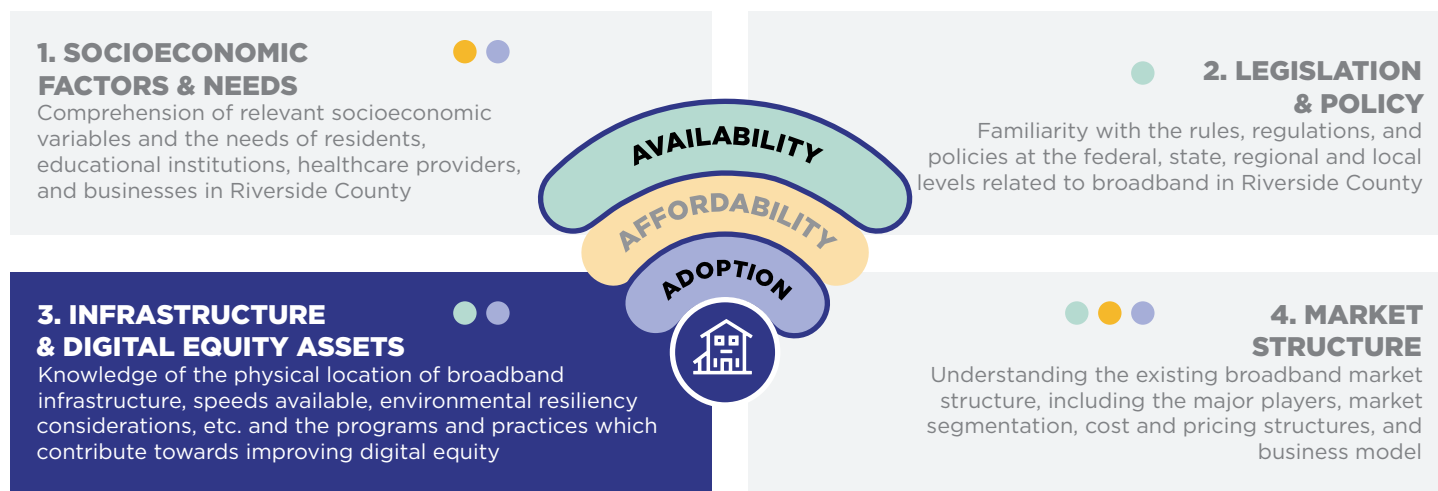


INFRASTRUCTURE AND DIGITAL EQUITY ASSETS

A wide range of physical infrastructure is involved in making high-speed internet available, including fiber, copper (DSL), cable, and fixed wireless technologies, all of which have different speed capabilities, cost profiles, and other advantages and disadvantages. Depending on the technology, locations may experience service limitations such as slow upload or download speeds, high latency, and service delivery issues, such as capacity challenges and line of sight restrictions. While mobile broadband can help those without reliable fixed broadband, it has significant limitations.

Riverside County offers some programs to help residents who lack access to high-quality home internet service get connected, including its Chromebook loan program operated by the Riverside County Library System. Although these programs have seen some success, gaps still exist in the county's digital equity offerings, particularly regarding digital literacy training. Expanding high-quality infrastructure through coordinated projects, leveraging state-level policies, and expanding digital equity and literacy programs are essential steps in addressing the digital divide. **Figure 6** depicts how these factors relate to the broader context of this report.

Figure 6: Infrastructure and Digital Equity Assets in the Broader Context of this Report



A WIDE RANGE OF INFRASTRUCTURE AND DIGITAL EQUITY ASSETS LEAVES SEVERAL KEY GAPS IN THE COUNTY


Various broadband technology types exist within Riverside County

There is a variety of existing broadband infrastructure located within Riverside County, including fiber, cable, and copper lines, as well as fixed wireless infrastructure. These technologies vary in their upload and download speeds, cost, latency, and other benefits and drawbacks.⁸¹ An overview of each technology type is shown in **Table 8** below.

⁸¹ FCC, [Types of Broadband Connections](#); High Speed Internet.com, [What Type of Internet Do You Have at Home?](#); CNET, [Here's the First Thing to Consider When Comparing Internet Providers](#); BroadbandUSA, [Introduction to Broadband and High Speed Internet](#); Frontier, [What is Network Latency](#); FCC, [Measuring Fixed Broadband - Tenth Report](#); SpeedTest, [United States Median County Speeds](#); Bipartisan Policy Center, [Difference Between 3G-4G-5G](#); Open Signal, [Mobile Network Experience](#)



Table 8: *Broadband Infrastructure Types and Attributes*

	FIXED BROADBAND					MOBILE BROADBAND
	WIRED BROADBAND			WIRELESS BROADBAND		
	FIBER	CABLE	COPPER	FWA*	GEO SATELLITE**	CELLULAR
	FIBER OPTIC CABLE	COAXIAL & HYBRID FIBER COAXIAL	DIGITAL SUBSCRIBER LINE (COPPER)	FIXED WIRELESS ACCESS	GEOSYNCHRONOUS EQUATORIAL ORBIT (GEO)	CELLULAR SERVICE INCLUDING 5G
SPEED	Fastest symmetric speeds; Residential typically 1 Gbps; up to 10 Gbps	Next fastest; Residential typically 20-100 Mbps; up to 1 Gbps	Slow to medium; Residential typically <100 Mbps; up to 200 Mbps	Medium to fast; Residential typically 25-50 Mbps; up to 1Gbps	Slow; Residential typically <25 Mbps	Slow to fast; Median download speeds in the 50-100 Mbps range with slower upload speeds; large variation depending on technology type
LATENCY	Very Low; 10-12 milliseconds	Low; 13-27 milliseconds	Low, 11-40 milliseconds	Low; 30-40 milliseconds	High; 500-600 milliseconds (depending on distance to satellite)	Higher latency than the best fixed technologies; 30-100 milliseconds
PROS	Fastest data transmission technology “Future proofing”	Widely used for urban/suburban Can use existing cabling	Uses existing telephone lines Widely available, but phasing out	Relatively low-cost to deploy Reasonable speeds	Widest coverage area	Large availability Portability
CONS	High initial capital cost	Asymmetric speeds	Lower speeds overall, esp. rurally	Potentially high maintenance costs and lower reliability	High latency and expensive	Higher latency and lower speed than many fixed broadband technologies; variable quality Data caps common

As shown above, Riverside County’s existing broadband technologies vary in speeds, latency, and several other considerations that can make one more beneficial than the other. Due to the inherent nature of the technology involved in satellite (GEO) service, which relies on orbiting satellites rather than fixed equipment at or near ground level, this broadband infrastructure option can serve most locations. The other four major fixed broadband technologies—fiber, cable, copper, and fixed wireless access—require some form of existing wired or wireless infrastructure to serve locations. These other technologies also see a high variation in speeds. Fiber service consistently reaches 100/100 Mbps and can reach several gigabits per second.⁸² While cable can offer high download speeds of up to a gigabit, quickly clearing the 100/20 Mbps threshold, it typically falls short of 100/100 Mbps due to slower upload speeds.⁸³ Most copper service fails to meet even the 25/3 Mbps FCC definition of broadband, and almost all copper falls below the 100/20 Mbps threshold.⁸⁴ Significant fixed wireless infrastructure fails to meet the 25/3 Mbps and 100/20 Mbps thresholds.⁸⁵

82 Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)

83 Ibid.

84 Ibid.

85 Ibid.

There is also considerable variation in the service footprint for each of these different technologies. **Table 9** shows the number of locations and speed tiers served by each terrestrial (wired or fixed wireless) technology.⁸⁶

Table 9: Number of Locations Served at Each Speed Tier by Various Technology Types

TECHNOLOGY TYPE	ALL SPEEDS	SUB 25/3	25/3 TO <100/20	100/20 TO <100/100	100/100 AND ABOVE
FIBER	391,682	2	100	13	391,567
CABLE	667,074	0	3	667,071	0
COPPER (DSL)	331,408	207,350	106,225	17,833	0
FIXED WIRELESS	26,429*	6,473	3,642	15,637	677

Fiber meets 100/100 Mbps speeds

Cable meets 100 Mbps with download speeds but its upload speeds lag behind

Several smaller providers offer various services with different service speeds

The majority of copper (DSL) fails to meet 25/3 Mbps threshold and the vast majority falls below 100/20 Mbps

Note: The fixed wireless calculation in this table excludes mobile broadband offerings from Verizon and T-Mobile which are included in the FCC data.

Fiber offers particularly strong speed and reliability but is limited in its current reach across the county

Of all the technologies available in the county, fiber stands out for a few key reasons:

- Speed and Reliability.** Fiber (fiber optic cable) is the fastest data transmission technology available, with the highest speeds and lowest latencies. It is the only technology that offers high-speed symmetrical service, meaning it provides the same download and upload speeds. All other internet access technologies — including cable, DSL, cellular, fixed wireless, and even satellite — leverage fiber-optic cables to transmit data until that fiber reaches their infrastructure.⁸⁷ Barring physical degradation of the cable, it is extremely reliable.⁸⁸
- While there are several tiers of fiber broadband service, fiber to the premise stands above all the others.** Most fiber services switch to another technology, like coaxial cable or copper telephone lines, at some point between the office of the internet service provider and home modem jacks.⁸⁹ Only fiber to the premise is truly 100% fiber, using fiber at all stages in the journey that information takes to the home or business.⁹⁰
- Fiber can utilize aerial or underground construction.** Underground lines are more robust and resilient to extreme weather and wildlife but more expensive than aerial.⁹¹

⁸⁶ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)

⁸⁷ Broadband Now, [Fiber-Optic Internet in the United States](#)

⁸⁸ Ibid.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Ibid.

Because laying fiber-optic conduit is expensive, and in some areas where population density is especially low or terrain is exceptionally rugged, it may not be feasible in every location.

Most incorporated areas and some unincorporated areas have fiber infrastructure.

Locations with fiber in Riverside County tend to be concentrated in incorporated areas such as portions of Temecula, Menifee, Riverside, Moreno Valley, Indio, and Palm Springs. In total, about 392,000 locations have fiber available. In addition, a few unincorporated areas also have fiber infrastructure, including areas in the southern part of the county (e.g., Anza, Thomas Mountain, and Pinyon Pines), some portions of the unincorporated communities located between Menifee and Hemet (e.g., Homeland, Green Acres, and Winchester) and some areas west of I-215 (e.g., Mead Valley). **Map 13** highlights these areas with fiber infrastructure.

HISTORY

Fiber optic cable has long been used to create the **internet backbone**: the conglomeration of multiple, redundant long-haul networks that create a worldwide network operated by numerous ISPs.



CURRENT USE

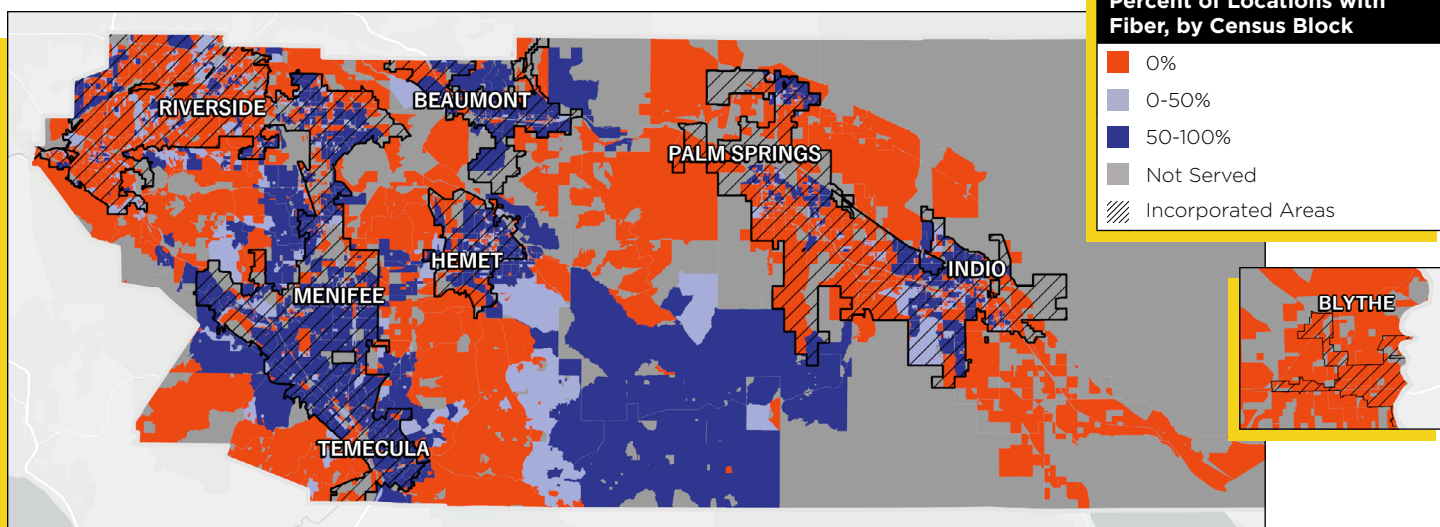
Fiber to the home gained traction in the 2000's and has increased in use since then. By using **fiber as the last-mile solution**, service providers can maintain high-speed and low latency on the pathway between the internet backbone and the end user.



