# BEAD state by state: what to expect

**A guide from Metro Connect**

# $42.5bn of investment: where is it going?

**The BEAD program, which will invest $42.5bn in bringing connectivity to all Americans by 2030, is a program unprecedented in its scope, ambition, and requirements for states.**

Each state has received an allocation taking into account the number of 'unserved' (defined as those lacking access to 25 Mbps download speed and 3 Mbps upload speed) and 'underserved' (with speeds below 100 Mbps/20 Mbps) households within it. And each state has its own unique factors that will influence how this money can best be spent.

There are some common factors between the states. Each must deliver high speed connectivity to all its unserved and underserved areas, provide gigabit services to 'Community anchor institutions' such as libraries that currently lack it, and make progress on digital equity and inclusion. On the challenges side, every BEAD participant is faced with, in the words of the FCC's Telecommunications Workforce Interagency Group, a "profound skills gap" – an issue which requires careful management. There are a host of other factors to consider alongside this, too.

To receive the BEAD money, each state must deliver a Five-Year Plan detailing the connectivity landscape of their territory, how many addresses require connectivity, and how they plan to deliver it.

These plans have been gradually published across the second half of 2023 (although most are out for public consultation and as such provisional). The Metro Connect team has read every one, and here is our summary of the broadband roadmaps of select states – the top 10 states by BEAD allocation, plus selected states primarily in the eastern areas of the United States in the first instance.

We hope you find it useful!

# METRO CONNECT USA

# Inside your guide...

In each state profile:

Overview of state connectivity and digital inclusion

BEAD plan highlights

Other connectivity initiatives

# TEXAS 1ST IN BEAD FUNDING
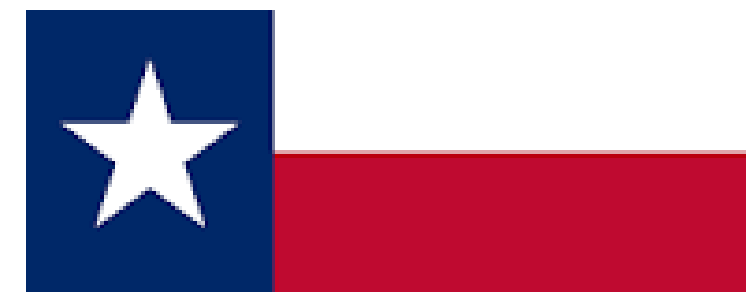
## What is the broadband landscape in Texas?

**Texas is by far the largest recipient of BEAD funding – its allocation is over $3.3 billion, nearly double that of California, the next state on the list. The challenge, however, is as big as the grant.** Texas has a large land area with wildly varying population densities, and there are unparalleled numbers of households, over 7 million in total, requiring either upgraded connectivity or any kind of high-speed connectivity at all. (Subscription costs are an issue here – 40% of Texans pay over $100 per month). The Texan broadband supply network is dominated by private companies, which has made connectivity for more remote areas with high passing costs unviable and therefore incomplete. However, there are several existing public infrastructure networks on the middle mile, including the 3,200-mile LEARN network with 26 points of presence, and the LCRA middle-mile and backhaul network established in 2021.

## What will the BEAD 5-Year Plan cover?

Texas's BEAD funding will, in the first instance, connect 779,378 unserved and 362,878 underserved locations in the state. Unusually for BEAD plans, Texan documentation includes as a number 2 objective 'Establish the BEAD program as a competitive and efficient grant program'. This is likely due to the large number of obstacles present in broadband deployment – not least willingness to participate among operators, 66% of whom reported in a Texas Broadband Development Office survey that they would not be willing to participate in the BEAD program if funding per passing were $2,000 or lower. Other obstacles include topography, although this is not seen as insurmountable by respondents, and the difficulty of obtaining permits, with railroad permitting a particular headache identified among the ISPs surveyed.

## Other connectivity programs and investments

State support for broadband deployment in Texas has been hefty in recent years. The Texas broadband Infrastructure Fund provides $1.5 billion for broadband, telecoms and 911 services, and this operates alongside 17 other funding sources, including $180 million to provide voice services across the state.

# CALIFORNIA

## 2ND IN BEAD FUNDING

CALIFORNIA REPUBLIC

## What is the broadband landscape in California?

**California already got its version of BEAD underway in 2021 – but even bigger than the actual BEAD.** A senate bill passed in July 2021 assigned $6 billion to "help bridge the digital divide and provide reliable and affordable internet access to all Californians", with over half of this amount dedicated to building an open-access middle mile network across the state administered by the California Department of Technology. In addition, $2bn has been earmarked for last-mile infrastructure projects and $750m in loan guarantee facilities. The $1.8bn of BEAD funding is a welcome addition to this – but according to the state's Five-Year Plan, this amount will still not reach the estimated $9.7 billion required to deploy FTTH to the state's 300,000+ locations that are currently unserved.

## What will the BEAD 5-Year Plan cover?

Having already developed a Broadband for All Action Plan in 2020 that aligns with the aims of BEAD, California is re-implementing the goals of that program within a BEAD framework – targeting the provision of high-speed internet to every resident of the state. The Golden State currently has 306,910 unserved and 151,107 underserved locations, but estimates vary substantially as to the number of premises that meet this definition. This is why one key aspect of BEAD deployment in the state will be to establish a strategy to map and assess exactly which areas are unserved and underserved, as well as developing a unified approach to avoid the risk of parallel or duplicated deployments. California's topography is likely to have a considerable effect on how BEAD upgrades are delivered – not just a rugged terrain, but the risk of wildfires and earthquakes requiring subterranean cables in certain locations, which will drive up costs that are already on the high side due to a nationwide 9-month wait for fibre-optic material delivery.

## Other connectivity programs and investments

California's statewide, pre-BEAD connectivity investments are some of the biggest in the nation. As well as the $6bn investment covered above, the California Advanced Services Fund collects a surcharge on operator rates and re-invests it in areas such as line extension, broadband adoption for housing parks or low-income developments, and connectivity initiatives on Tribal lands. There are also 16 additional funding programs active in the state.

# MISSOURI
3RD IN BEAD FUNDING

## What is the broadband landscape in Missouri?

**Missouri is the third-highest recipient of BEAD funding at over $1.7bn, and this generous grant is testament to the fact that reaching the nearly half a million unserved and underserved locations in the Show Me State is going to be a tough ask.** But Missouri has already been unknowingly working towards BEAD SLAs since the Broadband Plan of 2019, which committed to "prioritize activities to achieve universal access to high-speed Internet, with speeds of at least 100 Megabits per second (Mbps) download and 20 Mbps upload, for all Missouri citizens by 2028". As of 2022, 78% of the state were getting connection of this standard, and 87% of the state's population were subscribed to landline internet – an adoption rate helped by over 120 broadband providers operating in the state. However, urban areas (where availability is highest) have some of the lowest subscription rates, meaning action on quality and cost (an average subscription in the state costs $71) will be required to make a dent in the remaining share of Missourians who do not subscribe.

