Massachusetts Broadband Strategic Plan

EXECUTIVE OFFICE OF

HOUSING AND ECONOMIC DEVELOPMENT

MBI

MASSACHUSETTS BROADBAND INSTITUTE

at the MassTech Collaborative

Massachusetts Broadband Strategic Plan

Table of Contents

1. Introduction

The Massachusetts Broadband Strategic Plan (Broadband Plan) seeks to highlight the deep focus and investment by the Baker-Polito Administration to deploy broadband and provide internet access, and details new and expanded programs that the Commonwealth is launching at this key moment to bridge the digital divide in all areas of Massachusetts.

For years, the Commonwealth has focused on broadband infrastructure deployment in unserved and underserved towns in central and western Massachusetts through its "Last Mile" Program. However, the COVID-19 pandemic exposed and amplified other barriers to broadband access and adoption in all parts of the Commonwealth, including: the lack of affordable reliable service; the inability to purchase a connected device; and the absence of skills to effectively use the internet and device (referred to as digital literacy). The Commonwealth moved swiftly to address some of these concerns by expanding its WiFi hotspot program and establishing digital equity partnerships. Now, there is an opportunity to build upon the proven broadband deployment models developed by the Baker-Polito Administration, as an unprecedented amount of federal broadband funding will come to the state through sources such as the American Rescue Plan Act (ARPA) and the Infrastructure Investment and Jobs Act (IIJA). Because of the strong foundation of broadband deployment to date, combined with new sources of funding, the Commonwealth of Massachusetts has a once in a generation opportunity to close the digital divide for all residents of the Commonwealth in a transformative way. Both the physical infrastructure and the barriers to access and use will be addressed in this Plan as funding is deployed to tackle both of these key issues.

This Broadband Plan will be updated periodically to reflect the Commonwealth's continuing progress in its wide-ranging investments, and as federal spending and grant plans are approved by the appropriate federal agency.

1.1 What is Broadband?

Similar to roads and highways, the internet connects homes, businesses and government offices to each other and around the world. High-speed internet is critical to the flow of commerce, communications, government services, and information of all kinds. As a result, it is quickly becoming essential to participation in daily public life.

Broadband is high-speed internet access that is always on and is independent of network hardware and technologies used. The definition of broadband speed has and will continue to change over time as technology needs evolve.

Broadband speeds are:
- Currently defined by the Federal Communications Commission (FCC) as capable of download speeds of at least 25 Mbps (megabits per second) and upload speeds of at least 3 Mbps; but
- Defined in many new federal funding opportunities with minimum requirements for download speeds of at least 100 Mbps and upload speeds of 20 or 100 Mbps.

Internet infrastructure includes:
- Wireline technologies, such as coaxial and fiber-optic cable; and
- Wireless technologies, such as fixed wireless, 5G mobile wireless and satellite.

Broadband is the basic foundation needed for reliable access to digital resources. It is imperative that this access is provided to residents across the state.

1.2 Digital Equity and Why Does it Matter?

The COVID-19 pandemic has brought heightened attention to the importance of broadband access and adoption in almost every facet of daily life. Access to affordable broadband service is no longer considered a luxury, but an essential utility. The need for broadband in the 21st century is often compared to the need for electricity or phone service in previous centuries. Achieving digital equity in the Commonwealth is a critically important goal for our future prosperity.

> *"The influence and dominance of broadband in today's society has become so complete that it is now considered essential infrastructure." (Brookings Institution 2020)*

According to the National Digital Inclusion Alliance (NDIA), "Digital Equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and

economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services."

The lack of digital equity impacts our society in profound ways – hindering our citizens' access to economic prosperity, health care, educational attainment, and civic and social engagement.

Economic Prosperity

- More than a third of Americans without internet service have difficulty creating professional resumes, contacting an employer via email, or filling out an online job application. (Source: **Pew Research Center**)
- As far back as 2012 more than 80% of Fortune 500 companies were only accepting job applications online. Job seekers without broadband connections are therefore left at a disadvantage compared to their digitally equipped peers. (Source: **FCC**)
- For middle-skill jobs that offer family-sustaining wages, the vast majority of positions now require the ability to operate a computer, access the internet, and use spreadsheets and word processing software. (Source: **Urban Institute**)
- Many small business owners, particularly in low-income neighborhoods do not have a business email or a web presence and cannot process credit card transactions.

Health Care

- Literacy with electronic healthcare (eHealth) improves patient outcomes. Patients with access to their providers and medical records through online portals are more engaged in their care and have better treatment outcomes. (Source: **American Medical Informatics Association**)
- Telehealth breaks down the barriers low-income patients face accessing care and leads to fewer canceled medical appointments. (Source: **BMC Health Services Research**)

Education

- Nearly one-quarter of parents in the Commonwealth's **Gateway Cities**, "midsize urban centers that anchor regional economies around the state," reported difficulty using the computer systems required for remote learning. (Source: **MassINC**)
- Residents of Gateway Cities are twice as likely to not use email, which is a measure of basic digital literacy. This means that approximately 14,000 Gateway City households with school-age children have at least one adult who may need digital literacy training and assistance. (Source: **MassINC**)

Civic & Social Engagement

- Access to broadband increases the likelihood that citizens will vote and engage with the government.
- Email, social media, and other sharing platforms enables the elderly, disabled, and those living in remote areas to escape social isolation – a known trigger for depression and a decline in health.