FUTURE PROOF

End-to-end fiber networks have the most **bandwidth**, offer **high symmetrical speeds**, and use low-maintenance materials that last long and allow for **quick and relatively inexpensive network scaling**.

Map 13: **Locations with Fiber Service**⁹²



Portions of Riverside County lack fiber infrastructure

Roughly 331,337 locations in Riverside County lack available fiber service.⁹³ This includes the majority of unincorporated areas in the county along with a few of the 28 municipalities which either have significant areas without fiber inside their boundaries or lack it completely:

⁹² Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)
⁹³ Ibid.

- Several cities in the northwestern portion of Riverside County such as Riverside, Corona, Norco, and Jurupa Valley contain large areas without fiber.
- Portions of municipalities in the Coachella Valley such as Palm Desert, La Quinta, Rancho Mirage and Indio lack fiber.
- The City of Blythe lacks fiber completely.

While fiber may not be feasible in some locations due to geographic isolation and/or rugged terrain, many of the 331,337 households currently without fiber could be reached through expanded broadband infrastructure projects. In order to deploy such projects, public dollars can be used to incentivize ISPs and reduce out-of-pocket capital expenses.

**Roughly
330,000
locations
in Riverside
County lack
available fiber
service.**

Cable and copper reach many locations but offer inconsistent speeds

Cable and copper infrastructure exists in much of the region, including areas that do not have fiber infrastructure. However, cable and copper, which utilize cable television and phone lines, do not offer the same symmetrical high speeds as fiber, significantly lagging in upload speeds.

Cable allows for relatively high download speeds, reaching as high as 500 Mbps or one gigabit, but upload speeds are far lower, below 50 Mbps, even at the highest speeds offered.⁹⁴ While these speeds are high enough for most tasks today, this technology does not have the same kind of future-proof capability as fiber, which is better able to adapt to future increases in speeds required to keep up with technological advances that increase the scale and scope of tasks involving the internet.



Copper (also referred to as digital subscriber line or DSL) is typically the slowest of the three leading wired technologies, with the majority of copper infrastructure in the area failing to meet 25/3 Mbps speeds and almost all failing to meet 100/20 Mbps speeds.⁹⁵ In addition, copper tends to have higher latency than fiber and cable.⁹⁶ Despite its limitations, there is a large amount of existing copper infrastructure, with 207,000 locations served by the technology.⁹⁷ Copper tends to be found in many unincorporated areas where it is the only form of wired technology available.

⁹⁴ BroadbandNow, [Cable Internet in the USA](#)

⁹⁵ BroadbandNow, [DSL Internet in the USA](#)

⁹⁶ Ibid.

⁹⁷ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)



Fixed wireless is a widespread option, with distinct advantages and disadvantages relative to wired service offerings

In addition to these wired technologies, the county contains some fixed wireless infrastructure, with 27,000 locations served by fixed wireless technology. Wireless infrastructure exists with localized towers in areas near these locations. While some fixed wireless technologies can offer high speeds, they often fail to meet 25/3 Mbps or 100/20 Mbps.⁹⁸ The main advantage is that fixed wireless technologies can be a helpful mechanism to serve low-density or hard-to-reach areas as they can be far more cost-effective than fiber or other wired technologies. Other drawbacks of fixed wireless include:

- **Line of sight obstructions mean that fixed wireless networks can be easily blocked.** It can be complex to deliver a line of sight to every household in a service area as buildings, weather, and seasonal foliage can obstruct the line of sight required.⁹⁹
- **Fixed wireless technologies face scalability challenges.** Because a given amount of spectrum can only support a given number of users and bandwidth, to deal with an increase in users or the need for additional bandwidth for existing users, the network requires increasing the amount of spectrum, upgrading the technology, or adding antennas, which can all be expensive and difficult.¹⁰⁰
- **The fastest fixed wireless technologies have challenges in rural areas.** The fastest fixed-wireless technologies (such as those utilizing the millimeter wave spectrum) deliver service well in close range and to tightly grouped locations but struggle with the large dispersion of locations and lack of mounting structure in rural areas.¹⁰¹ Notably, because fiber is already present in many urban and suburban areas, fixed wireless is relied on more heavily in rural areas, where these distinct challenges may be more prevalent.

One additional consideration when comparing fixed wireless to wired technology, particularly wired technology involving buried conduit, is that the towers required for fixed wireless service may be susceptible to wildfires. Riverside County faces significant fire risks moving forward, with 92% of all properties at risk of being affected by wildfires in the next 30 years.¹⁰² In September 2022, the Fairview Fire in the Hemet area burned several wireless towers operated by Polly Butte Networks, a small fixed wireless provider in the area, resulting in service outages. As wildfires increase in size, destruction, and frequency, they may damage more wireless infrastructure.

While fixed wireless may have advantages, particularly those involving reduced costs when serving lower-density areas, it also has significant drawbacks, especially when compared to fiber which is cheaper to maintain and offers better performance, better capacity, and a longer lifespan than fixed wireless, in addition to avoiding line of sight issues.

Mobile broadband infrastructure can be an important option, but fails to entirely fill in the gaps of fixed broadband service

Where fixed broadband is not available, some may rely on mobile broadband through cellular service. Mobile broadband sees slower speeds on average and higher latency than fixed broadband. Nationwide speed test data shows median fixed broadband speeds roughly twice as fast as median mobile broadband speeds, with less than half the latency.¹⁰³ Mobile speeds vary based on their own network technology, with 3G connections reaching

98 Ibid.

99 Benton Institute for Broadband & Society, [Fixed Wireless](#)

100 Ibid.

101 Ibid.

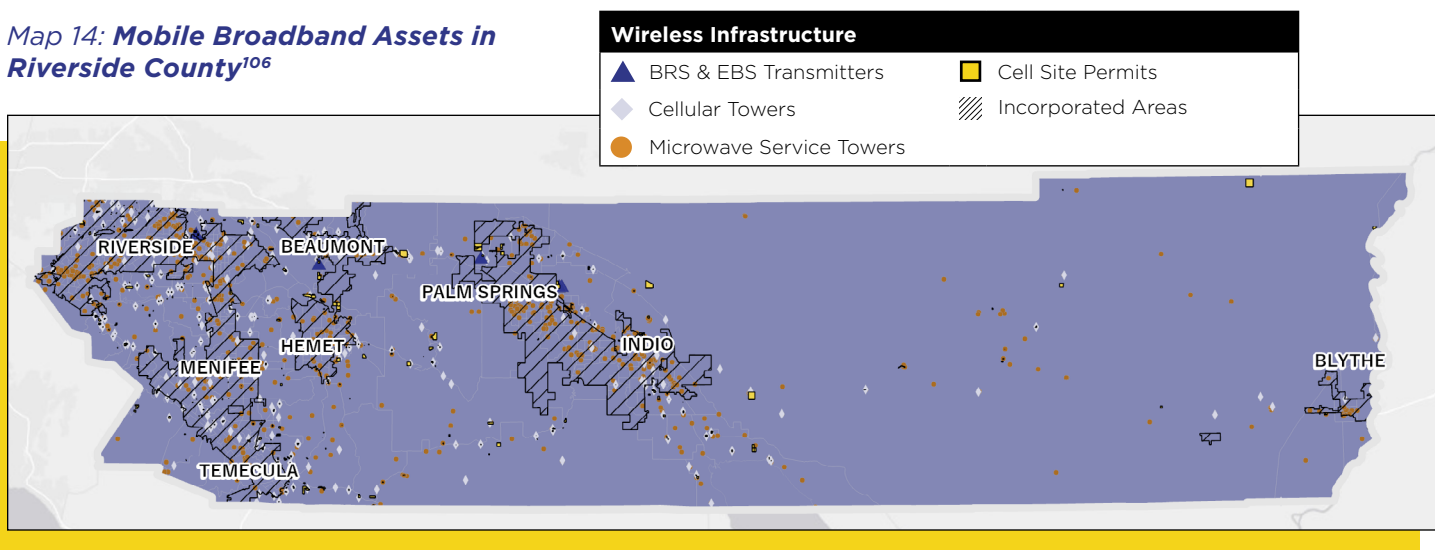
102 Risk Factor, [Wildfire Risk Overview](#)

103 SpeedTest, [United States Median County Speeds](#)



average speeds of 3 Mbps, 4G connections with average speeds of around 14 Mbps, and the most recent 5G technologies offering higher speeds and more capacity.¹⁰⁴ Despite high theoretical max speeds, 5G networks still lag behind the best fixed broadband speeds, with average 5G download speeds from three major US carriers (AT&T, T-Mobile, and Verizon) of 54, 171, and 73 Mbps, and average upload speeds of 10, 18, and 14 Mbps.¹⁰⁵ **Map 14** below shows where key infrastructure for mobile broadband is located.

Map 14: Mobile Broadband Assets in Riverside County¹⁰⁶



While many areas tend to have strong mobile coverage, a few parts of the region stand out as lacking wireless infrastructure, including cellular towers, microwave service towers, and cellular site permits. In particular, the areas east of Temecula and west of the Coachella Valley lack this infrastructure. Low population density and mountainous terrain exist in these areas. A lack of mobile broadband underscores the need for in-home fixed broadband connections, as without them, residents of these areas cannot access the internet. In other areas, available mobile coverage may help cushion those with limited fixed broadband availability.

Community anchor institutions can play a role in connecting residents without internet access and be important partners in infrastructure deployment

The FCC’s Universal Service Fund defines community anchor institutions as “entities such as schools, libraries, hospitals, and other medical providers, public safety entities, institutions of higher education, and community support organizations that facilitate greater use of broadband by vulnerable populations, including low-income, the unemployed, and the aged.¹⁰⁷” These locations can provide services for those without in-home connections, such as public Wi-Fi at libraries and parks, and services to help residents use the internet, such as digital literacy programs. In addition, connecting these kinds of facilities with high-quality service is both important to the community and beneficial to ISPs as they represent large-scale customers of broadband service. Future infrastructure projects can serve these locations with high-speed service to gain valuable customers and make serving nearby homes and businesses more enticing. **Table 10** below shows examples of each type of community anchor institution located within Riverside County.

¹⁰⁴ Bipartisan Policy Center, [Difference Between 3G-4G-5G](#)

¹⁰⁵ Open Signal, [Mobile Network Experience](#)

¹⁰⁶ Data provided by Riverside County

¹⁰⁷ Federal Communications Commission, [Community Anchor Institutions](#)

Table 10: Community Anchor Institutions by Type within Riverside County

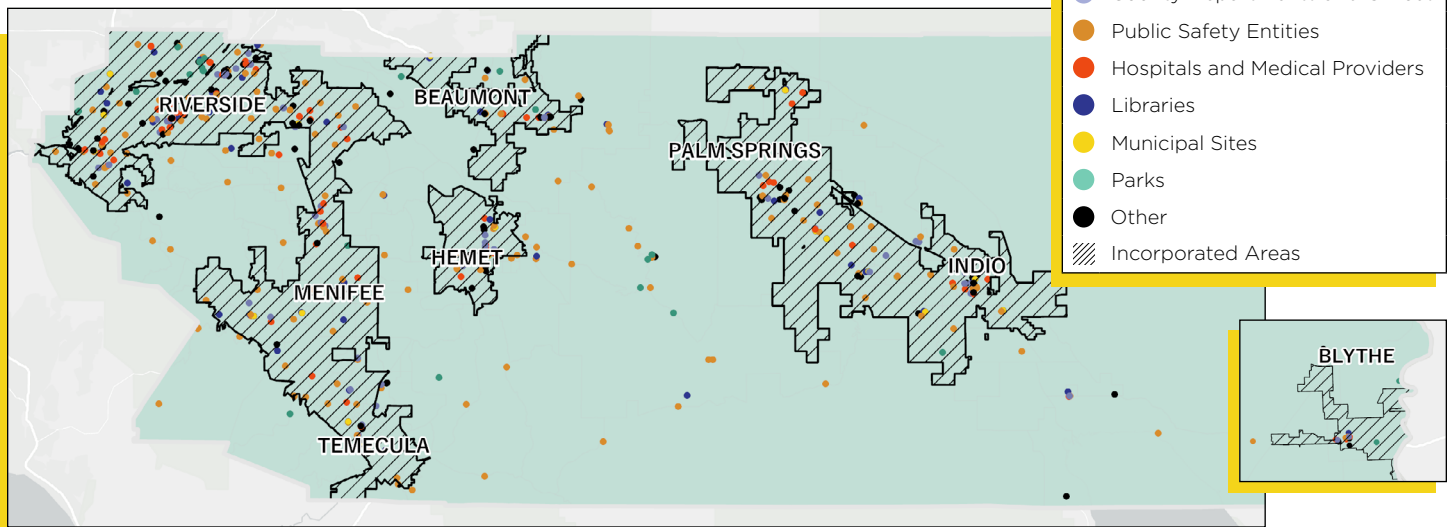
Type of Community Anchor Institution	Examples in Riverside County
K-12 schools	Alvord Unified School District, Banning Unified School District, Beaumont Unified School District
Libraries	The 35 Riverside County Library System (RCLS) branches and 2 mobile locations, as well as municipal libraries
Hospitals and medical providers	Riverside County Public Health, San Geronio Memorial Hospital, Corona Regional Medical Center
Public safety entities	Riverside County Sheriff's Department, Riverside County Fire Department, and municipal fire and police departments
Institutions of higher education	Public universities such as UC Riverside and the desert campus of CSU San Bernardino, private universities including California Baptist University, and community colleges such as Riverside City College, Palo Verde College, and the College of the Desert
County departments	Riverside County Library System, Riverside County Office of Education, Riverside County Office on Aging
Facilities at national, state, regional and local parks	Joshua Tree National Park, California Citrus State Historic Park, Indio Hills Palms State Park

Community anchor institutions are a critical component of broadband deployment because they may provide connectivity services to those who lack a home broadband subscription.