## What will the BEAD 5-Year Plan cover?

Of the 337,004 unserved and 107,032 underserved locations in Missouri, most are in areas with extremely challenging terrain, many in the south-central part of the state. However, data collection for Missourian connectivity is recognised as flawed – for example, apartment buildings are often reported and assessed as a single connection, meaning it would not come to light if certain residents were receiving poor service. Rolling out service to these unserved and underserved locations will continue under the umbrella of BEAD, with all existing commitments rescheduled for completion within the five years covered under the program. In terms of barriers to overcome, a survey of ISPs active in Missouri and local cooperatives and governments showed that the largest perceived obstacle was the lack of access to capital – a worry which will have been eased by recent reforms to BEAD's letter of credit system. 'Uncertainty of demand' was among the factors least mentioned.

## Other connectivity programs and investments

Missouri's organisational infrastructure for delivering connectivity improvements is already well established – to illustrate, while other states are planning hiring sprees to fill the roles needed to implement BEAD (this information is required by states and can be found in the Five-Year Plans), Missouri already has most of them filled and is only hiring a legal counsel and an accountant, both part-time. There are 19 funding sources currently operating in the state's connectivity space, nearly all at federal level.

# MICHIGAN 4TH IN BEAD FUNDING

## What is the broadband landscape in Michigan?

**Michigan's digital divide is enormous – nearly 500,000 of households are currently unserved or underserved by high-speed internet, and another 730,000 face various barriers to connectivity, whether that is digital literacy, affordability, adoption, or having Internet-ready devices.** This means over 30% of the state's residents do not have an adequate connection, explaining the large BEAD funding given to the state to close this gap. Digital participation in Michigan is uneven both in terms of geography and social groups – for example, while statewide broadband adoption is at 69%, this figure stands at 74% in the Detroit Metro area and just 54% in the Northeast region of the state.

## What will the BEAD 5-Year Plan cover?

The BEAD plan for Michigan forms part of the state's broader plan to eliminate the digital divide in the state. Given the scale of the divide in the Wolverine state, its plan extends over a longer period than that of other states – over a 10-year period, the aim is to ensure an affordable and high-speed Internet connection and a high-speed Internet-enabled device is made available to every household in the state, with the target of a 95% adoption rate for a permanent home internet connection.This will involve connecting all underserved and unserved locations as a priority.

## Other connectivity programs and investments

Michigan's High-Speed Internet Office is currently running five programs, two involved in providing connectivity and three focusing on engaging stakeholders and coordinating efforts. There are also 15 funding sources currently active in the state, mainly provided by federal funds and NTIA programs (including $61bn on middle mile provision), as well as $34 million for the Connecting Michigan Communities state-run project.

# NORTH CAROLINA 5TH IN BEAD FUNDING

## What is the broadband landscape in North Carolina?

**The ninth-most populous state in the United States, North Carolina has work to do to close its digital divide.** 73% of households currently have broadband internet subscriptions, but this drops to 64% for Black residents of the state and just 57% for Native American residents. The Old North State aims to bring these figures to 80% across the board by 2025 and has already been investing to make this happen, including a combined $400 million of state and American Rescue Plan Act money to connect its unserved homes and businesses.

## UNSERVED LOCATIONS

374,412

## UNDERSERVED LOCATIONS

127,956

## What will the BEAD 5-Year Plan cover?

North Carolina has the fifth largest BEAD funding allocation in the US and intends to use it through a combination of infrastructure and access, digital literacy and affordability. BEAD funding will be distributed through three existing programs for connectivity infrastructure, which is required by state law. The implementation will be divided into three phases – 210,000 locations to be connected via ARPA and state funding between 2023 and 2025; $490 million of projects from 2023 to 2026 including a Broadband Pole Replacement Program, and from 2024 to 2029 a focus on using BEAD funding to connect high-cost areas and community locations without broadband access.

## BROADBAND ADOPTION

73%

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## Other connectivity programs and investments

Given the access inequity in the state, North Carolina's broadband investment plan and the funding schemes supporting it have a considerable digital divide element. One strong focus in the state's plan is the 'Homework gap' – or the percentage of homes with school-age children with a computer but without high-speed Internet access – which the state is aiming to completely close by 2025, ensuring that all households with school age children are served by high-speed broadband.

# VIRGINIA 6TH IN BEAD FUNDING

## What is the broadband landscape in Virginia?

**Although Virginia is home to just over 8 million people, the Old Dominion is due to receive over $1.4 billion in BEAD funding, the sixth-largest of any state.** There is significant scope for coverage and infrastructure growth in the Commonwealth - 17% do not use the Internet at home at all, although half this number feel they do not need it. However, the state is suffering an acute labor shortage to develop its connectivity infrastructure.

## What will the BEAD 5-Year Plan cover?

Virginia's BEAD proposal focuses on the triple drive for access, affordability and adoption, with the aim of achieving 'functionally universal' broadband access by the end of 2024. A large part of the size of the funding is due to the remote locations needing to be served, with a priority of the plan ensuring cost-effective access to poles, conduits and rights of way. Virginia's five-year plan estimates how much it will cost to achieve universal coverage - $5,000 per location for multi-location deployments and $9,000 for a line extension. This represents a significant increase on previous estimates published by the state. The plan also identifies challenges in closing the connectivity gap, including increased costs for labor and materials (up to 20% increases in places), geographical challenges to reach unserved areas, and additional requirements for BEAD funding that were not necessary in previous programs.

## Other connectivity programs and investments

BEAD adds to numerous other federal and state programs to boost connectivity, notably the Virginia Telecommunications Initiative, launched in 2017 as an unknowing precursor to BEAD - extending broadband infra across the Commonwealth and aiming for 100Mbps/20Mpbs connectivity. Other initiatives include various mapping projects, a Broadband Advisory Council to ensure executive buy-in, and a program to extend connectivity from nearby infrastructure to unserved households.
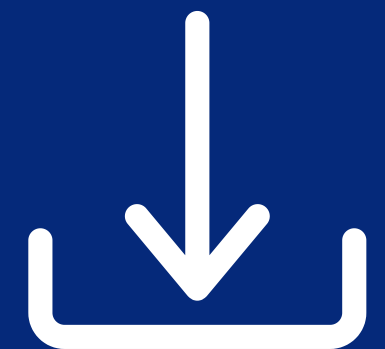
# ALABAMA
### 7TH IN BEAD FUNDING
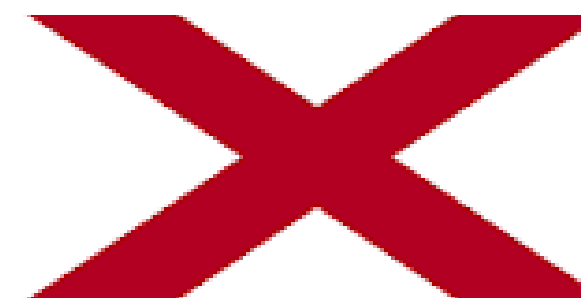
## What is the broadband landscape in Alabama?