The issues listed above are concerning for social, wellbeing and economic reasons and the Baker-Polito Administration is committed to closing the digital divide and ensuring digital equity for all residents.

1.3 Coordination and Leadership

The Massachusetts Broadband Institute (MBI) is the central broadband office for the Commonwealth of Massachusetts. MBI was created by the legislature in Chapter 231 of the Acts of 2008, An Act Establishing and Funding the Massachusetts Broadband Institute (the "Broadband Act") and the Institute's organizing statute (Chapter 40J, Section 6B), states that *"[t]he first priority of the institute shall be to assess and improve conditions in the commonwealth's communities that have no broadband access."* Today, MBI continues the mission to address unserved areas of the state and its mission has expanded to include economic recovery projects statewide, including subsidy programs to assist unemployed job seekers address technology barriers and to expand public connectivity options.

MBI is overseen by an independent nine-person Board of Directors, chaired by the Secretary of the Executive Office of Housing and Economic Development (EOHED). The MBI Board of Directors approves major funding allocations of state bond funds and shapes MBI's activities. In addition, MBI works closely with the Commonwealth's executive offices,

state legislature, municipalities, broadband service providers, and other key stakeholders to address the digital divide in Massachusetts.

MBI is one of five primary divisions of the Massachusetts Technology Collaborative (MassTech), an independent public instrumentality of the Commonwealth chartered to strengthen the competitiveness of the technology and innovation economy by driving strategic investments, partnerships, and insights that harness the talent of Massachusetts. MassTech, governed by its own Board of Directors, brings together leaders from industry, academia, and government to advance technology-focused solutions that lead to economic growth, job creation, and public benefits in Massachusetts. The Board of Directors of MassTech also approves all major funding allocations.

MBI serves as a trusted advisor and independent source of expertise on broadband issues for state policy makers. The MBI Director served as a member of the legislative Broadband Equity Commission and he provides broadband briefings to a variety of organizations including the Future of Work Commission; the Broadband Equity Commission; the Joint Committee on Advanced Information Technology, the Internet and Cybersecurity; and the Massachusetts Rural Policy Advisory Commission.

The Commonwealth's Broadband Plan describes key programs and initiatives that harness the collective expertise and collaboration among a variety of state entities, including the Massachusetts Broadband Institute, the Executive Offices of Housing and Economic Development, Health and Human Services, Administration and Finance, Technology Services and Security, Elder Affairs, and the Department of Elementary and Secondary Education. Ongoing coordination of efforts among state entities and engagement with stakeholder groups will continue to be a high priority for the Commonwealth.

1.4 Vision for Broadband and Digital Equity

The Commonwealth's broadband infrastructure and digital equity strategy is informed by its experience in bringing broadband connectivity to unserved towns in western and central Massachusetts, and in addressing the digital equity challenges that have been exacerbated by the COVID-19 pandemic. The strategy involves these four pillars:

1. **Extend and Improve Broadband Access and Infrastructure**
   Investments in reliable infrastructure where it's lacking, which may be found in pocket locations along town edges, low-density areas, and low- income urban neighborhoods.
2. **Reaching Target Populations through Partnerships**
   Best practice from the Mass Internet Connect implementation experience is that it is vital to have a distribution partner trusted in the community with the ability to reach the target population and deliver support on devices, subsidies, and digital literacy training.
3. **Digital Literacy**
   Go beyond connectivity by providing the necessary digital and computer skills for vulnerable populations. More than one out of four participants in the Mass Internet Connect program with MassHire has requested Digital Literacy support.
4. **Adoption and Affordability**
   Getting devices to people who need them, and directing consumers to broadband service subsidies and low-cost service options.

As the programs and uses of federal and state investment into broadband are outlined in the pages of this Plan, these pillars will guide those investments to ensure that access and opportunity is given to those who need it the most across the Commonwealth. Details of the Commonwealth's prior broadband investments and identification of future investment funding streams is provided in an Exhibit to this Plan.