Less densely populated areas of the county have fewer community anchor institutions

While many of these institutions exist throughout the region, some areas are far from important services. Unincorporated areas east of Temecula (including Aguanga, Lake Riverside, Sage, Cahuilla, and Anza) are less sparsely populated than other areas and have hilly terrain. The result is a lower concentration of institutions such as hospitals, schools, libraries, etc., as residents sometimes must travel considerable distances to reach these. In addition, the area in the southern portion of the Coachella Valley (including unincorporated communities such as Thermal, Mecca, Vista Santa Rosa, and Oasis), located between the City of Coachella and the Salton Sea, lacks many of these resources. A lack of institutions in these areas underscores the importance of strong infrastructure, as in-person services are hard to deliver, making digital ones more useful. Furthermore, it is more challenging to take advantage of opportunities such as free Wi-Fi in public libraries for these residents who may not live close to facilities. **Map 15** below highlights where these sites are located in the county.



Map 15: *Community Anchor Institutions in Riverside County*¹⁰⁸

Existing digital equity programs can provide availability and improve adoption for residents who lack other options, but additional programs may be needed

There are currently several programs operated by Riverside County which contribute towards the goal of closing the digital divide by promoting digital equity.

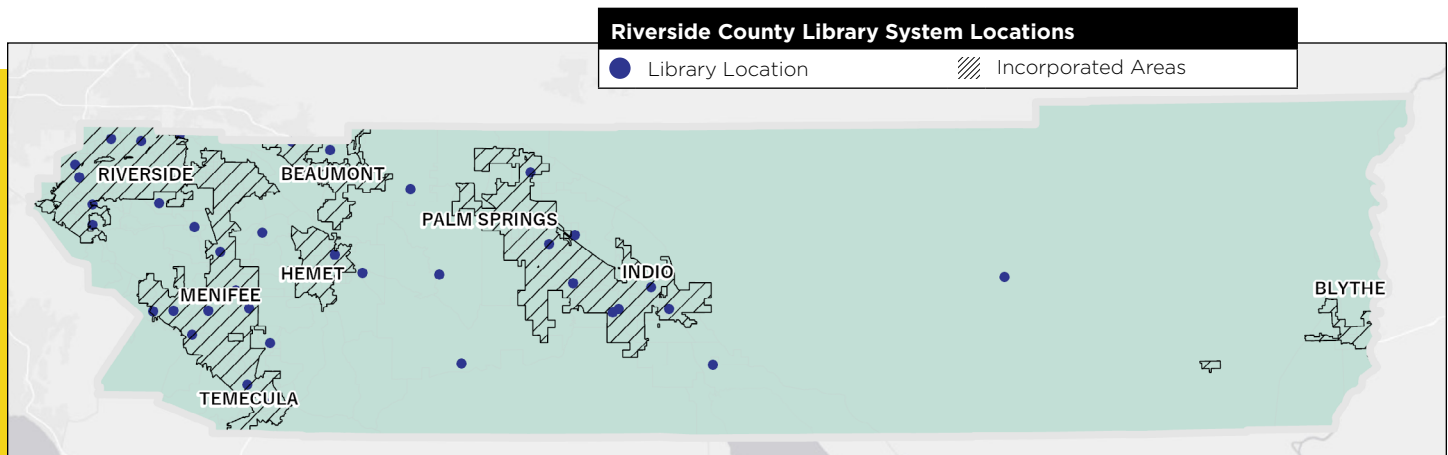
County mobile hotspot and Chromebook loan program

Riverside County Library System (RCLS) runs a portable hotspot program connecting to T-Mobile or Sprint mobile coverage. These hotspots are available for residents to check out for up to three weeks. The program is available for any resident of Riverside County who is 18 or older (with a limit of one per household) on a first-come first-serve basis, and there are 60 hotspots available at each RCLS branch. While RCLS operates 35 libraries and two mobile libraries, some residents may not be located near a branch, as **Map 16** shows. In particular, the residents of Blythe do have access to a local library, but there is no RCLS branch nearby. In addition, a few parts of the county such as Pinyon Pines, Alpine Village, and portions of the Santa Rosa Reservation along SR-74 are not covered by T-Mobile or Sprint, meaning residents of these areas cannot connect to the hotspots.¹⁰⁹

In tandem with the hotspot program, RCLS also offers Chromebooks for checkout. The Chromebooks are available for the same three-week timeframe, and this program operates with the same constraints as the mobile hotspot program. Each RCLS library also has 60 Chromebooks. While Chromebooks do allow for a variety of web-based tasks such as online research, they are limited in functionality compared to other computers and rely entirely on internet connections. For those without home internet subscriptions, Chromebook loans have limited functionality if residents are unable to obtain a hotspot loan as well.



¹⁰⁸ Data provided by Riverside County
¹⁰⁹ T-Mobile, [T-Mobile Coverage Map](#)

Map 16: *Riverside County Library System (RCLS) Locations*¹¹⁰

Public computers and Wi-Fi at county libraries

In addition to offering the hotspot and Chromebook programs, RCLS also offers public computers inside libraries and free Wi-Fi at its locations. While these programs do benefit residents there are several challenges residents face:

- **Residents may not live near libraries.** While RCLS operates 37 branches across Riverside County, residents living in more remote parts of the county may need to travel long distances to reach their closest branch, which presents a barrier to accessing these services through the library.
- **Libraries may be closed when residents need to access the internet.** Most library locations are open during the day when residents may have school, work, or other commitments and are not open early in the morning or in the evenings. In addition, many branches are closed on Sundays. This is incredibly challenging for activities like telehealth appointments with health providers, teleworking, online education, online shopping, entertainment, and maintaining social connections. While residents wish or need to use the internet for these tasks, they may not have access to the library facilities.
- **Public computers may be occupied when residents wish to use them.**
- **Users of these services do not have privacy.** This is the case both because devices are located in a public space, and due to library policy, as these are shared, not personal devices. This lack of privacy may make a variety of sensitive tasks more difficult.

There is a lack of available digital literacy programming for residents

While there are current and previously run digital literacy offerings in Riverside County, there are gaps present in programming to give residents the skills to effectively utilize the internet for essential tasks such as remote learning,

¹¹⁰ Data provided by Riverside County

telehealth, accessing employment opportunities and developing the digital skills required for the workforce, and obtaining government benefits. This is due to the combination of a lack of county-run programs and a small network of community-based organizations (CBOs) in Riverside County. There have been several efforts to run digital literacy programs on the county front, however, programs have either been too small to make a significant impact or they are not currently in operation due to funding or other administrative issues:

- The Riverside County Library System (RCLS) has offered digital literacy courses at branches in the past.** Unfortunately, due to the COVID-19 pandemic, the program was placed on hold and struggled with low turnout because of social distancing practices. The program was previously funded by Chase Bank and will likely need additional sources of funding to renew any future operations.
- The Riverside County Office on Aging has a small digital literacy pilot program for senior citizens.** The program distributed tablets and hotspots to senior citizens in the county and provided in-home training on using these devices. Only about 40 people have been able to participate due to a limited supply of hardware and the program's nature as only a pilot. The Office is interested in additional funding to continue and expand the program.
- RivCo Connect operates a device refurbishment program where computers are provided to non-profit organizations for distribution to low-income families within Riverside County.** Since October 2021, the program has donated 960 PC workstations (including computers, monitors, keyboards, mice, and cables) and two printers for a combined estimated value of \$77,300. While this is a notable figure, it is not large enough to fill in the device gap on its own, as roughly 34,000 households lack devices completely. An additional 54,000 rely only on a smartphone, according to 2017-2021 estimates from the American Community Survey.¹¹¹ Universal computer access in Riverside County would require far more devices than this project has been able to provide, as it is limited to when the county can offer the refurbished device.

Leveraging California's statewide middle-mile initiative in new infrastructure projects could help county's broadband expansion efforts.

This gap in digital equity and literacy programs is also partially attributable to a lack of large-scale efforts from community-based organizations (CBOs). This is primarily due to the limited CBO presence in Riverside County relative to the population. Few CBOs in Riverside County have the funding, capacity, and reach to implement large-scale programs to tackle challenging issues such as digital literacy training.

OPPORTUNITIES EXIST TO IMPROVE INFRASTRUCTURE AND DIGITAL EQUITY ASSETS

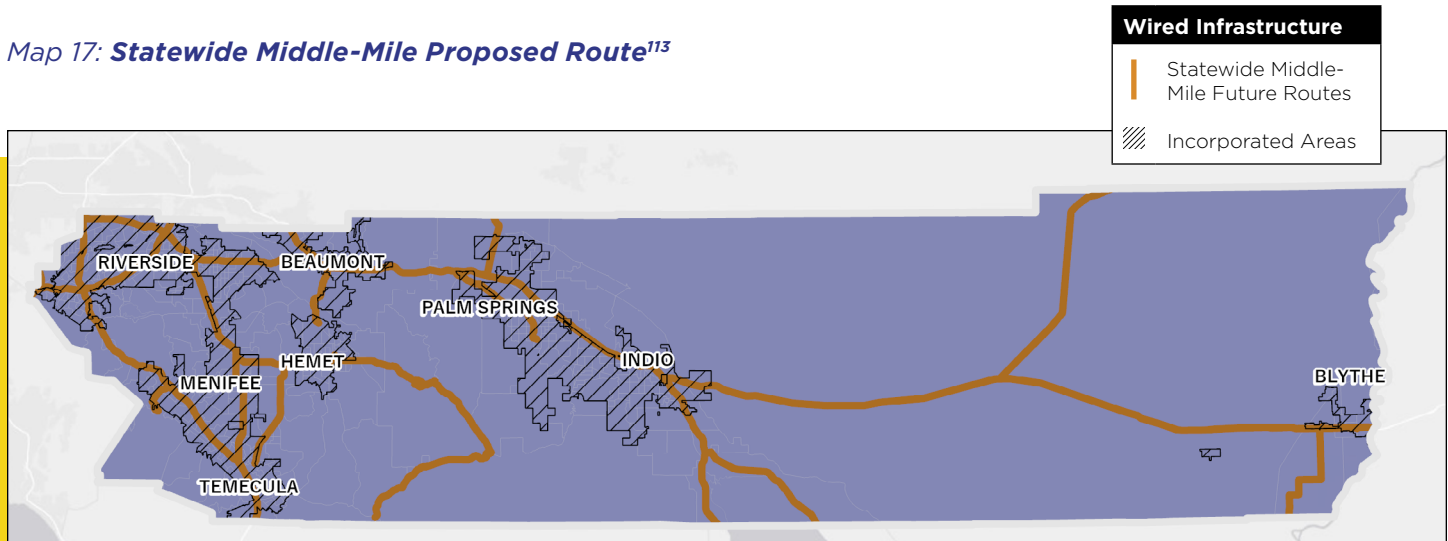
California's middle-mile initiative, in which the State of California plans to construct 10,000 miles of open-access fiber lines throughout its broad geography, represents a significant opportunity for Riverside County. Multiple planned routes extend across the region and will include courses through major highway corridors such as the entire lengths of I-215, I-15, I-10, and CA-91

¹¹¹ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021, Types of Computers and Internet Subscriptions](#)



located within Riverside County, as shown in **Map 17** below.¹¹² When complete, this project will even connect Blythe in the far eastern portion of the county with fiber. The middle-mile network will allow providers to leverage existing fiber lines to reach previously more challenging to serve areas. For example, this project will dramatically increase the feasibility of fiber expansion into Blythe, which is served by Frontier's copper network but lacks access to fiber and is located 100 miles across the desert from the Coachella Valley.