**With $1.4 billion of funding, Alabama weighs in at 8th place in terms of BEAD funding amounts despite its population of just 5 million.** Around 12% of locations in the state are unserved or underserved, mainly in the west and south-west, but only 65% of households are subscribed to wireline internet. This is primarily due to affordability concerns – 40% of households that are eligible for enrolment in the Affordable Connectivity Program are enrolled in it, which is healthily above the national average. In terms of connectivity development, Alabama Department of Economic and Community Affairs (ADECA) has focused on middle mile development as well as last-mile programs, in addition to expanding grants to Historically Black Colleges and Universities to bolster digital equity in the Yellowhammer State.

## What will the BEAD 5-Year Plan cover?

BEAD funding will, as in every state, target unserved and underserved households, of which in Alabama there are 191,164 and 75,044 addresses respectively. The state has also published estimates of how much it expects BEAD delivery to cost (which can be seen on slide 24 of this document), with the majority spoken for, unsurprisingly, by physical fiber plant construction. One of the priorities in the five-year plan is increasing broadband adoption, and to this end the state will require any ISP awarded BEAD funds to also participate in the ACP.

## Other connectivity programs and investments

Alabama's state-funded programs have as a rule specified 100/100 symmetrical service, meaning BEAD slots nicely into existing initiatives in the state. These include £191 million of ARPA funds for last-mile builds, a further $245m in 2023 for middle mile, and a recently completed Alabama Broadband Map, built in collaboration with ISPs and updated twice yearly.

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TOTAL BEAD FUNDING

$1,401,221,901.77

UNSERVED LOCATIONS

191,164

UNDERSERVED LOCATIONS

75,044

BROADBAND ADOPTION

65%

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# LOUISIANA

8TH IN BEAD FUNDING

## What is the broadband landscape in Louisiana?

**Expanding connectivity to the remaining 650,000 unserved or underserved households in Louisiana is a challenging job** - hence the 25th most populated state receiving the ninth-largest allocation of the BEAD program.. A water-heavy geography means it is not quite as simple as laying fibre across farmland or next to a railroad, infrastructure must be resilient to natural disasters, and a longstanding brain drain of Louisianans leaving for opportunities elsewhere means implementing plans is difficult. However, progress has been made in the state in recent years through statewide initiatives like Granting Unserved Municipalities Broadband Opportunities (GUMBO) plan, which has delivered funding to vital initiatives such as the 1,600-mile Louisiana Optical Network Infrastructure, a sorely-needed 40 Gbps backbone network across the state.

## What will the BEAD 5-Year Plan cover?

Louisiana's strategy for spending the $1.35bn of BEAD cash focuses on stemming brain drain and improving overall connectivity rates, including ensuring 100% connectivity for multiple dwelling unit wireless access, deploying climate-resilient infrastructure, and improving the state's current broadband adoption rate of 81%, which is on the low side compared to the nationwide average. A major part of the plan that is specific to Louisiana is improving digital skills, improving the rate by 50% by means of providing training to 230,000 people in the state.

## Other connectivity programs and investments

Louisiana is also implementing 13 other programs to enhance connectivity in the state, which will continue to be implemented alongside BEAD, made possible thanks to coordination from the ConnectLA body. These programs include efforts to improve wireless connectivity to first responders, a rural revitalisation project, and a climate-based plan that looks to boost home working for ecological reasons.

UNSERVED LOCATIONS

483,113

UNDERSERVED LOCATIONS

217,772

BROADBAND ADOPTION

81%

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# FOCUS ON:
# GEORGIA
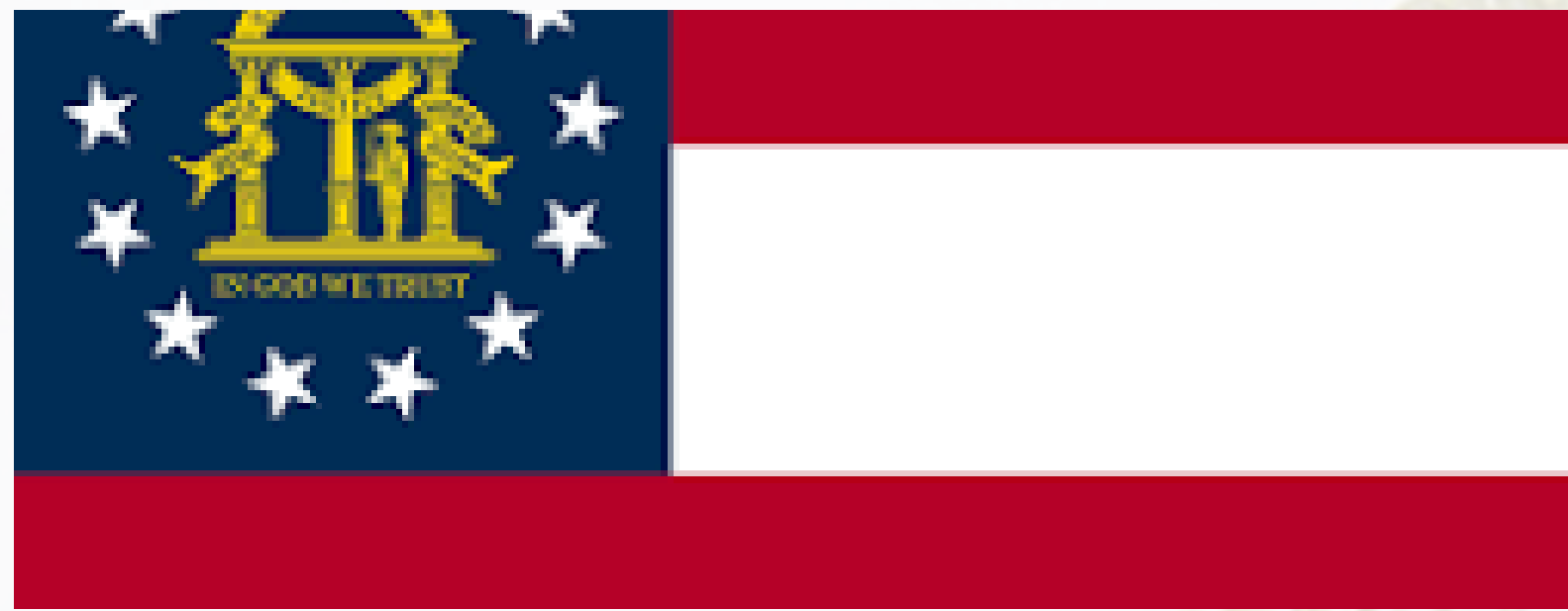
## 9TH IN BEAD FUNDING