2. Broadband Infrastructure

2.1 Investments to Date

MBI has been working with EOHED to address the digital divide and many of MBI's investments have been targeted toward the development of infrastructure in the unserved areas of western and central Massachusetts, but also include support for communities, organizations, and providers statewide.
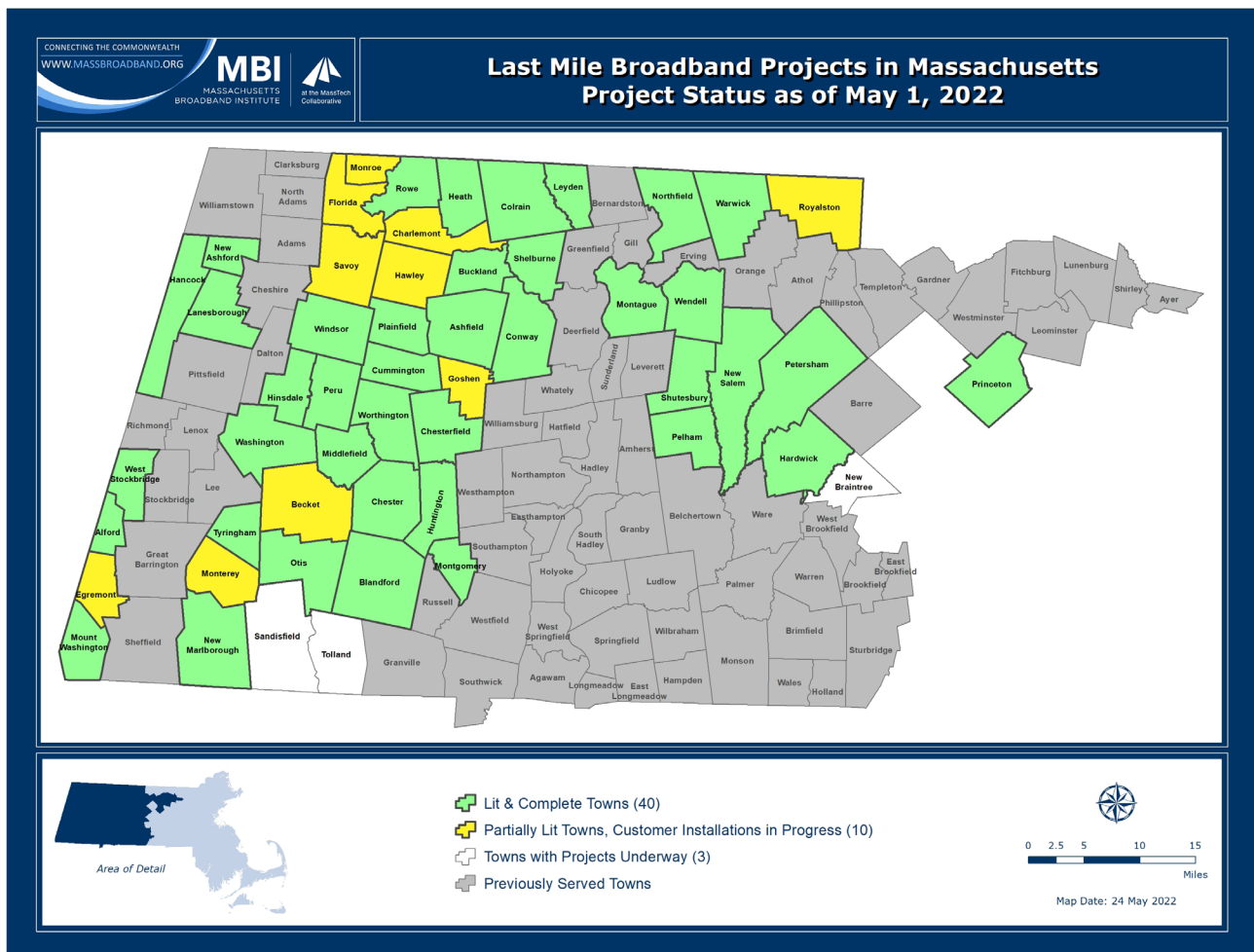
2.1.1. Last Mile Infrastructure

In 2016, Governor Baker and Lieutenant Governor Polito, EOHED and MBI built a flexible framework that would help all 44 unserved Last Mile towns in western and central Massachusetts achieve broadband access, allowing for a range of project models, including multi-town collaborations, locally-owned networks, and public-private partnerships. Project models allowed for many technology and operational choices, as long as they met core speed, affordability, and sustainability standards.
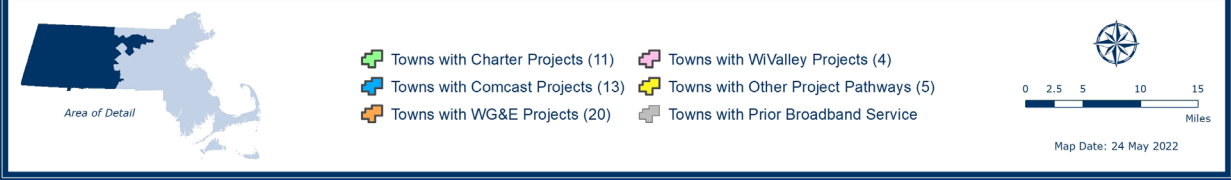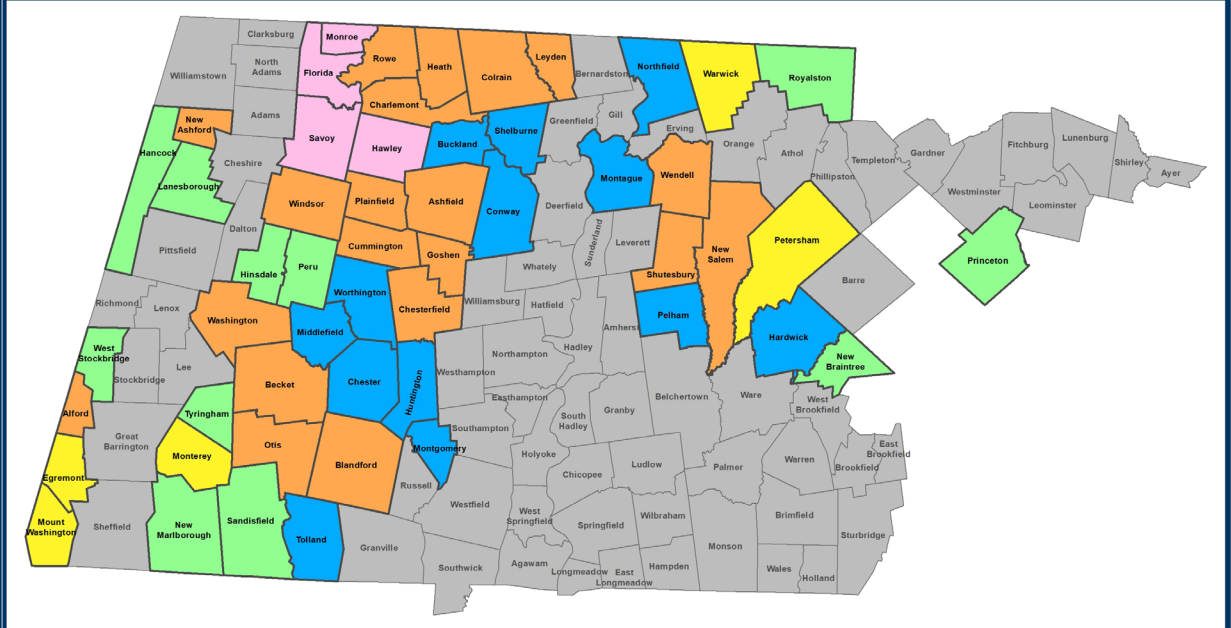
The Commonwealth and EOHED launched the Last Mile Infrastructure Grant Program for Last Mile towns that were seeking to build a municipally-owned broadband network. MBI administers the Flexible Grant Program that provides grants to private providers to build, own and operate broadband networks in Last Mile Towns.