*Map 17: Statewide Middle-Mile Proposed Route*¹¹³



The project's Coachella Valley leg will be one of the first 18 segments of the project. As of early February, the state's contractor, GoldenStateNet, had accepted a proposed build for the I-10 corridor in the Valley at a rate of roughly \$400,000 per mile. In addition, another one of these 18 legs will be constructed in Northern San Diego County and Southern Riverside County.¹¹⁴ The Riverside County portion of this project will run along State Route 371 through the Cahuilla Reservation and to the community of Aguanga, then far veer south along State Route 79 into San Diego County. These initial middle-mile builds offer a chance to bring fiber to areas without access. Last-mile efforts can coordinate with these middle-mile projects to take advantage of their routes, making new fiber builds economically feasible in challenging areas.

One challenge with utilizing this middle-mile network is that large ISPs may prefer to use the middle-mile network they have control over rather than an open network they do not. This concern means that while the middle-mile may be used in some potential projects where major ISPs would be unlikely to build their infrastructure, other projects may involve ISPs building their middle-mile network, reducing the value and efficacy of the statewide effort.

¹¹² State of California, [California Middle-Mile Broadband Initiative](#)

¹¹³ California Department of Technology, [Statewide Middle-Mile Network Design](#)

¹¹⁴ Ibid.

Coordination of infrastructure expansion projects can reduce project costs and expedite timelines

Coordination is vital to ensuring that opportunities are taken advantage of to facilitate broadband infrastructure expansion. By working with state, regional, and municipal government entities, Riverside County can ensure that projects are leveraged to do their best. For example, coordinating across governments can reduce the number of digs required in a given area, thus reducing the overall cost of broadband projects. **Figure 7** highlights some of the key projects occurring in the region.

Figure 7: **Key Regional and Local Infrastructure Initiatives**

SEVERAL BROADBAND INFRASTRUCTURE-RELATED INITIATIVES ARE IN PLANNING OR ALREADY UNDERWAY				
STATE-LEVEL ACTIONS	OWNER	SUMMARIZED INITIATIVES	LOCATION	KEY INSIGHTS
<p>Local Agency Technical Assistance Grant (LATA) Many entities are using LATA awards from the state or seek to do so to fund planning and development of these initiatives.</p> <p>Middle-Mile Broadband Initiative Multiple components of the state's open-access middle-mile network will ultimately run through Riverside County, allowing projects to build last-mile off of this network.</p>	Coachella Valley Association of Governments (CVAG)	As part of the CV-Sync traffic light synchronization project CVAG wants to integrate middle-mile. In addition, CVAG has been involved in the statewide middle-mile project that is being built down I-10 through the Coachella Valley.	SR-111 and major routes in the Coachella Valley	Broadband infrastructure deployment can come in tandem with other forms of infrastructure projects.
	Western Riverside Council of Governments (WRCOG)	WRCOG wants to integrate broadband into its LED streetlight initiative to further its goals of turning the area into a smart region.	Western Riverside County	Broadband infrastructure development takes coordination between local and regional bodies to facilitate both middle and last-mile deployment.
	City of Jurupa Valley	Jurupa Valley is utilizing a grant from Caltrans and its own funds to interconnect all of its traffic signals. As part of this project, it hopes to run a fiber backbone along this route and have an ISP build last-mile infrastructure of this fiber.	Jurupa Valley	
	City of Indio	Indio plans to utilize the CV-Sync project to build out its own fiber that would add last-mile conduit at the same time CVAG lays the fiber in these locations to connect to unserved areas.	Downtown and Jewel neighborhoods of Indio	Municipalities face challenges of determining which model of public private partnerships works best for their needs.
<p>Note: Banning and Palm Springs have received LATA awards while Coachella and Menifee have submitted applications.</p>				

**Coordination
is vital to
ensuring that
opportunities
are taken
advantage of
to facilitate
broadband
infrastructure
expansion.**



Expanding existing digital equity programs could help address adoption challenges

Riverside County can utilize already established programs to expand its digital equity efforts and digital literacy offerings. Existing and previous programs such as RCLS's digital literacy training, hotspot, and Chromebook programs, the Office on Aging's literacy and device program, and RivCo Connect's device donation program are all opportunities for expanded digital equity efforts. These departments already have experience running these programs, which will improve the ability to run them successfully in the future. Outside funding opportunities may be utilized to fund expanded versions of these programs. Relevant funding may include the CPUC's CASF Adoption Account, BEAD, and Digital Equity Act grant programs once the state establishes guidelines.



KEY TAKEAWAYS

INFRASTRUCTURE AND DIGITAL EQUITY ASSETS

This section has looked at the existing landscape of broadband infrastructure and digital equity assets and considered the challenges associated with affordability, access, and adoption. The county identified the following list of key gaps to address and important opportunities to take advantage of to expand broadband expansion and improve its digital equity programming.

GAPS

1 Many households are connected through technologies with significant drawbacks, such as copper and fixed wireless. Roughly 340,000 households lack access to fiber infrastructure, mostly in unincorporated areas of Riverside County, leaving them reliant on copper, cable, and fixed wireless.¹¹⁵ These technologies have significant shortcomings: they do not offer the same symmetrical future-proof high speeds as fiber. While cable offers high download speeds, it has limited upload capabilities, typically not exceeding 35 Mbps. Most copper infrastructure in the area supports only 25/3 Mbps service. While some fixed wireless service approaches or exceeds the 100/100 Mbps threshold, it has significant disadvantages compared to fiber due to inherent qualities of the technology, such as issues with line-of-sight obstructions and scalability challenges. As long as the reliance on these technologies persists, end service for consumers will not meet the highest standards. While fiber is not necessarily viable in all locations, it may be feasible in a significant number of them.

2 Digital literacy programs remain limited. Even if high-quality affordable service is obtained for all residents of Riverside County, residents may be unable to take advantage of the digital world until they have the knowledge and skills needed to do so. The digital divide cannot be closed without significant investment and focus on this area. Currently, programs for digital literacy are limited; there are no major current offerings from the county for digital literacy training and the non-profit landscape is limited.

3 While offering public Wi-Fi to residents is valuable, it is no replacement for an in-home broadband connection. Too many residents lack devices and internet plans. While RCLS has 2,100 available Chromebooks and hotspots and many more computers available to be used at branches, there are significant challenges associated with using these devices: residents do not have privacy, they may not be able to use them when needed, and they may struggle to access library locations.

While offering public Wi-Fi to residents is valuable, it is no replacement for an in-home broadband connection.

¹¹⁵ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)



Focusing efforts on infrastructure improvements, not just digital equity programming is essential to ensure universal connectivity.

OPPORTUNITIES

1 **The statewide middle-mile project can be used to expand fiber to areas currently lacking it.**

While future sections, which the state plans to build as part of its initiative to build 10,000 miles of fiber, would reach Blythe with fiber. Currently, Blythe has no fiber infrastructure and relies on inadequate copper and fixed wireless. Due to the considerable distance of approximately 100 miles from any major population, private fiber expansion to Blythe is not commercially viable. Two builds included in the state's initial 18 projects (located in the Coachella Valley and the southern portion of Riverside County and northern San Diego County) also offer opportunities to expand fiber to areas currently without it. Projects to expand last-mile fiber in the Coachella Valley and portions of the Wine Country region could take advantage of the statewide middle-mile. Coordinating with the state built to minimize costs through practices like "Dig Once" could make fiber deployment far more feasible than in the past in these areas.

2 **Existing programs can be expanded in reach, scope, and funding to improve digital equity.**

Riverside County does already or has offered, in the past, some programs for digital literacy and adoption, including those offered by RCLS and the Office on Aging. There is a significant opportunity to expand these programs into a more prominent role through a renewed effort and potential outside funding opportunities.

3 **Focusing efforts on infrastructure improvements, not just digital equity programming is essential to ensure universal connectivity.**

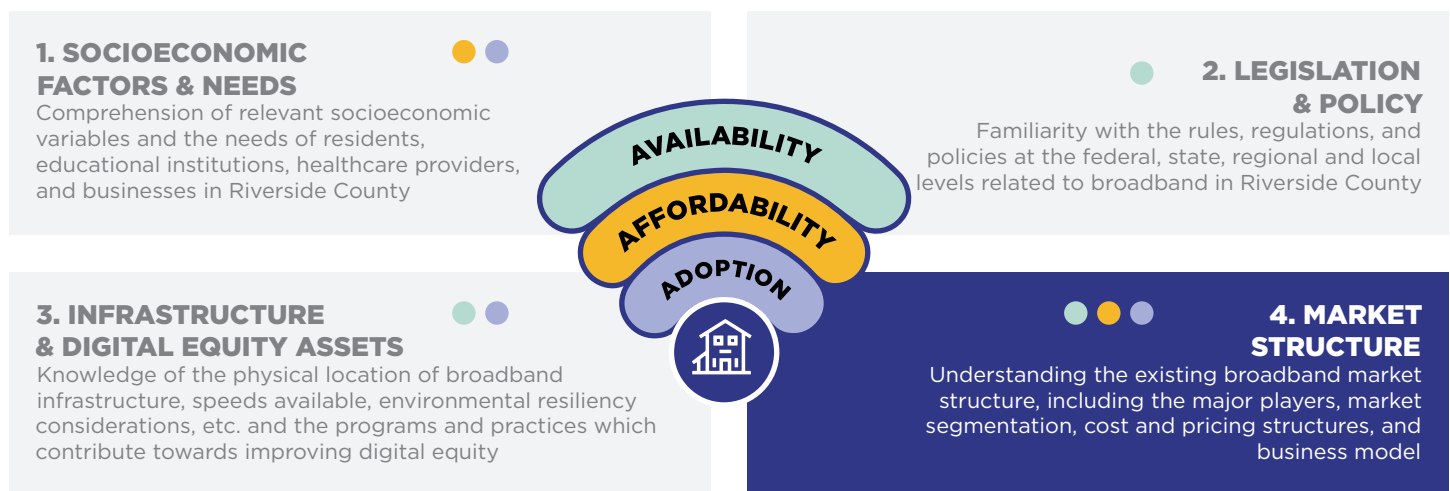
While digital equity programs like public Wi-Fi, hotspots, and literacy trainings are important measures, they cannot replace infrastructure improvements. In particular those who find it most challenging to utilize these resources due to distance are likely to be the same residents with more limited in-home broadband options. Serving these residents with a reliable broadband connection remains of key importance.



MARKET STRUCTURE FACTORS

The current market landscape for broadband service includes a large variety of carriers and options, ranging in ISP type, technology offering, and speed. This variation means that while in some areas availability is strong, other areas face limited or even no options for reliable broadband-level speed. Additionally, prices of plans vary significantly, meaning that in some cases they are not affordable. Opportunities exist to fill gaps in the market through working with ISPs to build new infrastructure projects and expand ACP offerings, coordinate with regional bodies and municipalities within the county, and develop a strong workforce capable of building and maintaining the networks needed. **Figure 8** depicts how this section fits into the report as a whole:

Figure 8: **Market Structure Factors Impact all Three Pillars of Addressing the Digital Divide**



THE CURRENT MARKETPLACE SERVES THE MAJORITY OF THE COUNTY BUT LEAVES MANY UNABLE TO ACCESS OR AFFORD BROADBAND SERVICE

While the majority of residents have broadband service available, in some portions of the county access is limited. These tend to be concentrated in a few low-density unincorporated areas, isolated communities, and select portions of major cities. This includes over 31,000 locations without available offerings meeting the minimum definition of broadband, and another 8,600 with only wireless options.¹¹⁶ In addition, many residents who do have broadband service available struggle to afford it.






















¹¹⁶ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)



The current marketplace includes a large variety of providers and service offerings

There are at least 21 internet service providers with offerings in some parts of Riverside County, with a large variety in the number of locations served, technology offerings, and business profile. **Figure 9** shows many of the carriers that operate within Riverside County, broken up by size and technology offerings.