**With broadband adoption slightly above the national average at 86%, Georgia has been investing in broadband expansion in the current wave since 2019's establishment of the Georgia Broadband Deployment Initiative, which has made particular use of public-private partnerships and close industry ties to improve coverage. To illustrate, various telcos sit on the state's advisory committees for broadband development and digital connectivity, including Verizon and Windstream.**

Between February 2022 and June 2023, over $660m was invested in reducing the 455,000 unserved locations in the state, which had already fallen by 30,000 or so since the previous year. Lack of middle-mile availability in rural areas is identified in the five-year plan as a serious barrier for ISPs to getting broadband out to underconnected areas – although a program of grants such as the $92m provided to Zayo in June 2023 and the 185-mile Northwest Georgia Middle Mile Broadband Backbone project are helping address this. This is one reason why 13% of households in the state do not have an Internet service currently.
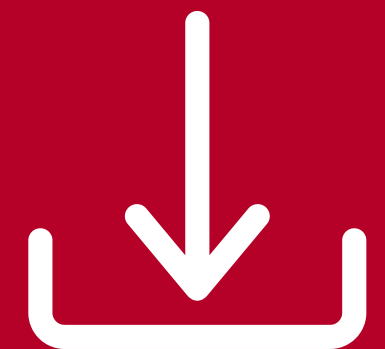
**TOTAL BEAD FUNDING**

$1,307,214,371.30

**UNSERVED LOCATIONS**

119,278

**UNDERSERVED LOCATIONS**

74,934

**BROADBAND ADOPTION**

86%

**DOWNLOAD THE GEORGIA FIVE-YEAR PLAN**

# FOCUS ON GEORGIA (CONT)

One interesting part of Georgia's broadband build landscape is the reforms implemented to improve right of way and access issues for digital infra providers, which are the bane of the existence of telcos in many states. Georgia's electricity network, for example, is mainly owned by cooperatives, and in 2020 Georgia's General Assembly passed a bill to implement a standardised fee structure between these cooperatives and CSPs to service infrastructure, with set access rates per pole. A similar agreement exists for access to railroads, with a flat fee replacing per-mile charging, and efforts are underway to do the same for road access. This will simplify BEAD-related buildouts, although as in many states there is a severe labor shortage, particularly for trench diggers where there is a 10% shortfall if all BEAD builds are to take place.

As with all states, Georgia's BEAD program at the top level aims to bring all currently underserved and unserved communities to full 100Mbps/20Mbps connectivity within five years, as well as delivering gigabit connections to 'community anchor institutions' that do not already have such connectivity. The situation with the latter group is poor in Georgia, with just 12 of 33 respondents saying 1Gbps service was available at their location. If funds remain after this has been achieved, focus will shift to addressing line extension challenges, upgrading internal wiring in blocks, and removing barriers to digital connectivity.

Although BEAD will provide $1.3bn of funding, the state's plan estimates up to $2.4bn will be required to achieve the objectives of bringing service to all remaining unserved and underserved locations. This means PPP and existing programs will be needed to plug the gap, of which there are no fewer than 25 in operation in the state. Alongside grants and programs for general buildouts, many programs relate to education and improving access for young learners – Georgia is one of few states to aim for a minimum speed per student, rather than per household or educational institution, meaning households with more than one learner are targeted for improved connections.

**TOTAL BEAD FUNDING**

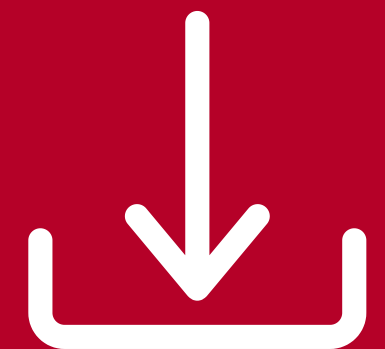**$1,307,214,371.30**

**UNSERVED LOCATIONS**

**119,278**

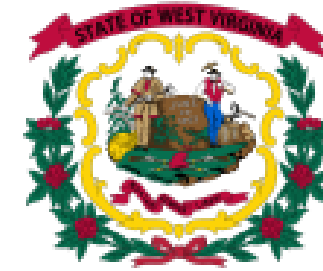**UNDERSERVED LOCATIONS**

**74,934**

**BROADBAND ADOPTION**

**86%**

**DOWNLOAD THE GEORGIA FIVE-YEAR PLAN**

# WEST VIRGINIA
## 11TH IN BEAD FUNDING

**TOTAL BEAD FUNDING**

**$1,210,800,969.85**

**UNSERVED LOCATIONS**

**271,623**

**UNDERSERVED LOCATIONS**

**45,604**

**BROADBAND ADOPTION**

**81%**

**DOWNLOAD THE WEST VIRGINIA FIVE-YEAR PLAN**

## What is the broadband landscape in West Virginia?

**West Virginia will receive £1.2 billion in funding to close its digital divide, and a glance at the statistics shows why.** Its percentage of locations with access to high-speed internet is this third lowest in the United States at 65%, and up to 57% of West Virginians would find broadband internet access unaffordable even if it were provided to them. Additionally, up to 97% of the state's population are covered by the Digital Equity Act. There are various reasons for this lack of coverage. These include a primarily rural population, terrain that is hard to build on, issues with permits, and a lack of open access middle mile – even though $40 million of middle mile grants have been received since 2022, multiple ISPs operate in West Virginia and FTTP providers generally do not lease their lines, which drives up prices and makes universal coverage harder. Additionally, the differences in service between counties is stark. To illustrate, broadband connectivity in Barbour County is 26%, while in Ohio County this figure is 97%.

## What will the BEAD 5-Year Plan cover?

West Virginia's strategy within BEAD to bring connectivity to 317,227 unserved and underserved addresses by 2029 focuses on expanding a grant process to fill the service gaps, with gigabit fibre-optic service preferred. The plan will also connect community anchor institutions by developing a parallel grant process, simplify the build environment by developing Dig Once policies (while progress has been made on this front, the sheer scale of upcoming builds require further easing of regulation) and improve how standards are communicated. On the digital equity side, efforts will focus on making connectivity more affordable and securing device access.