MBI and EOHED have provided and continue to administer grants to deploy Last Mile networks in 44 unserved and nine underserved communities in western and central Massachusetts that lacked access to broadband service that met the FCC definition for broadband (25 Mbps download/3 Mbps upload speeds). The Baker-Polito Administration has invested approximately $58 million to support broadband infrastructure in its Last Mile towns.

As of May 1, 2022, 40 of 53 eligible Last Mile towns have networks that are fully operational, ten have networks that are partially operational and serving some customers, and three have projects underway.

The maps below are snapshots of the status of the Last Mile Town projects as of May 1, 2022. For more up-to-date information visit the **MBI Last Mile Programs** web page.

Towns with Charter Projects (11)   Towns with WiValley Projects (4)
Towns with Comcast Projects (13)   Towns with Other Project Pathways (5)
Towns with WG&E Projects (20)   Towns with Prior Broadband Service

Area of Detail

0   2.5   5   10   15
                                Miles

Map Date: 24 May 2022

2.1.2 New Municipal Last Mile Fiber Networks

EOHED administers the Last Mile Infrastructure Grant Program for eligible unserved towns that sought to build a municipally-owned broadband network. The program supports 21 formerly unserved municipalities in the design and construction of Fiber-to-the-Premises (FTTP) networks. Each municipality has or will bring new residential broadband services to a minimum of 96% of homes in their community.

EOHED has committed over $29 million in direct grants from the Commonwealth to support approximately 40% of the design and construction costs with the balance of funding provided by the municipalities through long-term debt financing. MBI also committed approximately $1.3 million in direct grants to support the upgrade of a municipally-owned fixed wireless network in Warwick and the construction of a FTTP network in Petersham with a hybrid ownership structure.

Alford	**Chesterfield**	**Leyden**	**Petersham**	**Wendell**
Ashfield		**Mount Washington**	**Plainfield**	**Warwick**
	Colrain Cummington			
Becket*		**New Ashford**	**Rowe**	**Windsor**
	Goshen*			
Blandford		**New Salem**	**Shutesbury**	
	Heath			
Charlemont*		**Otis**	**Washington**	

Denotes a town with network construction still in progress as of May 1, 2022.

Prior to the launch of the Commonwealth's Last Mile grant programs, MBI provided grant funding for the Town of Leverett's pioneering, municipally-owned Fiber-to-the-Home broadband network. Leverett's broadband network was the first municipally-owned network to connect to the MassBroadband 123 middle mile network and served as a

model for other towns that subsequently moved forward with municipally-owned broadband networks.

2.1.3. New Private Provider Last Mile Networks

MBI has committed approximately $23.3 million in direct grants to four broadband service providers to assist 21 formerly unserved municipalities to build cable, fiber-optic, or fixed wireless networks. These networks have or will make service available to a minimum of 96% of premises in each town. Eleven of the 21 project were complete as of May 1, 2022.

Egremont*	Lanesborough	New Braintree*	Sandisfield*	Worthington
Florida*	Middlefield	New Marlborough	Savoy*	
Hancock	Monroe*	Peru	Tolland*	
Hawley*	Monterey*	Princeton	Tyringham	
Hinsdale	Montgomery	Royalston*	West Stockbridge	

Denotes a town with network design, make-ready or construction still in progress as of May 1, 2022.

2.1.4. Last Mile Network Extensions

MBI invested $4 million in the Broadband Extension Program to extend broadband access to previously unserved homes in nine underserved municipalities in Western and North Central Massachusetts. These communities were partially served by broadband service but had significant gaps in coverage. Existing cable infrastructure was extended to make broadband service available to more than 1,300 previously unserved residences and businesses, bringing the overall coverage level in each of the nine municipalities to 96% or above. The project was completed in August 2018. The 96% target was the result of a statewide cable mapping project in 2014 and 2015, which estimated the median town coverage in the state to be 96% based on data available to MBI at that time.

Buckland	Conway	Huntington	Northfield	Shelburne
Chester	Hardwick	Montague	Pelham	

2.1.5. Middle Mile Infrastructure

In 2009-2010, Massachusetts committed to invest state matching funds to leverage federal funds available through the Broadband Technology Opportunities Program (BTOP) administered by the National Telecommunication and Information Administration (NTIA). These awards supported the construction of two open access middle mile networks in the Commonwealth.