Figure 9: *Breakdown of Internet Service Providers by Size and Technology Offerings* ¹¹⁷

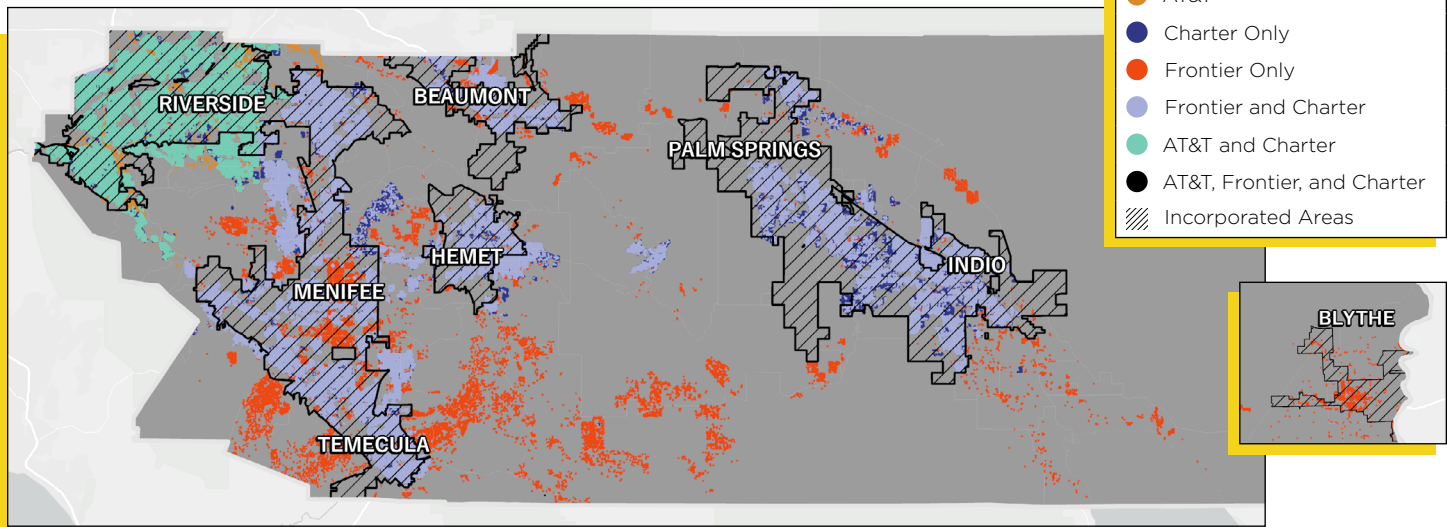
SEGMENT & TECHNOLOGY TYPE BREAKDOWN		EXAMPLE INTERNET SERVICE PROVIDERS BY SEGMENT				
LARGE/NATIONAL (8)	Offer wired service (3)	 AT&T	 Charter Spectrum	 FRONTIER		
	Wireless only (2)	 T-Mobile	 verizon			
	Satellite (3)	 HughesNet	 Viasat	 STARLINK		
MEDIUM/REGIONAL (5)	Offer wired service (5)	 ZITO	 optimum	 Mediacom	 EarthLink	 Astound Broadband
	Wireless only (3)	 GEOLINKS	 San Diego Broadband	 Accel Wireless		
SMALL/LOCAL (5)	Offer wired service (1)	 ConnectAnza				
	Wireless only (4)	 PACIFIC LIGHTWAVE SPEED OF LIGHT COMMUNICATIONS	 Southern California Telephone Company	 UIA Ultimate Internet Access, Inc.	 Polly Butte	

Three major national ISPs provide the bulk of wired service offerings in Riverside County, in addition to several small carriers:

- **AT&T:** AT&T services the northwestern portion of Riverside County, including the cities of Riverside, Corona, and Norco. While this service mainly uses its copper network, some portions are also served with fiber to the premises.
- **Charter/Spectrum:** Charter/Spectrum is the third major national wired provider in Riverside County, primarily serving the county with cable. Charter Spectrum's service area overlaps with AT&T and Frontier and is mainly constrained to areas within the county's 28 municipalities.
- **Frontier:** Frontier serves much of the western portion of Riverside County, including incorporated cities of Menifee, Temecula, Hemet, San Jacinto, Moreno Valley, and neighboring unincorporated communities. In addition, it serves much of the Coachella Valley and is the only large national carrier to cover Blythe. Frontier generally offers fiber to the premise in most incorporated areas it serves (with the notable exception of Blythe) but tends to serve unincorporated areas only with copper.

¹¹⁷ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)

Map 18: *Service Areas of AT&T, Frontier, and Charter/Spectrum in Riverside County*¹¹⁸



- **Other carriers:** Many other small carriers operating in the area, including a variety of fixed wireless and satellite carriers, as well as a few additional regional and local providers offering wired service. **Table 11** below shows the number of locations served, and the technologies offered by several providers with terrestrial offerings in Riverside County.

Table 11: *Key Terrestrial ISP Footprints and Technology Types (Minimum 100 Locations)*

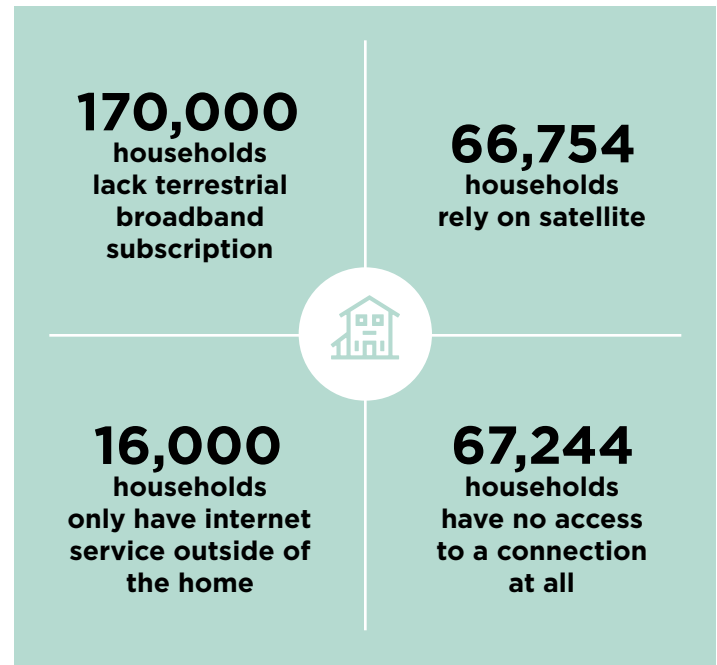
Carrier	Number of locations ¹¹⁹	Technology ¹²⁰
AT&T	165,165	Copper, Fiber
Charter/Spectrum	647,268	Cable
Frontier	553,442	Copper, Fiber
Mediacom	19,611	Cable
Optimum	4,413	Cable
Zito	1,208	Cable
GeoLinks	509	Fixed wireless
Anza Electric Cooperative	4,792	Fiber, Fixed wireless
Pacific Lightwave	647	Fixed wireless
Polly Butte	Not reported	Fixed wireless
SoCal Telco	656	Fixed wireless
Accel Wireless (including Wave and Digital West Networks)	3,992	Fixed wireless
San Diego Broadband	15,659	Fixed wireless
Astound	780	Cable, Copper
Airpeak Wireless	6,628	Fixed wireless

¹¹⁸ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)

¹¹⁹ Ibid.

¹²⁰ Ibid.

There are significant gaps in service within Riverside County, leaving many with insufficient service or entirely without it.



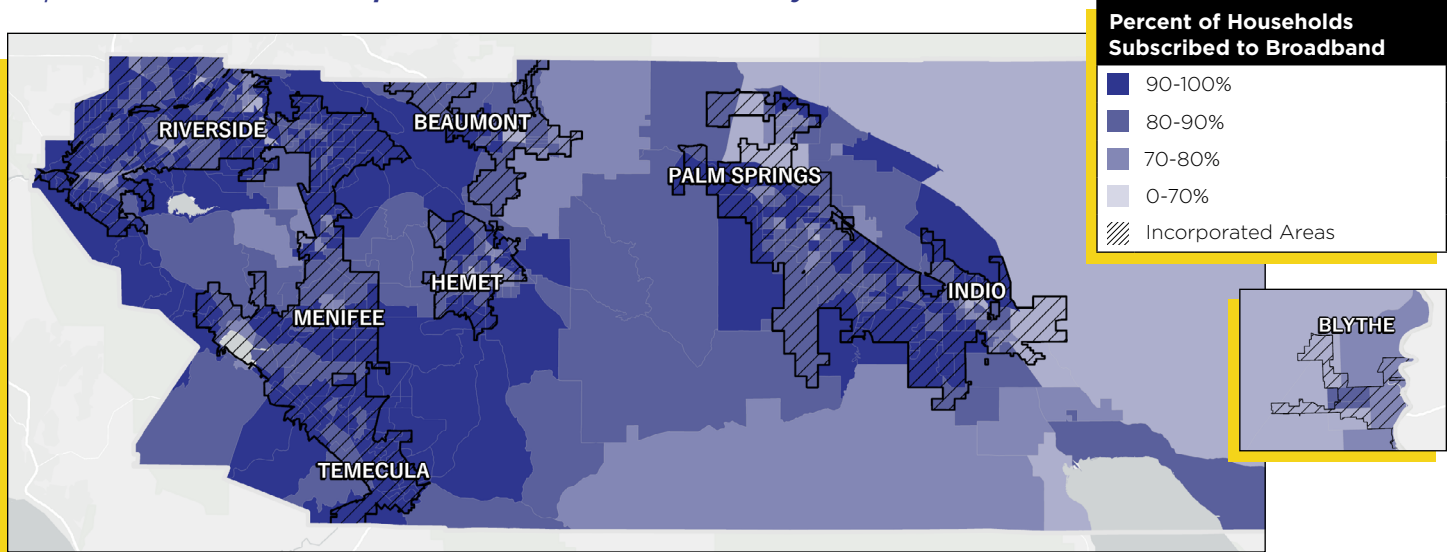
While the service area covers many residents, significant gaps are left for those with access to these services. These include households who subscribe to satellite plans, often receiving speeds less than 25/3 Mbps or facing data caps, families who have no internet service in their home and rely on connectivity in another location, and households who have no internet subscription whatsoever, as shown in **Table 12**.¹²¹

Table 12: *Households by Connection Type*

TOTAL HOUSEHOLDS	WITH INTERNET			NO INTERNET
	All	Broadband technologies	Satellite, dial-up, and other technologies with below broadband speeds	
740,506	673,262	569,691	103,571	67,244

While much of the county sees high broadband subscription rates, lower rates are concentrated in a few areas. Census tracts with low broadband adoption tend to be located in portions of the desert and Coachella Valley regions, while the western part of the county tends to see higher adoption rates, as shown in **Map 19** below. Even in major cities, where the overall subscription rate is high, there are large numbers of households without subscriptions.

¹²¹ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)

Map 19: **Broadband Subscription Rates in Riverside County**¹²²

Speed test data highlights additional availability challenges

Speed test data from across Riverside County shows that most residents have high upload and download speeds, exceeding multiple broadband definitions, but high standard deviations mean that there are notable minorities of residents who see far worse end speeds.¹²³ These results are shown in **Table 13**.

Table 13: Key Data from Speed Tests Across Riverside County Over the February 2022-January 2023 Period

VARIABLE	MEDIAN	MEAN	STANDARD DEVIATION
DOWNLOAD SPEED	214 Mbps	234 Mbps	197 Mbps
UPLOAD SPEED	22 Mbps	88 Mbps	157 Mbps

Standard deviations for both upload and download speeds are high, meaning there is a large amount of variation in speeds across the area

Median download speeds are high, meaning the majority of testers are seeing sufficient speeds

Median upload speeds trail mean upload speeds, meaning there are some with very high speeds, while the majority see speeds closer to the median

¹²² Ibid.

¹²³ Analysis was conducted using data from speed tests conducted at speedtest.net from February 2022 through January 2023. This data was filtered to exclude tests that measured mobile hotspot broadband or had poor location accuracy, resulting in 667,109 tests in the sample.

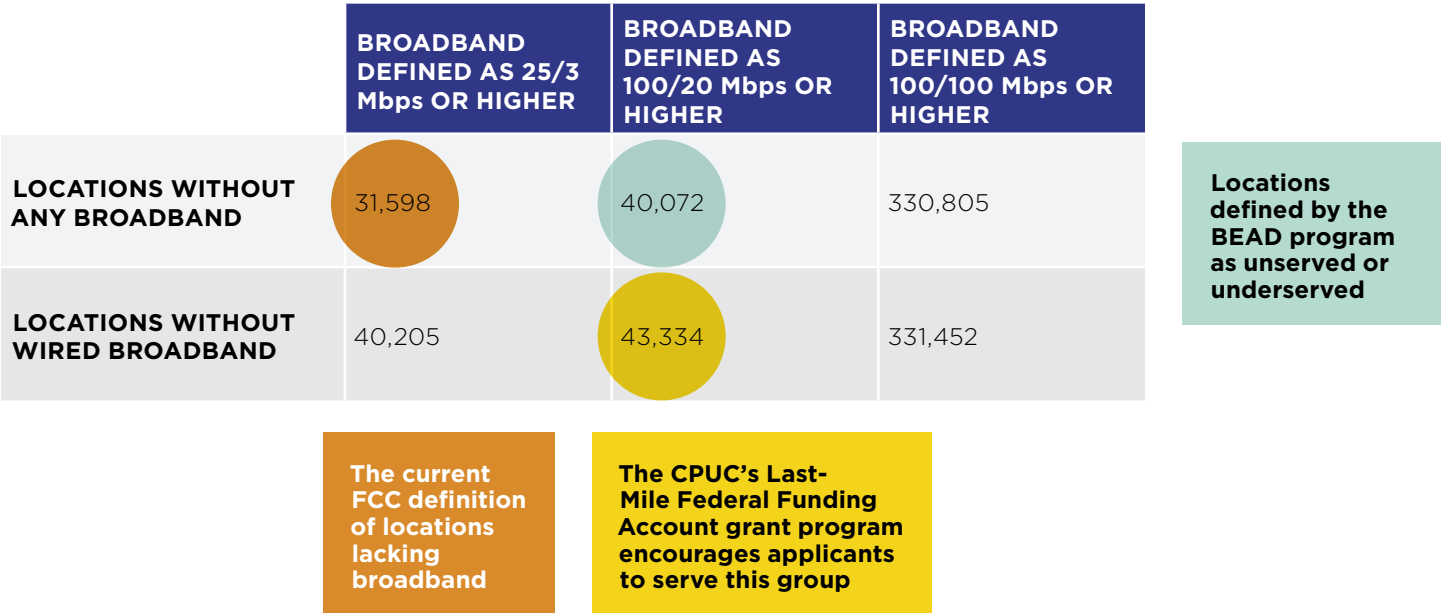


Low speed test results may be caused by several factors. Some residents may face affordability barriers which limit them to low-speed plans or simply not value higher speed plans. In addition, some may only have slow plans available, or subscribe to plans which receive far slower actual speeds than are advertised by their provider.