## Other connectivity programs and investments

Thanks to its existing West Virginia Broadband Investment Plan programs, the Mountain State already has a framework for delivering connectivity investments, and West Virginia has launched or participated in nine programs to invest in broadband infrastructure, the majority supported by federal funds.

# FLORIDA

### 13TH IN BEAD FUNDING
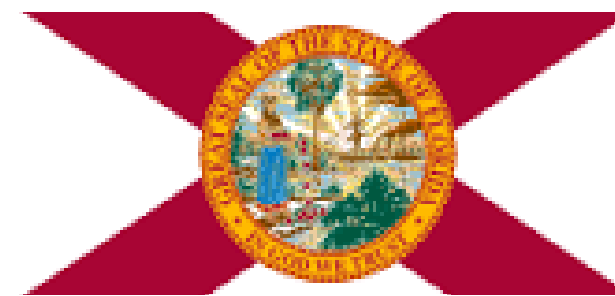
## What is the broadband landscape in Florida?

**Florida is a highly populated state, but without the broadband coverage to match.** This map (part of a presentation given at a recent broadband summit in the state) shows the swathes of territory currently classified as unserved or underserved, and the Florida Broadband Deployment Act of 2021 represented a large-scale effort to expand access. This has resulted in funds from sources like the ARPA and the US Capital Projects Fund being allocated to improve coverage, but barriers remain – notably a lack of detailed data on unserved areas, areas where broadband is available but take-up is low, and Florida state law currently restricting the use of funds from more than one source in the same area. Fixing this will be a priority if Florida's enormous broadband investment will succeed.

UNSERVED LOCATIONS

**267,199**

UNDERSERVED LOCATIONS
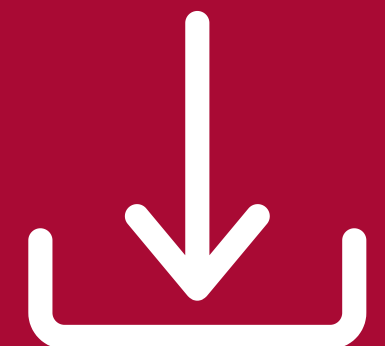
**138,027**

## What will the BEAD 5-Year Plan cover?

Florida's $1.17bn BEAD allocation, as detailed in the Sunshine State's 5-year plan, will focus sequentially on three aspects – availability, adoption, and use. The plan details the stated outcomes of the investment, with a focus on workforce development, education and healthcare, giving providers an idea of which project types are most likely to receive the support. In numerical terms, of the 7 million broadband serviceable locations in the state, 408,000 are eligible for BEAD funding, the majority in the central areas of the state. One specific aspect of the five-year plan is to attract multiple providers to deploy rural broadband Internet, in an attempt to encourage take-up that might be lacking rurally due to high costs of service.

BROADBAND ADOPTION

**74%**

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## Other connectivity programs and investments

The 2021 Broadband Deployment Act aimed to bridge the gap between the responsibilities of state and local-level stakeholders, looking to create a collaborative process between them. This involves deploying funds from various other initiatives, namely the Rural Digital Opportunity Find, the Connect America Fund, the ReConnect American Program, the Broadband Opportunity program, and the Broadband Infrastructure Program.

# PENNSYLVANIA
### 14TH IN BEAD FUNDING
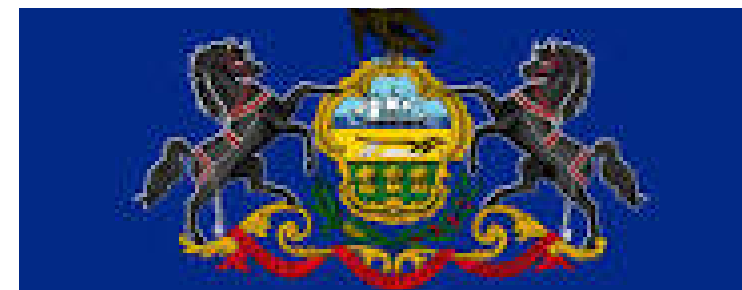
## What is the broadband landscape in Pennsylvania?

**While various programs and initiatives had been active prior to 2021, the foundation of the Pennsylvania Broadband Development Agency at the end of that year marked a new phase in expanding connectivity and digital equity in the Keystone State.** Ubiquitous connectivity in Pennsylvania is currently hindered by several factors affecting take-up by residents – there are over half a million households in the state that could subscribe to broadband but do not do so. The main reason for this, as identified by a PBDA fieldwork within the five-year plan, is the cost of packages, up to $70 per month in some cases, which are driven up by mandatory bundling by suppliers and high installation costs due to Pennsylvania's challenging geography, which are then passed on to consumers. A factor unique to Pennsylvania's connectivity landscape is a sprawling permitting system that slows deployment – the state comprises over 2,600 separate municipalities, and each of these have their own rules and governance relating to access (there is similar disparity in how railroad companies operate).

## What will the BEAD 5-Year Plan cover?

Pennsylvania's Five-Year Plan for spending its $1.16 billion BEAD funding grant, like that of most other states, prioritises connecting the 279,000 unserved locations and 54,000 underserved locations that are currently spread around Pennsylvania – due to the state's generally low population density, these areas are less concentrated than in other states. The second part of the plan involves driving up Pennsylvania's internet adoption and meaningful usage, primarily through improving affordability of services and supporting affordable connectivity programs. While fiber is the bedrock of the plan, Pennsylvania's BEAD deployment documentation includes a focus on "Exploring the value of alternate technologies in hard-to-reach areas, while considering existing and emerging alternatives to fiber", showing that creative technological solutions will be welcome among the state's decision makers for BEAD spending.

## Other connectivity programs and investments

Program interaction has improved substantially in Pennsylvania since the 2021 entry into law of the PDBA. There are currently five additional activities overseen by the state's broadband office, including driving ACP adoption, mapping underserved areas, and programs to deliver ARPA funding.

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# WISCONSIN
16TH IN BEAD FUNDING

## What is the broadband landscape in Wisconsin?

**Wisconsin's connectivity map is imbalanced, and fixing this is a priority of the state's efforts in the coming years.** The state's overarching connectivity plan focuses on hooking up underserved and unserved locations, which are mainly located in pockets in the east and north-east of Wisconsin. As a result, the state aims to have all its households connected to 100MB/20MB broadband by 2029. BEAD funding is already leading to activity in the state's connectivity sector – Nokia announced in August 2023 a partnership with Sanmina Corporation to produce fibre-optic material in Wisconsin specifically for use in the BEAD program.