2.1.6. MassBroadband 123 Network

MBI built and owns a 1200-mile fiber optic cable broadband network, called MassBroadband 123, which connects 123 communities in western and north central Massachusetts to the internet. It is an open access, carrier grade middle mile broadband network operated through a contracted Network Operator. MBI constructed the network in 2013 and 2014 to serve as a building block for region. The MassBroadband 123 service territory encompasses more than one-third of the geographic area of Massachusetts, depicted in the map on the following page with the network route. The project was funded with $44.3 million of state funds and $45.4 million in funds through the federal BTOP grant program.

The network is generally comprised of a main loop throughout western and north-central Massachusetts, with smaller loops into key parts of the service area. Additional third-party leased fiber routes connect MassBroadband 123 to Boston from Springfield and Ayer, MA. The service area is predominantly located in a rural region where, at the time that MassBroadband 123 went live in February 2014, there were numerous towns in the network footprint that either had substantial gaps in access to service meeting FCC broadband standards or were completely unserved with no incumbent broadband provider.

MassBroadband 123 provides wholesale services to local Retail Service Providers (RSP) that offer consumer services in the region. Many municipally- and commercially-owned broadband last mile networks have and continue to be developed with state grant funds that are connecting to the middle mile network.

MassBroadband 123 directly connects with approximately 1,100 Community Anchor Institutions (CAI) in the service area, which include federal, state and local government buildings; schools and universities; libraries; hospitals and healthcare facilities; public safety facilities; and wireless communications towers. Public safety CAIs also include police and fire stations, as well as e911 public safety answering points (PSAP) and Emergency Operations Centers (EOC).
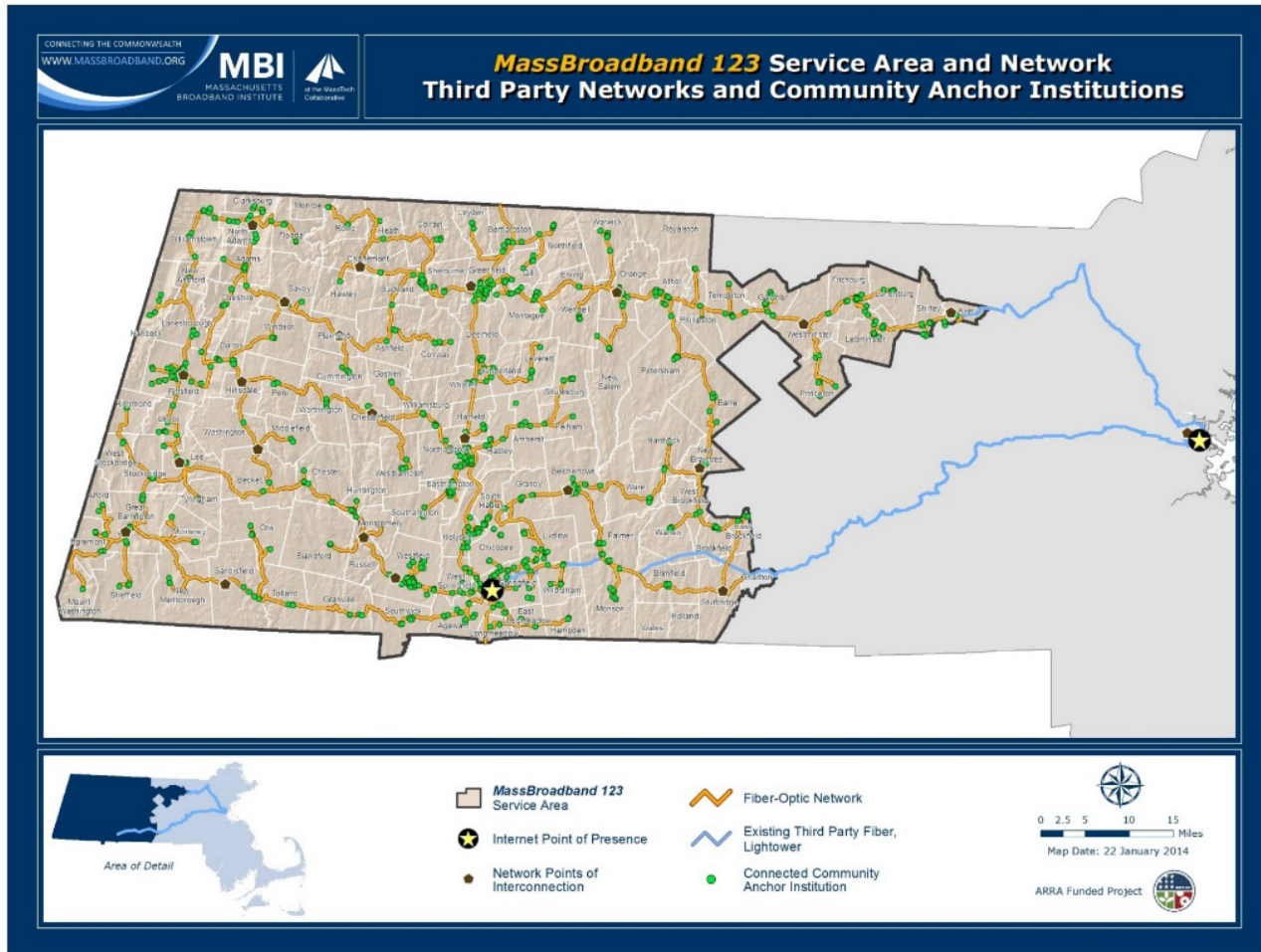
2.1.7. Open Cape Network

MBI provided $5 million in state matching funds to OpenCape Corporation, a nonprofit organization headquartered on Cape Cod, to leverage a $32 million dollar federal BTOP grant for middle mile infrastructure to expand connectivity options on Cape Cod.