Some households lack subscriptions due to a lack of available broadband plans

Different infrastructure funding programs have different definitions of what constitutes a location eligible for infrastructure projects, with some programs making locations lacking 100/20 Mbps service eligible for funding, while others only allow locations without 25/3 Mbps service eligible. Furthermore, some state funding specifies that to be considered ineligible for funding locations must have wired service at a given speed tier. The result of this variation among programs means that there are multiple relevant numbers of unserved locations. While 31,598 locations do not have broadband service under the FCC’s 25/3 Mbps definition, that number rises to 43,334 for locations relevant to the Last-Mile Federal Funding Account.¹²⁴ These figures are shown below in **Table 14**.

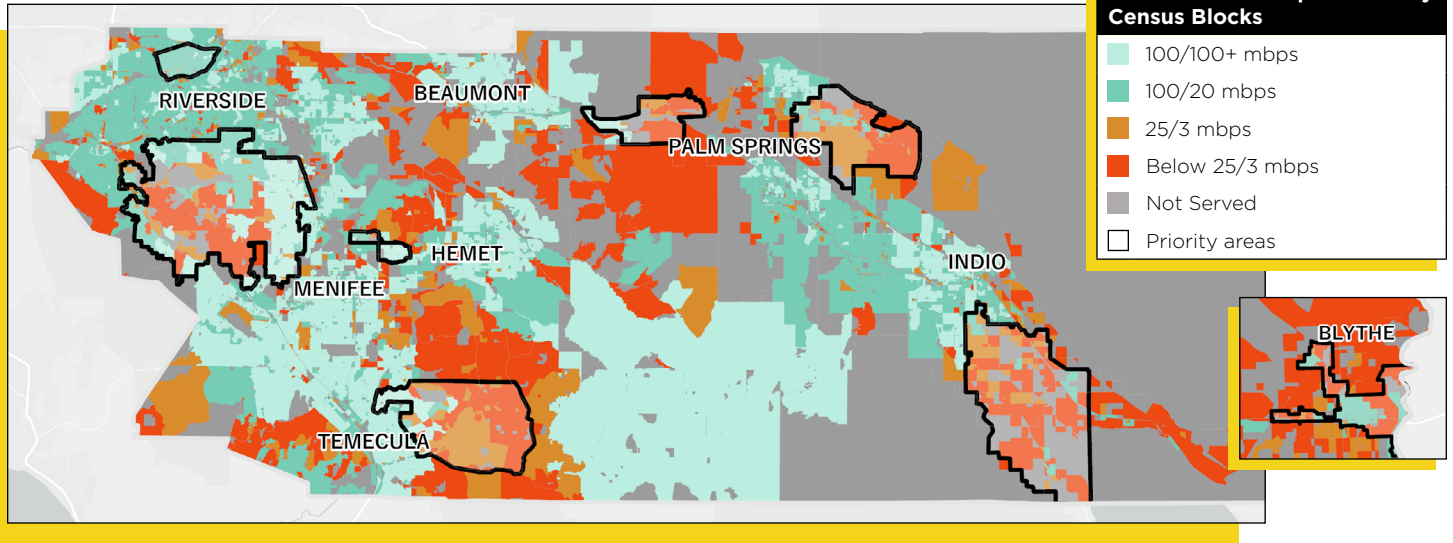
Table 14: *Number of Unserved Locations by Technology and Speed*



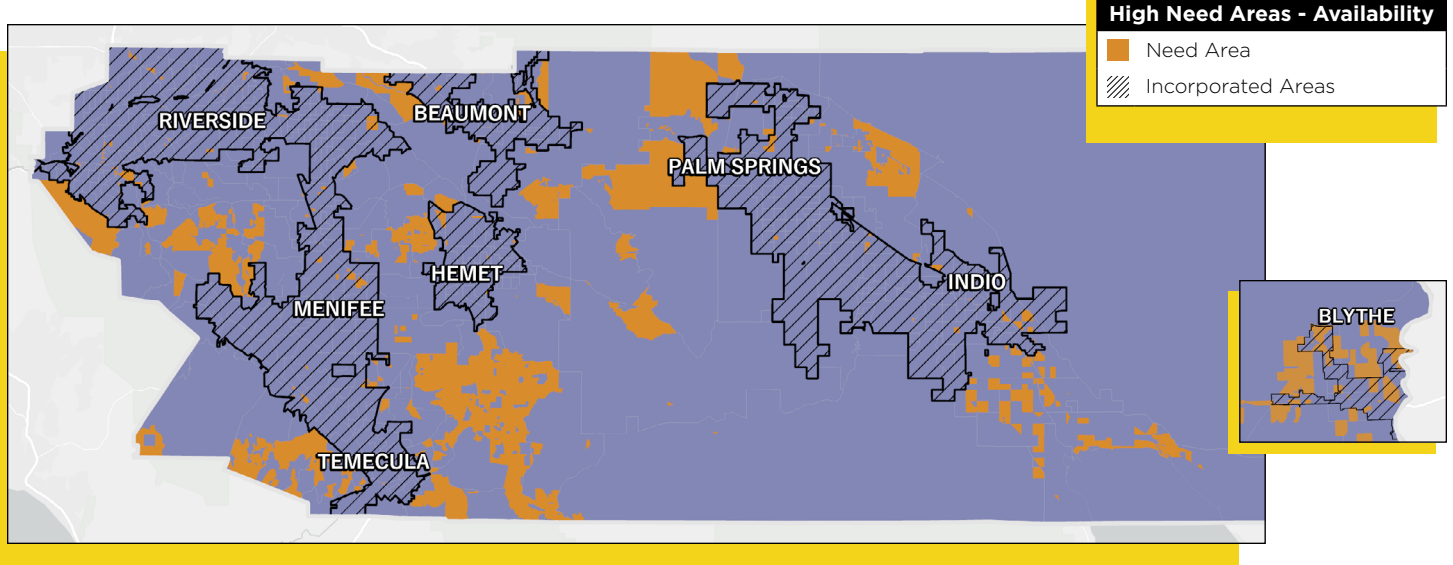
Availability challenges are particularly prevalent in several portions of the county including Blythe, the southern Coachella Valley, and much of the southwestern portion of the county

Provider-reported data to the Federal Communications Commission shows the wide range of available service in the county. While much of the county, including the most populated areas, are offered high maximum available speeds, there are large swaths of the county without service reaching 100/20 Mbps or even 25/3 Mbps.

124 [Federal Communications Commission, FCC National Broadband Map, Jun 30, 2022 \(Last Updated: 4/12/23\)](#)

Map 20: *Maximum Advertised Speeds by Census Block*¹²⁵

As is highlighted in **Map 20** above, there are several areas throughout Riverside County with significant availability challenges. Several areas stand out as particularly in need of improved availability lacking 25/3 service entirely which are depicted in **Map 21** below.

Map 21: *Areas of High Availability Needs*¹²⁶

As **Map 21** indicates, these census blocks are spread across Riverside County. However, several areas exist that are notable as they contain several census blocks that lack 25/3 Mbps service:

- Unincorporated communities in western Riverside County located near Lake Matthews such as Gallivan Hills.
- Unincorporated communities in western Riverside County located to the west of Hemet and San Jacinto.

¹²⁵ Ibid.

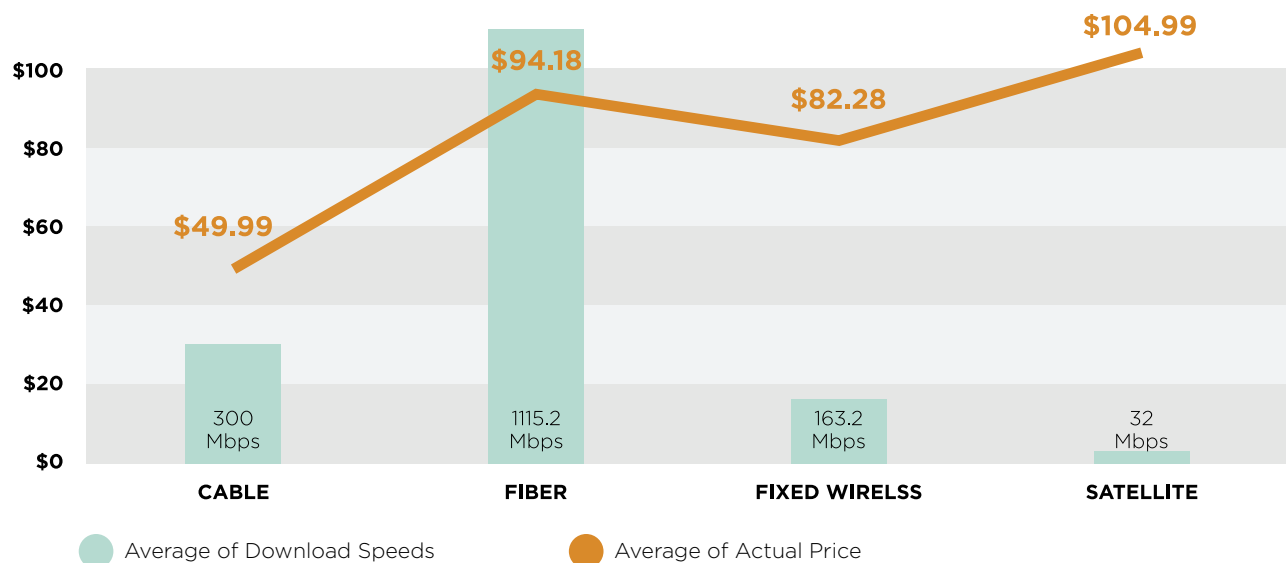
¹²⁶ Census blocks were identified if they either had no provider-reported offerings of 25/3 Mbps or higher according to data from the FCC National Broadband Map or if all speed tests conducted at SpeedTest.net from February 2022 through January 2023 were below 25/3 Mbps

- Unincorporated areas located west of Temecula.
- The Wine County region and adjacent unincorporated areas located east of Temecula, Murrieta, and Menifee, and south of Hemet. Communities in this area include Valle De Los Caballos, Glenoak Hills, Sage, and Sycamore Springs, and they extend to Aguanga in the southeast.
- Unincorporated areas located along the Banning Pass and in the San Jacinto Mountains.
- Unincorporated communities in the northeastern Coachella Valley such as Sky Valley and Desert Edge.
- The southern end of the Coachella Valley. This area includes portions of the cities of Indio and Coachella, and the unincorporated communities between them and the Salton Sea, including Thermal, Mecca, Oasis, Vista Santa Rosa, Valerie, Desert Camp, and Mortmar.
- Blythe and surrounding unincorporated communities.

Affordability challenges exist in the current market for broadband

Many residents in Riverside County face affordability challenges which may prevent them from possessing an in-home broadband subscription. While in some cases carriers offer plans as low as \$30 per month (essentially free along with enrollment in ACP), residents do not have affordable options in some areas. In general, the major national carriers offer competitive pricing in heavily populated areas. However, in other areas, especially where smaller fixed wireless providers are the only option, costs can be much higher. The average cost of fixed wireless plans is over \$80 per month, for an average upload speed of 163 Mbps download.¹²⁷ This is much higher than the \$50 average monthly cost of cable, which averages 300 Mbps download speeds, and lower cost fiber plans (which see higher upload and download speeds).¹²⁸ In areas completely unserved by terrestrial service, satellite plans are the only option. These plans are especially expensive, averaging \$105 in month cost for 32 Mbps of download speeds.¹²⁹ In addition, satellite plans often come along with data caps limiting the amount that residents can actually use the internet, and expensive installation fees of over \$300.¹³⁰ These rates are burdensome for a sizable portion of the population, especially given that 12% of the county's population have annual household income below the federal poverty level.¹³¹ Data on internet plan costs and speeds is shown in **Figure 10**.