## What will the BEAD 5-Year Plan cover?

Wisconsin's BEAD allocation is $1.05 billion, and according to its five-year plan the amount will be primarily spent on meeting this end-of-decade goal to provide ubiquitous connectivity in the state – and according to the document, 'fibre should be prioritised'.  As with several other states suffering from brain drain and rural flight, a large part of the plan focuses on upskilling and training, particularly at the higher education and technical college level.

## Other connectivity programs and investments

The other connectivity programs running in Wisconsin, including enabling middle-mile and the Digital Equity plan, are broadly united around the main goals of the state's connectivity plan. One interesting aspect of Wisconsin's planning is a focus on 'data before deployment' – opening opportunities in the state for suppliers that specialise in planning technology and visualisation.

# OHIO

25TH IN BEAD FUNDING
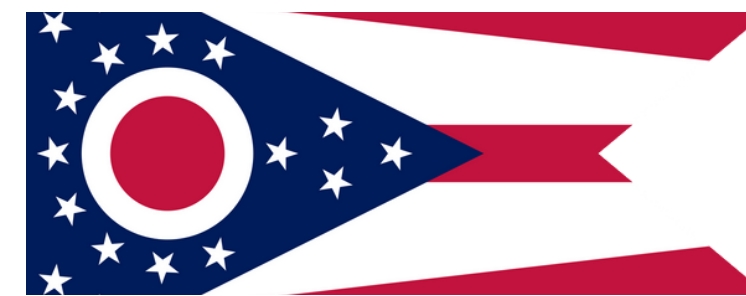
## What is the broadband landscape in Ohio?

**Ohio is a geographically varied state, and this is reflected in the state's connectivity and broadband availability map.** While the share of unserved and underserved locations is relatively low at 7%, these are concentrated in certain areas – for example, 61% of all unserved locations are in the Appalachian region of the state. The adoption map is similarly skewed, with a large chunk of non-subscribed households located in a handful of the state's counties. Since BroadbandOhio was formed in 2020, the state has deployed half a million dollars in state funds, but gaps remain – middle mile distance from premises is a particular issue, as is affordability of packages and low digital literacy.

UNSERVED LOCATIONS

188,000

UNDERSERVED LOCATIONS

144,000

## What will the BEAD 5-Year Plan cover?

Addressing the challenges, both technological and social, is at the heart of the Ohio five-year plan, which is divide into infrastructure buildout, digital empowerment, and encouraging participation in the modern economy. The program focuses on several aspects that pose a threat to closing the digital divide in the state – particularly middle mile networks (where the plan foresees both an expansion of the middle mile network and a 5-8% reduction in its cost), last-mile infrastructure deployment, and reducing the cost and difficulty of the permitting process, particularly railroad crossings. With affordability of subscriptions also a problem (22% of subscription-less Ohio residents cite cost as a factor), the state will also develop a $30 tariff for residents eligible for ACP support. In terms of dealing with the challenging terrain of connecting the Appalachian regions of the state, the plan will target middle-mile deployment, subsidise last-mile buildout taking community preference into account, and offer low-interest loans to service providers to incentivise buildout.

BROADBAND ADOPTION

86%

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## Other connectivity programs and investments

There is an estimated cost of $1.6 billion to connect all currently unserved and underserved Ohio addresses, and $370 million of this has already been spoken for by Rural Digital Opportunity Fund (RDOF), Connect America Fund Phase II (CAF II), and other schemes. In general, Ohio has many state-driven schemes compared to other states in this guide, including programs to boost 5G uptake, telehealth, and connectivity for the agricultural sector to implement smart farming.

# NEW YORK

## 28TH IN BEAD FUNDING

## What is the broadband landscape in New York?

**Development in the public broadband sector in New York has a long history.** The Broadband Program Office founded as far back as 2008 to improve Internet services to the state. Recently, attention has been focused on ConnectALL, a $1bn+ initiative launched in 2022 to transform the state's digital infrastructure via investment to deliver affordable and equitable Internet access to the state. The plan is ambitious in scope – for example, affordable housing owners can upgrade and install high-speed broadband free of charge, and ISPs can apply for grants to carry out that work. The scheme aims to address connectivity inequalities in the Empire State, which is highly varied economically and geographically, and clear up the 3.5% of locations that are unserved (149,343) or underserved (36,635), mainly in rural areas in the north and west.

## What will the BEAD 5-Year Plan cover?

The $664 million of BEAD funding allocated to New York, as per the state's five-year plan, will aim to connect all households to broadband infrastructure by 2030 and expand rural cellular coverage. A key part of the plan is improving choice, with the plan looking to provide 100,000 households in affordable and public housing with 'improved broadband quality, affordability and choice' by 2030 – a focus on market diversification not often found in the state five-year plans released so far. Equity is another large focus area – while 97% of New Yorkers have access to not one but two wired or fixed wireless ISPs, 13% of the state's households do not subscribe to any of them, with vulnerable communities and ethnic minorities over-represented in this figure. Expanding competition through additional buildouts will be an important part of the BEAD plan, as will the use of public-private partnerships.

## Other connectivity programs and investments

The BEAD five-year plan forecasts a $2.2bn cost to connect unserved and underserved locations, necessitating 18,036 miles of new fibre build. As BEAD funding does not cover this, the state will integrate its BEAD-related efforts into existing programs. 11 such programs are currently in operation, most related to ConnectALL, although there is a Department of Transportation program in place to make it easier for installers to gain permits to physically access and work on the areas needed to install hardware.

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# SOUTH CAROLINA 32ND IN BEAD FUNDING

## What is the broadband landscape in South Carolina?

**As of December 2022, South Carolina was standing at around 92% of its dwellings connected to fiber or cable broadband, with the unserved and partially served regions mainly in the northern areas of the Palmetto State.** Improving connectivity in South Carolina faces several roadblocks which were identified partially through a survey of 13,000 state residents in early 2023. The two priority issues to remedy are affordability and the lack of actual physical connection, which goes some way to explaining a broadband adoption rate several percentage points below the national average. Other issues that hold back more widespread and equitable broadband access in the state are problems with permitting, particularly along railway lines, with the state broadband office recommending the development of a 30-day 'shot clock' for permit reviews, ideally written into state legislation in a similar way to Virginia and Wisconsin.

## What will the BEAD 5-Year Plan cover?

South Carolina's BEAD Five-Year Plan is currently unavailable on the state broadband website, but the 2023 Annual Report from the South Carolina State Broadband Office is available to view (see the right-hand column of this page, and goes into detail regarding the areas of development BEAD funding will prioritize. One of these is a Dig Once policy, something required anyway to receive BEAD funding, as well as expansion of the state's workforce to deal with the upcoming influx in permitting requirements.