OpenCape utilized the state and federal funding to construct a middle mile communications network to expand broadband access throughout Cape Cod, the Islands, and the South Coast. The 350 mile open access network, operated by OpenCape, was built to support the economic, educational, public safety, and governmental needs of southeastern Massachusetts. The initial network buildout included:

- A fiber-optic backbone on Cape Cod;
- Fiber-optic extensions to regional network connection centers in Providence and Brockton;
- Fiber-optic laterals connecting more than 90 community anchor institutions;
- A public safety backup microwave radio overlay for the Cape and Martha's Vineyard; and
- A Regional Collocation Center in Barnstable.

2.2. Current State of Broadband Access in Massachusetts

As a result of the Commonwealth's significant investments in broadband infrastructure to date, Massachusetts is among the national leaders in broadband access. Now, the Commonwealth is in a position to enter a new phase of

its investments to close the digital divide by closing remaining infrastructure gaps, expanding access to devices and digital literacy resources, and accelerating broadband adoption.

Massachusetts has a mix of terrestrial-based fixed broadband service providers that offer residential services, including private and municipal service providers. These services include (1) coaxial cable, (2) fiber-optic cable, (3) hybrid fiber-coaxial cable, and (4) fixed wireless technologies. The map below shows the residential cable broadband service providers in each municipality across the Commonwealth or, in municipalities without a cable service provider, an alternative fixed broadband service.
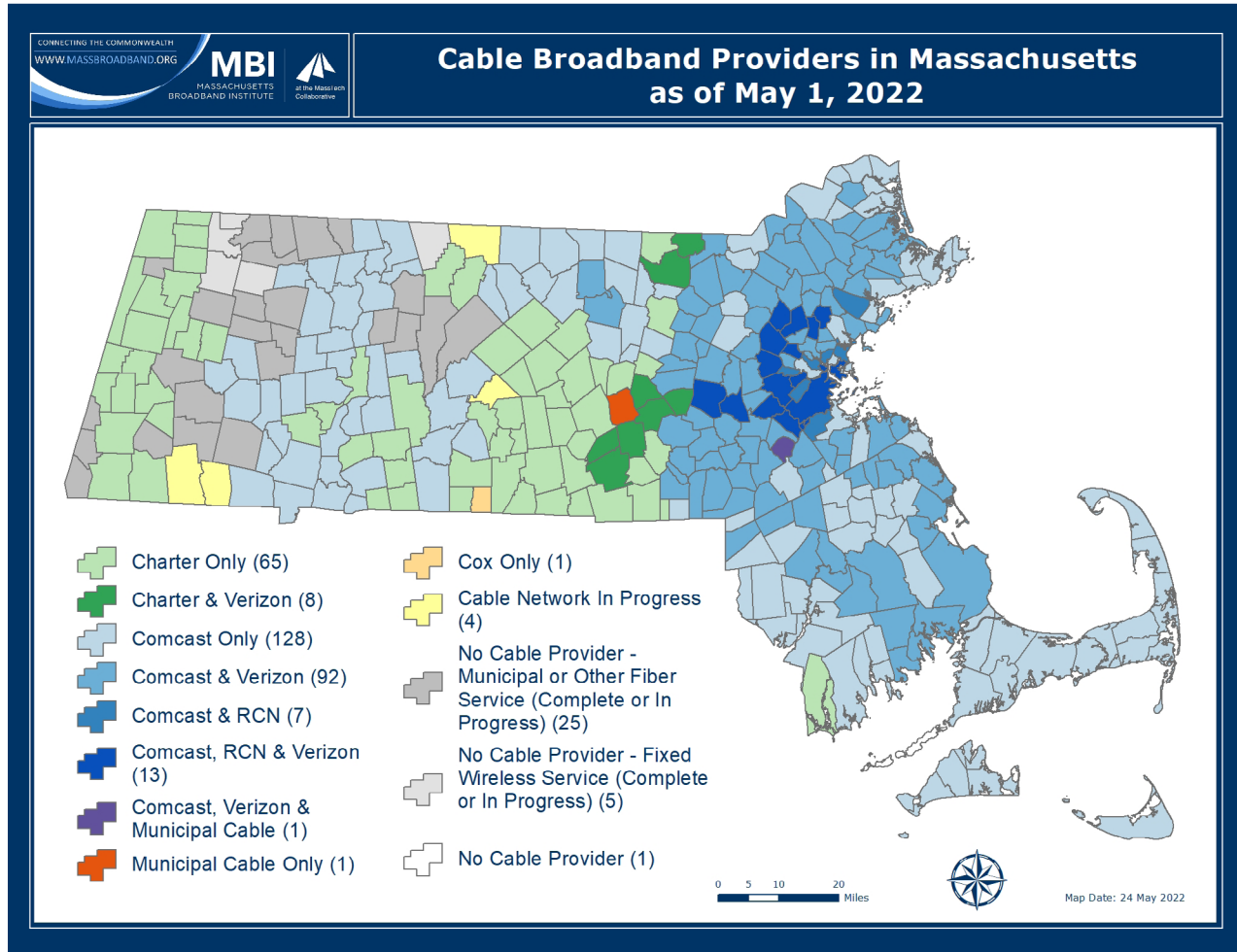
Additional broadband or internet services described below are available in the Commonwealth, but not included on the map.