Figure 10: **Internet Plan Average Cost and Speeds Based on Technology Type**



¹²⁷ This was compiled based on plan pricing data from various internet service providers online and phone offers.

¹²⁸ Ibid

¹²⁹ Ibid

¹³⁰ Ibid

¹³¹ US Census Bureau, [ACS Table S1703: Selected Characteristics of People at the Specified Levels of Poverty in the Past 12 Months, 5-Year Estimates 2017-2021](#)

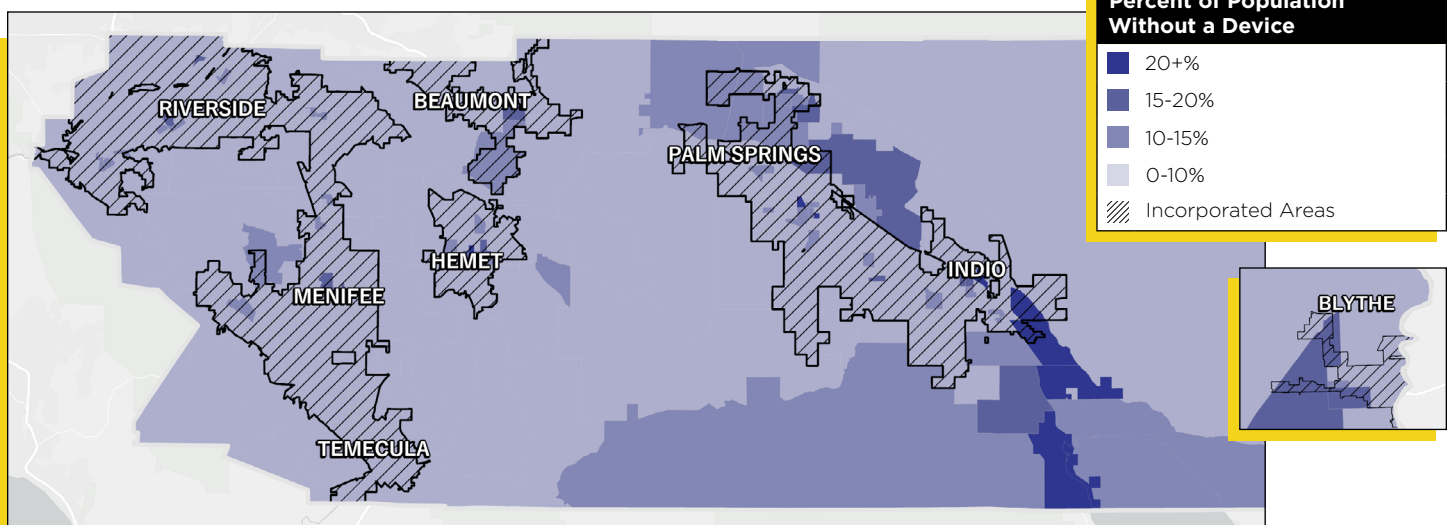
Device access is also limited by affordability challenges

Just as some residents are constrained by the pricing of internet subscription plans, device affordability also proves to be a major issue contributing to the digital divide. Access to a digital device is necessary for broadband availability, as many households lack the devices to make the most of their connectivity. Countywide, 34,000 households, or 4.6% of all households, do not have a home computing device.¹³² Roughly 54,000 households rely only on a smartphone – which may be able to handle basic tasks but is often inadequate for critical connectivity-related needs such as telemedicine, remote learning, and applying for jobs.¹³³ Furthermore, families may have devices but still not have enough for all members to complete necessary tasks. For some residents, this can mean sacrifices need to be made whether it is foregoing schoolwork or dropping out of school due to inability to participate.

Device ownership rates vary across the county, as shown in **Map 22**, with areas such as Blythe, the southern portion of the Coachella Valley, and parts of Indio, Palm Springs, and Hemet standing out with low device ownership rates.¹³⁴ Even cities with higher subscription rates still see large numbers of households without devices, for example approximately 3,500 households in the City of Riverside lack devices entirely.¹³⁵

**Countywide,
34,000
households,
or 4.6% of all
households,
do not have
a home
computing
device.**

Map 22: Device Ownership Rate by Census Tract¹³⁶



¹³² US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)

¹³³ Ibid.

¹³⁴ Ibid.

¹³⁵ Ibid.

¹³⁶ Ibid.

Currently, the ACP offers a \$100 device subsidy for qualifying participants, however, this is difficult for residents to take advantage of as the subsidy amount does not suffice to cover the cost of most basic computing options, let alone a traditional laptop or desktop computer. In addition, very few providers are actually able to make this device subsidy available to the subscribers. While availability challenges can be addressed through expanded broadband infrastructure, there are few opportunities to address this challenge directly outside of expanding device loan and giveaway programs.

OPPORTUNITIES IN RIVERSIDE COUNTY'S BROADBAND MARKET

Forging partnerships with ISPs is a key step to addressing unserved residents

Partnering with one or more ISPs to secure grant funding represents an opportunity to expand service areas into new territories or improve existing services from legacy technologies, such as copper to fiber. Leveraging funding opportunities would reduce the upfront costs ISPs face when developing new infrastructure and may make improving and/or expanding service offerings more attractive. In addition to significant federal and/or state funding opportunities to entice ISPs by lowering the net cost of capital expenses, significant barriers must be overcome to take advantage of this opportunity. ISPs may be concerned about not just the capital expenses of broadband infrastructure but also the operating expenses associated with serving presently unserved areas. Addressing these operating expenses is a critical step in forming partnerships with ISPs to expand infrastructure offerings. There are many forms of public-private partnerships for the county to consider with ISPs that can further attract their investment from joint pursuit of funding opportunities to public support of planned infrastructure expansion. The county can also consider allowing service providers to leverage public rights-of-way and further streamline local permitting policies to reduce red tape and long wait times.

Developing a workforce with the capability to build, maintain, and operate broadband infrastructure can simultaneously help the county reach its construction needs while growing high-paying jobs

A skilled workforce is needed to support deployment, maintenance, and operation of need broadband infrastructure in Riverside County. This includes jobs in construction, installation and maintenance, machinery, customer service, and cloud support to install, maintain and troubleshoot broadband networks.¹³⁷

The job requirements for these positions vary, with some requiring a bachelor's degree and some not requiring any formal education. Some jobs will offer pathways for upward mobility, while others will not. In general, infrastructure jobs tend to be stable and well-paid relative to other options for workers without a college degree.¹³⁸ In addition, many broadband-related jobs, such as those in installation and repair for telecommunications equipment, telecommunications lines, and electrical powerlines tend to be better paid, have low barriers to entry, and be more likely to be covered by a union than the general workforce.¹³⁹

For Riverside County, taking advantage of this opportunity to improve employment outcomes for residents, particularly those without college diplomas, would help improve broadband access for residents and positively impact the workforce. Taking advantage of significant federal commitments to these goals to create job training and upskilling programs could be particularly impactful. The IIJA will allocate \$200 million in funding towards workforce training and development programs for the industries created by the law, including broadband.

¹³⁷ Brookings Institute, [Reimagining the broadband technology workforce](#).
¹³⁸ Brookings Institute, [How federal infrastructure investment can put America to work](#).
¹³⁹ Ibid.



KEY TAKEAWAYS

MARKET STRUCTURE FACTORS

This section has looked at the existing landscape of broadband availability, cost, and service providers. It identified the following list of gaps to address and critical opportunities to take full advantage of for Riverside County to close its digital divide:

GAPS

1 Many locations within Riverside County lack the availability needed to connect with the digital world. Over 31,000 locations do not have internet service plans offered that meet or exceed 25/3 Mbps, according to data from the internet service providers.¹⁴⁰ Speed tests further highlight this lack of adequate availability for portions of the county, with 11% of all tests (about 72,000) below 25/3 Mbps speed and over half of all tests not meeting the 100/20 Mbps threshold. These locations are spread across the areas with some areas of particular need – Blythe, the southern and northeastern portions of the Coachella Valley, and the Wine Country – but needs to extend in all regions (western Riverside County, Coachella Valley, and the desert), and across both incorporated and unincorporated communities.

2 The high cost of plans offered in the current marketplace prevents many from subscribing to in-home connections. As many as 360,000 households face challenges in affording the cost of a broadband subscription.¹⁴¹ The mean internet subscription plan of \$79.00 per month is not affordable for many residents, even with a subsidy from ACP.¹⁴² Furthermore, many plans require installation fees that can exceed \$100.¹⁴³ With 12% of the population living in poverty these costs are a major barrier.¹⁴⁴

3 Many households have limited or no access to digital devices. This observation includes households without a device (34,000) and households limited to only a smartphone (54,000).¹⁴⁵ Without a device, residents cannot access the internet even if they may have an ISP able to offer service to their homes. With only a smartphone, people cannot use the internet for important tasks such as telehealth, remote learning, job searches, etc.



¹⁴⁰ Federal Communications Commission, [FCC National Broadband Map, June 30, 2022 \(Last Updated 4/12/23\)](#)

¹⁴¹ This figure represents the number of households eligible for the Affordable Connectivity Program (ACP), a federal program providing internet plan discounts for households earning less than 200% of federal poverty guidelines or enrolled in one of a variety of government-assistance programs.

¹⁴² This was compiled based on plan pricing data from various internet service providers online and phone offers.

¹⁴³ Ibid.

¹⁴⁴ US Census Bureau, [ACS Table S1703: Selected Characteristics of People at the Specified Levels of Poverty in the Past 12 Months, 5-Year Estimates 2017-2021](#)

¹⁴⁵ US Census Bureau, [ACS Table S2801: Types of Computers and Internet Subscriptions, 5-Year Estimates 2017-2021](#)



Many households have limited or no access to digital devices.

OPPORTUNITIES

1 Forming partnerships with ISPs to bring new infrastructure projects forward is a crucial opportunity to help address availability issues in Riverside County. Riverside County can establish relationships with ISPs to ensure that infrastructure expansion targets unserved and underserved communities with the highest needs. The county can also submit letters of support for proposed projects involving grant funding and can encourage ISPs to bring projects forward.

2 Working with ISPs to lower end prices for consumers can ease affordability challenges. While major national providers utilize economies of scale to offer nationally competitive pricing and accept ACP, many small carriers, including fixed wireless operators, have more expensive pricing and do not accept ACP subsidies. Working to expand the footprint of the major carriers, as well as to expand the number of providers who participate in ACP through collaboration and information-sharing about the program may reduce end costs that consumers have available to them.

3 Riverside County can explore funding opportunities to help residents afford devices. While ACP offers device subsidies, they are not large enough to allow residents to purchase digital devices with the same full capabilities as a laptop or computer. To account for this, Riverside County should explore other funding opportunities to assist with device programs and explore expanding its device refurbishment programs such as the Digital Equity Program (DEP).

4 Developing a workforce capable of building, operating, and maintaining new broadband infrastructure can have significant positive effects on the county's workforce and economy. Developing a strong workforce of trained personnel to build, operate, run, and troubleshoot new infrastructure built in the county would offer strong labor force opportunities to many residents. Cultivating this workforce from inside the county would benefit many residents. In turn, this will also ensure that the county has enough manpower to build out the needed infrastructure.

Forming partnerships with ISPs to bring new infrastructure projects forward is a crucial opportunity to help address availability issues in Riverside County.



STAKEHOLDER ENGAGEMENT

As part of the broadband planning process, Riverside County conducted extensive stakeholder and community engagement to promote support for countywide broadband expansion. These stakeholder engagement activities aimed to collect insights about the broadband landscape by bringing together a team of stakeholders from around the county. Through this engagement, the county intended to:

- Identify broadband activities and assets across the county, particularly those managed by other county organizations and agencies.
- Catalogue broadband efforts between county departments, agencies, nonprofits, and private partners.
- Coordinate broadband-oriented activities to promote partnership to allow for scaling and expansion.
- Promote the Affordable Connectivity Program.
- Partner with stakeholders to expand the reach and breadth of the ACP Outreach Campaign.

Since October 2022, the county has engaged 24 organizations including the Riverside County Board of Supervisors, county departments and agencies, incorporated cities, regional bodies, private ISPs, local nonprofits, and county residents. This engagement allowed the county's broadband team to collect insights about the current broadband landscape to inform this report, identify trusted messengers for ACP outreach, and establish partnerships to pursue broadband funding and programming across all agencies. As a result, the county has identified important takeaways through this engagement, which include the following:

GAPS

1

Internet service providers are only interested in broadband infrastructure projects that provide a Return on Investment (ROI) and leverage existing and upcoming funding programs. While ISPs demonstrate an interest in expanding their networks in Riverside County, it is also essential to a growing demand for their expansion across the nation. Consequently, this means that ISP expansion will be limited and backed by financial justification to ensure any broadband deployment project has a significant ROI. While this means there may be opportunities to serve some areas in the county, there will ultimately be areas with population density too low to justify expansion projects. Partnerships are still of viable interest and benefit to the county, however, alternative solutions will need to be addressed to serve those located in remote or harder-to-serve areas.