## Other connectivity programs and investments

State data shows that South Carolina's previous broadband project funding is well balanced, with state, private and federal spending each accounting for roughly a third of the investment dollars into the state's connectivity. Of the circa $1bn in state and federal broadband funding, around half is allocated for by the BEAD program, and over $200 million from the American Rescue Plan Act. Funding has to date been allocated to 23 ISPs, both nationwide and state-only, with AT&T, Brightspeed, Spectrum and TruVista all among the recipients.
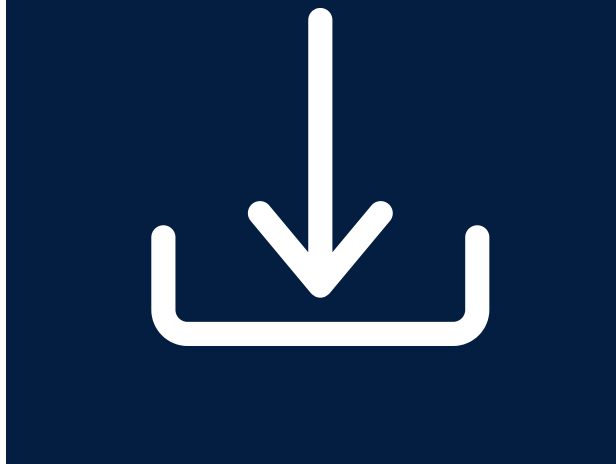
# MAINE

40TH IN BEAD FUNDING

## What is the broadband landscape in Maine?

**Maine is a large, sparsely-populated state with challenging geography for connectivity providers – so closing its digital divide will take a lot of work.** Over 14% of the state's locations lack access to 100/20 service, primarily in the centre of the state. This figure is higher than most other states in this guide – although Maine's five-year plan looks to build on the state's impressive history of community connectivity initiatives (here's an example) and aim for 100/100 connection as part of BEAD implementation. Current challenges that suppliers will need to overcome are both topological and consumer-related. 40% of Mainers are currently dissatisfied with their broadband connection and 47% have difficulty paying their bill energy month. There is also a forecast 3,400-person workforce shortage.

## What will the BEAD 5-Year Plan cover?

Maine's BEAD deployment is a tough ask given 1 in 7 of the state's households needs to be covered under the plan. This has resulted in a focus on prioritisation and decision-making on which addresses to go for first, as well as optimising deployment and a focus on affordability given the bill struggles Mainers face. The plan is notable in that is foresees a large state presence in funding and activities – "private investment alone has proven insufficient", the document says – and middle mile will be an important focus, with Maine developing a new and expanded network, packed with CPF funding, to support home passings as part of BEAD.
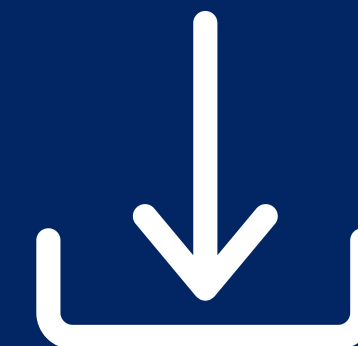
## Other connectivity programs and investments

BEAD will operate alongside substantial existing middle mile development, and the plan will make use of Maine's numerous community and residential initiatives by providing transparent data and technical assistance. Other programs in operation include a drive to increase ACP awareness, which is low in the state, an assistance programme for broadband utility districts, and a range of schemes to connect rural locations that will be integrated to a greater or lesser extent with BEAD efforts.

# MARYLAND

41ST IN BEAD FUNDING

## What is the broadband landscape in Maryland?

**Maryland's broadband adoption rate currently stands at 79%, which is a few percentage points above the national average.** This has been helped by the 2021 launch of the Connect Maryland initiative, which set aside $400 million for the twin foci of infrastructure build-out and digital inclusion efforts - $270 million of which had been spent by April 2023, including on middle mile initiatives like the Inter-Country Broadband Network. Factors specific to Maryland when it comes to improving connectivity are more urban disconnection than other states – two third of disconnected Marylanders live around Baltimore or in the metro areas of other cities – and an high average package cost, with 66% of all households paying more than $80 a month for their subscription. While a state $15 package subsidy has helped, affordability is a big threat to digital inclusion in the Old Line State.

## What will the BEAD 5-Year Plan cover?

Maryland's underserved and unserved address count currently stands at 32,006, and the state's Five-Year Plan estimates it will require around $480 million to deliver a FTTH passing to each of them. As the Connect Maryland initiative has already made considerable progress in widening connectivity, picking off the low-hanging fruit, the remaining addresses are in hard-to-access areas – particularly various islands in Chesapeake Bay, including one with 238 residents but which is only accessible by boat.

## Other connectivity programs and investments

Alongside Connect Maryland, there are various other programs in operation in the state, including the Maryland Emergency Broadband Benefit Program that delivers the above-mentioned $15 subsidy, a grant program to help ISPs with their federal funding applications, and – not often seen in state programs – a drive to provide 145,000 devices to low-income households.

UNSERVED LOCATIONS

21,751

UNDERSERVED LOCATIONS

10,255

BROADBAND ADOPTION

79%

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# NEW JERSEY
### 42ND IN BEAD FUNDING

## What is the broadband landscape in New Jersey?

**New Jersey is a highly connected state in general –** only 3% of locations in the state are classified as unserved or underserved. Most of them in the North Jersey area, although adjusting for population South Jersey is less connected. However, an additional 7% of the population do not subscribe to terrestrial broadband even though it is available to them, a figure which rises to 34% of households in the $20k per year and under household income bracket. Reasons for this mainly centre on a lack of digital skills – even after a growth in knowledge post-Covid, 30% of respondents to one survey said they were unconfident judging whether online content was trustworthy or not.

UNSERVED LOCATIONS

43,324

UNDERSERVED LOCATIONS

29,212

## What will the BEAD 5-Year Plan cover?

New Jersey's BEAD delivery program will be coordinated by the recently established Office of Broadband Connectivity, which will prioritise the connection of the state's 72,536 unserved and underserved locations by 2029. As well as driving adoption of broadband through building digital skills, an aim common to most five-year plans, New Jersey's plan stands out in that it puts a particular focus on building the state's relationships with its community partners, residents, and industry players.

BROADBAND ADOPTION

90%

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## Other connectivity programs and investments

New Jersey's broadband officers have been prioritising getting a clear picture of where the gaps are in recent years, including through the New Jersey State Broadband Survey, launched in November 2022, and various working groups to investigate digital equity. Funding for connectivity in the state includes $25 million for middle-mile development –unspent as of November 2023 – and over $150 million from the Emergency Connectivity Fund, which provides connectivity to schools and libraries.