- Satellite internet services are available throughout the Commonwealth and are sometimes the only current option in the remaining unserved rural locations.
- Mobile wireless broadband services are another alternative to wireline services in locations where cellular service is available.
- Digital Subscriber Line (DSL) and dial-up residential services typically do not meet the minimum broadband speed threshold of 25 Mbps download and 3 Mbps upload.

2.3. Broadband Infrastructure Strategy Moving Forward

The Commonwealth seeks to identify remaining coverage gaps, including pocket locations along town edges and low density areas. Existing federal coverage data is not detailed or accurate enough, and service providers are not required to reveal their unserved areas, so the exact locations of the premises in the unserved pockets are often unknown and difficult to determine.

The two primary federal broadband maps available to the public are:

- The **FCC Fixed Broadband Deployment Map**; and
- The **NTIA Indicators of Broadband Need Map**.

To prepare for infrastructure investments that will deploy federal broadband funding, EOHED and MBI will conduct a comprehensive data collection and mapping effort funded by a planning grant from the U.S. Economic Development Administration (EDA). This effort will enable the Commonwealth to make targeted broadband investments across all regions by identifying communities that (1) are not served by broadband infrastructure or (2) have access to broadband service that is not sufficiently reliable.

To accomplish this, MBI will:

- Seek the voluntary cooperation of Internet Service Providers (ISP) to provide address level broadband service data to develop a statewide map of served and unserved locations;
- Acquire statewide speed test data containing quality of service metrics such as download/upload speeds, latency, jitter and packet loss;
- Gather data from fieldwork and community outreach and engagement in collaboration with regional and local partners; and
- Identify areas for investment or further investigation.

This will serve to augment the substantial investments the Commonwealth has made over the last several years to expand broadband connectivity into unserved and underserved rural communities in the central and western regions of the Commonwealth, as well investments in wireless access projects in Gateway Cities and on Cape Cod.

Additionally, there are two key funding sources from the federal government that will bolster the investments in broadband infrastructure and digital equity and inclusion programs:

- **American Rescue Plan Act (ARPA) Capital Project Funding**
  (Enacted March 2021 by Congress)

  Eligibility categories:

  - **Infrastructure**: Construction and deployment of broadband infrastructure to deliver symmetrical 100 Mbps service, unless impracticable due to geography, topography, or excessive cost (in which somewhat slower speed may be considered).
  - **Digital connectivity technology**: The purchase or installation of devices and equipment to facilitate broadband internet access. Permitted devices include laptops, tablets, and desktop personal computers for distribution to members of the public through a short- or long-term loan program or to be made available for use in public facilities. Permitted equipment includes equipment installed as part of public WiFi infrastructure (e.g., access points, repeaters, routers).
  - **Multi-purpose community facilities**: Construction or improvement of buildings designed to jointly and directly enable work, education, and health monitoring.

- **Federal Infrastructure, Investment & Jobs Act (IIJA)**
  (Enacted November 2021 by Congress)

  IIJA's major areas of funding include:

  - **Broadband Equity, Access & Deployment Program (BEAD)**: Formula-based grant program for states and territories to close the access gap for unserved and underserved areas. It provides funding for infrastructure planning and deployment. Unserved is defined as no access to 25/3 mbps. Underserved is defined as no access to 100/20 Mbps. A third program priority is community anchor institutions without gigabit connections.
  - **Digital Equity Act**, via three sequenced grant programs:
    - ➢ State Digital Equity Plan Grant – to ensure the states have the appropriate plan and capacity to achieve digital equity.
    - ➢ State Capacity Building Grants – to update, maintain, implement and report on implemented activities in the State Digital Equity Plan.
    - ➢ Competitive Grant – to further support efforts in achieving digital equity.
  - **Enabling Middle Mile Broadband Infrastructure**: Encourages the expansion and extension of middle mile infrastructure to reduce the cost of connecting unserved and underserved areas, and to promote broadband connection resiliency.
  - **Tribal Connectivity**: Provides new funds and extends expenditure deadlines for the existing Tribal Broadband Connectivity Program.

- **Affordable Connectivity Program (ACP)**: Replaces the Emergency Broadband Benefit (EBB) Program as a long-term federal program that provides internet service and device subsidies to eligible households.

The state is currently developing plans that will be submitted to the U.S. Treasury Department to deploy the Capital Project Funds. The primary focus will be on launching a Broadband Infrastructure Grant Program. Building upon the success of the Last Mile infrastructure grant program, EOHED and MBI subject to approval of a grant plan by the US Treasury Department, intend to launch a grant program to address gaps in affordable, reliable broadband infrastructure by expanding access and connectivity in unserved and underserved locations across the Commonwealth, with a priority on unserved locations. The first phase of this grant program will proceed concurrently with the statewide data collection and mapping effort.