2

Some internet service providers face funding limitations due to their technology foundations as a result of policy preference towards fiber. Many of the state and federal grant programs that fund broadband infrastructure projects require service delivery to meet 100/20 Mbps or 100/100 Mbps thresholds. Consequently, funding programs will prioritize middle-mile and last-mile fiber deployment projects. While some ISPs can benefit from this, other ISPs solely deliver service with alternative technologies such as fixed wireless. These ISPs often face difficulty receiving funding due to the preference for fiber.



3 **Riverside County has a disjointed Community-Based Organizations (CBO) network, which can lead to future challenges in scaling ACP outreach and digital literacy programming.** In engaging the local community to promote ACP, Riverside County relied on CBOs to hold in-person events. CBOs are seen as trusted messengers in their communities, attracting residents and boosting program enrollment. Partnering with CBOs also allows the county to communicate with eligible populations it may have challenges reaching. While the county established these relationships, one thing is clear: there are opportunities for the county to grow its CBO network. This is especially important as state and federal funding for digital equity initiatives become available.

4 **Riverside County has had some digital literacy programming in the past but does not have enough to reflect the need based on broadband adoption data.** Digital adoption, or internet use, is hindered by several challenges, including a lack of knowledge on how to use the internet and advanced digital devices. These challenges are especially true for older populations and those who may not speak English. Digital literacy programming is a crucial resource to help bridge these challenges and promote digital adoption, opening other opportunities like remote work and social connectivity. While the county has provided some digital literacy programming in the past, it did not fare well during the pandemic. As the county promotes digital adoption, it will need to provide a mix of in-person and virtual programming for residents looking to learn or expand the use of their digital device.

OPPORTUNITIES

1 **Pursuing state and local funding opportunities for broadband infrastructure expansion can entice private investment.** Maximizing state and federal funding opportunities is the best mechanism for the county to bring in funds to attract existing ISPs to upgrade and expand their networks. This will reduce pressure on ISPs to demonstrate a high ROI if significant pre-construction and construction expenses are accounted for. The county plans to closely monitor the status of funding programs and coordinate with ISPs to share this information with the hopes of ultimately submitting an application to fund a shovel ready project in an un(der)served community in Riverside County.

2 **Riverside County intends to encourage broadband expansion projects that serve un(der)served communities through alternative technologies where fiber is not financially or technically feasible.** The county has been an active member of the state's BEAD planning process and commented in support of funds allocated to projects delivering non-fiber deployment if no other project was proposed for the same area. The county intends to support all projects that serve residents that are not connected.

3 **Upcoming state and federal opportunities addressing digital equity through digital literacy and other community outreach measures can help expand the presence of CBOs operating in Riverside County.** Many of these opportunities will be available for CBOs. Riverside County CBOs must grow their capacity to apply for grants as they become available and administer digital literacy and other adoption programming.



FUNDING LANDSCAPE

Riverside County and its partners have access to a wide range of state and federal funding opportunities that can be leveraged to address the county's broadband availability, affordability, and adoption needs. These opportunities include broadband-specific programs and more general funding opportunities that may be applied to advance the county's broadband goals. To date, Riverside County has been awarded \$500,000 for programs to improve and expand broadband for its residents. The county is well-positioned to pursue additional funding through both state and federal grant opportunities as they become available in the coming months.

BROADBAND INFRASTRUCTURE FUNDING

As described elsewhere in this report, a top priority for the county is expanding broadband infrastructure to connect unserved and underserved residents to high-speed internet. Broadband expansion projects are complex, requiring consideration of middle-mile and last-mile infrastructure as part of network design. Federal agencies and the State of California have established numerous grant programs, which are listed below, to support the kind of work Riverside County plans to undertake to connect more of its residents.

- **Broadband Equity, Access, and Deployment Program (BEAD):** Established under the IIJA, BEAD invests over \$42 billion for state broadband planning and deployment. IIJA requires that BEAD-funded programs prioritize unserved and underserved areas in order to promote equitable access to high-speed internet. In December 2022, the Biden Administration awarded the CPUC \$4.9 million to fund its initial planning efforts related to BEAD. NTIA is expected to announce California's full BEAD award by June 30, 2023.
- **Rural Development Broadband ReConnect Program:** The ReConnect Loan and Grant Program, established by the U.S. Department of Agriculture, allocated up to \$150 million in funds to support the costs of broadband infrastructure construction and improvement in rural areas. Grant recipients are required to build infrastructure to support high-speed internet, with a minimum standard of 100/100 Mbps speed service. As of March 2023, the Department of Agriculture is continuing to award funds appropriated under the program to states.
- **Rural Digital Opportunity Fund (RDOF):** The FCC established RDOF to provide more than \$20 billion to fund broadband infrastructure deployment and network operations projects in areas of the country that lack broadband service of at least 25/3 Mbps. In total, California was awarded over \$2 billion to support projects serving over 300,000 locations.
- **Last Mile Federal Funding Account:** Through the passage of SB 156 (2021), the California Legislature set aside \$2 billion in state and federal funds for last-mile broadband infrastructure through the CPUC's Last Mile Federal Funding Account. This grant program will fund last-mile broadband infrastructure projects to connect unserved and underserved Californians with broadband speeds of at least 100/200 Mbps. As of March 2023, the CPUC is defining the areas eligible for funding in order to determine which types of projects will be approved and receive program funding.

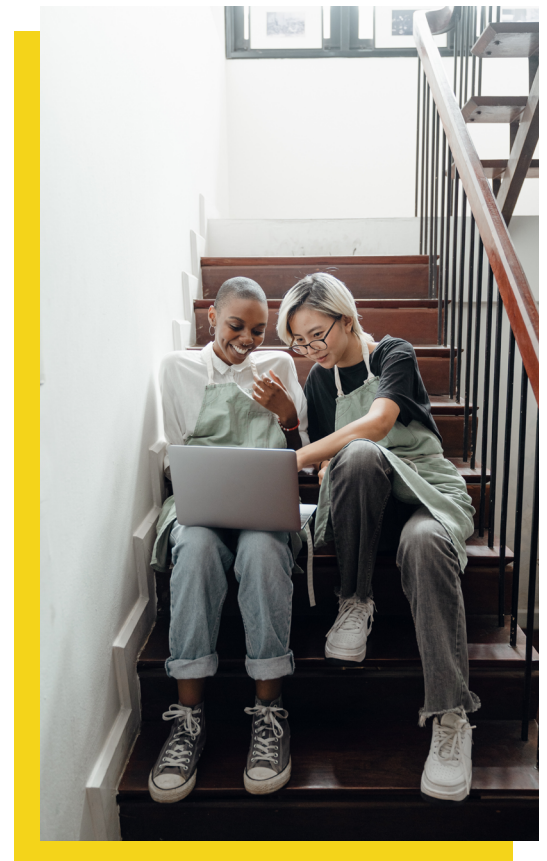


- **California Advanced Services Fund (CASF) Broadband Infrastructure Grant Account:** The CASF Broadband Infrastructure Grant Account was established by the CPUC to provide funding for middle-mile and last-mile broadband infrastructure to facilitate adoption by unserved or underserved communities. Although as of March 2023 the CPUC has not determined total funding for the program, it will give preference to projects in unserved and underserved communities facing socioeconomic barriers to broadband access.

DIGITAL LITERACY FUNDING

Digital literacy programs are critical for ensuring that residents can take advantage of expanded broadband access in their communities and close the digital divide. Gaps in digital literacy exacerbate existing inequities caused by a variety of socioeconomic factors, as is described earlier in this report. Riverside County can collaborate with local agencies, such as the county's Department of Housing and Workforce Solutions, to provide digital literacy programs as part of existing workforce development initiatives. Both state and federal funding opportunities exist to support this work.

- **BEAD Program:** In addition to the broadband infrastructure deployment activities described above, the BEAD program also provides funding for broadband adoption and digital equity programs.
- **Digital Equity Act Programs:** The Digital Equity Act, which passed in 2021 as part of the IIJA, established three grant programs to support digital equity and inclusion initiatives, the Digital Equity Planning Grant, Digital Equity Capacity Grant, and Digital Equity Competitive Grant. California received a \$4 million Planning Grant award, with which it developed a State Digital Equity Plan. Still available are the Capacity Grant, which was allocated a total of \$1.44 billion to fund states' implementation of their Digital Equity Plans, and the Competitive Grant, which will award \$1.25 billion to eligible entities to promote broadband adoption for low-income households and other key populations.
- **CASF Broadband Adoption Account:** The Broadband Adoption Account, which is administered by the CPUC through CASF, provides grants to support broadband adoption and digital inclusion initiatives. The account funds a variety of digital equity activities, including publicly available broadband access, digital literacy training programs, and reimbursement for digital devices and mobile hotspots. CPUC has allocated a total of \$20 million to the account to fund recipients' eligible activities.



AFFORDABILITY ASSISTANCE FUNDING

As this report discusses, low-income households are less likely to have a home broadband connection than their higher-income counterparts. When these households are connected, they are often limited to slow, unreliable internet plans that cannot meet their needs. Further, as of 2021, 41% of adults living in low-income households did not own a computer, and 27% of low-income households relied on a smartphone for internet access.¹⁴⁶ These national trends are the case in Riverside County, where more than 67,000 households do not have a broadband connection. To address these affordability barriers, Riverside County has already undertaken several initiatives to provide discounted broadband subscription plans and digital devices to its residents. As it continues these programs, the county has access to several state and federal grant opportunities that support this kind of work.

- **Affordable Connectivity Program (ACP):** The FCC's Affordable Connectivity Program provides eligible low-income households with a \$30 monthly subsidy for broadband service plans (or \$75 for eligible households on tribal land), as well as a one-time \$100 discount for the purchase of a digital device, such as a laptop or tablet. As described earlier in this report, approximately half of ACP-eligible households in Riverside County are enrolled in the program, and the county continues to increase enrollment through its ACP outreach program.
- **Emergency Connectivity Fund:** The Emergency Connectivity Fund, administered by the FCC, has allocated over \$7 billion to fund eligible schools' and libraries' purchases of devices, such as laptops, tablets, WiFi hotspots, modems, and routers, as well as broadband connectivity for students' off-campus use.
- **Lifeline:** The FCC's Lifeline program provides qualifying low-income households with a \$9.25 monthly subsidy for phone and broadband service (or \$34.25 for households living on tribal land).
- **BEAD Program:** BEAD requires states to develop plans to address broadband affordability issues and prioritizes funding for broadband expansion projects that ensure affordable and accessible connections for Americans.



¹⁴⁶ Pew Research Center, [Mobile Technology and Home Broadband 2021](#)

PUBLIC-PRIVATE PARTNERSHIPS

Riverside County is interested in pursuing grant opportunities in partnership with ISPs, which will allow the county to better define the scope and timeline for prospective broadband expansion projects and pursue projects it cannot commit to alone. The county may consider several possible models for this type of public-private partnership, each with differing levels of responsibility concerning financing, customer service, right of way, and more for both the public entity and private partner. Partnering with ISPs will enable data sharing on broadband service and availability, coordination on priority communities, and access to more funding as the county and partner ISPs combine grant funds with private resources.

Additionally, strong partnerships with CBOs will continue to be critical for the county as it pursues funding to address the digital divide. CBOs are critical to increasing awareness of and enrollment in broadband subsidy programs, facilitating digital literacy programs, assisting with workforce development programs, and conducting outreach on behalf of the county to increase awareness of the many opportunities available to residents. Riverside County looks forward to continued collaboration with local CBOs to amplify its broadband adoption efforts.

As it continues to develop its broadband expansion priorities, Riverside County is developing a more comprehensive report describing available funding opportunities and an updated broadband master plan that will consider the county's funding needs for implementation of its broadband expansion strategy.



NEXT STEPS FOR RIVERSIDE COUNTY

In addition to this report, Riverside County is creating three other standalone documents:

1

FUNDING LANDSCAPE REPORT

This document details the broadband funding landscape at the state and federal levels and highlights key opportunities for broadband-related funding based on the county's needs.

2

STAKEHOLDER ENGAGEMENT REPORT

This document summarizes conversations with various internal and external stakeholders regarding the county's broadband-related needs. It lays out key themes and recurring narratives brought up by these stakeholders.

3

BROADBAND MASTER PLAN

The Gaps and Opportunities report and these two additional reports form the basis for the 2023 update to the Riverside County Broadband Master Plan. This document will build upon the gaps identified in the Gaps and Opportunities Report and lays out concrete strategies for addressing these gaps. Following this, the county will continue to execute and implement the identified strategies.