# NEW HAMPSHIRE
### 40TH IN BEAD FUNDING
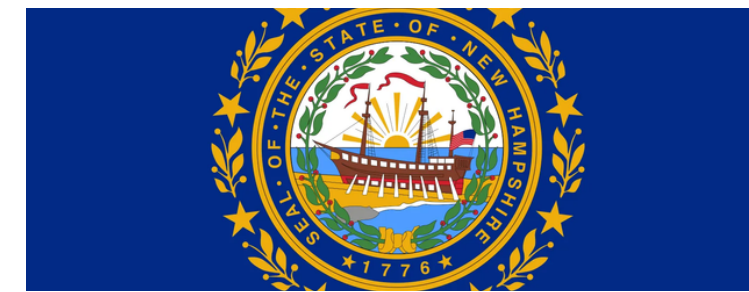
**TOTAL BEAD FUNDING**

**$196,560,278.97**

**UNSERVED LOCATIONS**

**26,123**

**UNDERSERVED LOCATIONS**

**10,153**

**BROADBAND ADOPTION**

**92%**

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## What is the broadband landscape in New Hampshire?

**New Hampshire is large and challengingly-terrained, fitting its nickname of the Granite State, and its northerly location means connectivity providers do not have long to get shovels in the ground before work is snowed off.** Combined with low population density in rural areas, it is highly impressive that broadband connectivity is available to 93% of locations in the state. Eliminating all unserved and underserved areas is the aim of the state by 2029, and BEAD funding will combine with various existing programs to achieve this.

## What will the BEAD 5-Year Plan cover?

New Hampshire's $196 million of BEAD funding is being put to bringing all 36,000 currently unserved and underserved locations to full 100/20 connectivity, with a stretch goal of extending this to 100/100 service. Other targets in the working draft of the state's BEAD plan include bringing household broadband adoption rate from 92% to 96%, growing ACP enrolment in eligible households from 19% to 25%, and ensuring that 96% of households possess an internet-capable device, a figure that currently stands at 94%.

## Other connectivity programs and investments

BEAD funding will dovetail with 17 other sources of funding for the state, most of them New Hampshire's share of federal funding programs such as the CARES Act and the American Rescue Plan Act. New Hampshire received $11 million in 2022 to expand its existing middle mile network, although a larger $26 million bid by the state's Grafton County for a new 353-mile middle mile network was turned down by the NTIA in August 2022.

# MASSACHUSETTS 48TH IN BEAD FUNDING

## What is the broadband landscape in Massachusetts?

**Massachusetts has been ahead of the game when it comes to broadband investments to close the digital divide.** Since 2016, the Bay State's administration, via the Massachusetts Broadband Institute, has invested in a 1,200-mile middle-mile fibre network to bring connectivity to unserved and underserved communities in the western and central parts of the state, and additional funding via the American Rescue Plan Act and the BEAD program will build on this existing work. Remaining challenges to improving general connectivity for the state, identified in the Internet for All plan, include high internet subscription costs and poor internet quality in some areas.

## What will the BEAD 5-Year Plan cover?

Relative to its population size, Massachusetts has one of the lowest BEAD funding grants of the states covered in this guide. One reason for this is the strong existing framework and progress on connecting its communities, and Massachusetts' initial proposal for spending its $147 million BEAD allocation is mainly focused on scaling up its existing programs and investment. However, several new areas will be created with the funding, including a Front Door program to troubleshoot connectivity issues and training digital navigators to do the same.

## Other connectivity programs and investments

As covered above, the Commonwealth is already well on its way to improving general connectivity. Its availability rate currently stands at over 98%, and existing programs are focused on clearing up these last couple of percentage points. The Last Mile Infrastructure Grant Program is one such initiative – as of November 2023, over 40 of 53 eligible Last Mile towns had been provided with fully operational 25Mbps/3Mbps networks.

# CONNECTICUT

### 49TH IN BEAD FUNDING
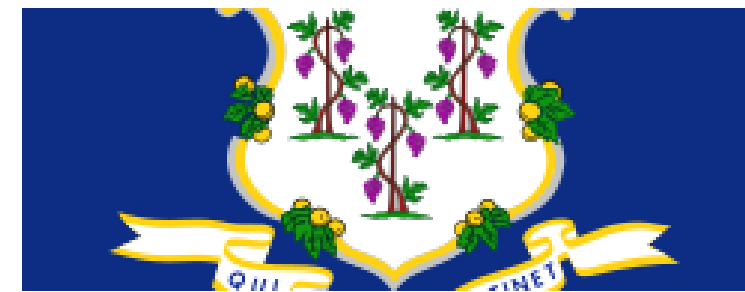
## What is the broadband landscape in Connecticut?

**Connecticut has made impressive progress in bolstering its connectivity in recent years.** Its longstanding economic base – with a particularly large number of insurance firms – has driven infrastructure investment and cloud take-up in recent years. And on the consumer side, high-speed internet penetration is moving healthily, with a 20% rise in households connected to 1Gbps/100Mbps services over just the first seven months of 2022. There is also a strong executive framework to manage upgrades statewide, with an equitable broadband act passed in the Constitution State in 2021.

## What will the BEAD 5-Year Plan cover?

Given its healthy connectivity base (only 1.5% of locations in the state are classified as unserved or underserved, which BEAD funding will prioritise, and there is an 87% broadband adoption rate), Connecticut is aiming high with its BEAD 5-year plan. BEAD will interact with various other programs to meet a general goal of 1Gbps/100Mbps connectivity, with a focus on delivering public Wi-Fi – Connecticut has two purpose-built statewide networks with 1,000 points of presence across the state, and the $144 million of BEAD funding will be partially used to improve this common infrastructure. In terms of improving connection to unserved and underserved areas, this will focus on rural areas in the eastern part of the state where most of the 10,000 such locations are found.

## Other connectivity programs and investments

Connecticut's other broadband access and connectivity initiatives include $40 million of funding made available via the 2021 American Rescue Plan Act. Like BEAD, this will be targeted at improving broadband infrastructure, and focus on adding public locations like municipalities, schools and libraries to the Connecticut Education network, one of the state's two public networks.

# Discover more about BEAD opportunities at Metro Connect 2024

The 23rd annual Metro Connect USA will take place on 26 - 28 February, 2024, at Fort Lauderdale Marriott Harbor.
This premier event unites leadership teams across the US fiber market, including metro, lit, dark fiber, long-haul, subsea, fiber to the home, and fixed wireless access, as well as data centers, cloud providers, wireless communications infrastructure providers, and their investors.

Metro Connect USA is the most important annual touch point for the US digital infrastructure community to renew agreements, build new partnerships, agree financing and M&A deals, and learn about the future state of the industry.

## 26-28 Feb, Marriott Harbor, Fort Lauderdale FL

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