These investments of Capital Projects Funds alongside the capital investments the Administration has supported in the Last Mile and Middle Mile operations will continue to ensure that access to broadband is possible for as many residents as possible. The Commonwealth's plans for IIJA funding will be developed consistent with the guidance and timeframes recently announced by the National Telecommunications and Information Administration.

3. Digital Equity

3.1. Investments to Date

In October 2020, the Baker-Polito Administration announced the COVID-19 Economic Recovery Plan, **"Partnerships for Recovery,"** which included funding for MBI to implement broadband initiatives for rural unserved communities, Gateway Cities, and unemployed job seekers. MBI continues to support wireless access and digital equity programs and projects that have informed the Commonwealth's strategy to promote digital equity and inclusion throughout the state.

3.1.1. Mass Internet Connect

The Mass Internet Connect (MIC) Program was launched by MBI and the Baker-Polito Administration on January 5, 2021, in partnership with the Executive Office of Labor and Workforce Development and the MassHire Department of Career Services that operates 29 One-Stop Career Centers. The program was developed to support the needs of unemployed job seekers with one or more technology barriers that require assistance with (1) internet connectivity, (2) a device to connect to the internet and/or (3) digital literacy. This program continues to support unemployed Massachusetts residents with the tools, services and internet connections necessary to find employment and get connected to critical online resources.

As of May 1, 2022, approximately 6,300 customers from all 16 MassHire regions across the state had been referred to programs to address technology barriers. Since inception, the program made 586 referrals for internet subsidies, distributed 5,609 Chromebooks, and referred 1,583 customers to digital literacy resources and direct support from a digital navigator.
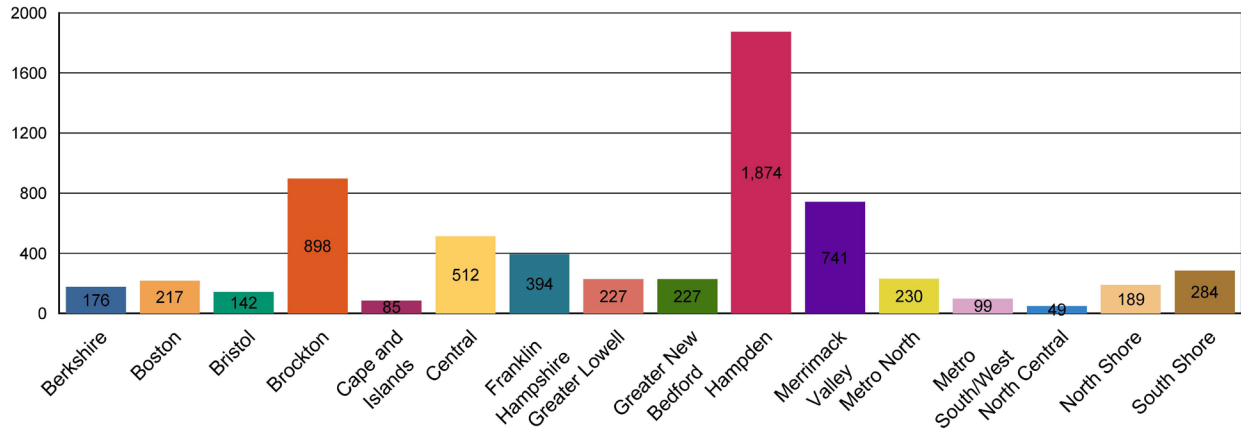
Beginning in June 2021, customers requiring assistance with access to affordable broadband were referred to the temporary federal EBB internet subsidy program. Starting January 1, 2022, those customers are being referred to the ACP, the EBB's long-term replacement program.

An important aspect of the MIC program is matching customer needs to existing programs and resources. MBI and MassHire have partnered with the NDIA to launch a digital navigator pilot program. Staff members at participating career centers are participating in the digital navigator training and an ongoing community of practice to improve their ability to (1) assess customer needs and (2) find and successfully match them to the resources they need. NDIA defines digital navigators as "trusted guides who assist community members in internet adoption and the use of computing devices" and digital navigation services to include "ongoing assistance with affordable internet access, device acquisition, technical skills, and application support."
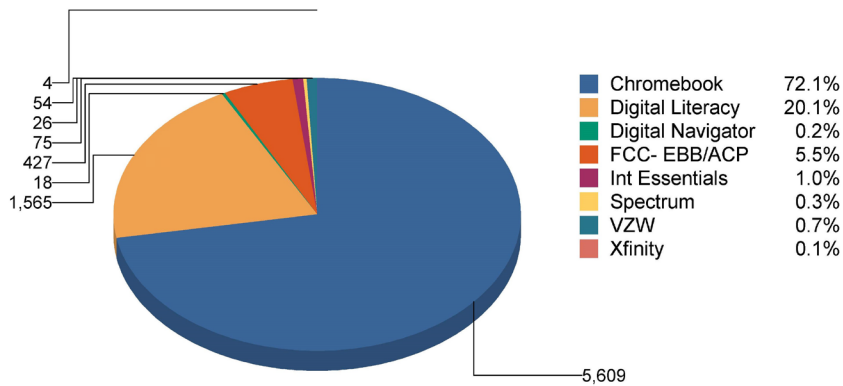
A survey of MassHire customers has demonstrated the value of the MIC program to empower unemployed residents with digital tools necessary to reenter the workforce. MIC program statistics as of May 1, 2022, and customer survey results from September 2021 are shown on the following pages.

Mass Internet Connect (MIC) Stats from MassHire

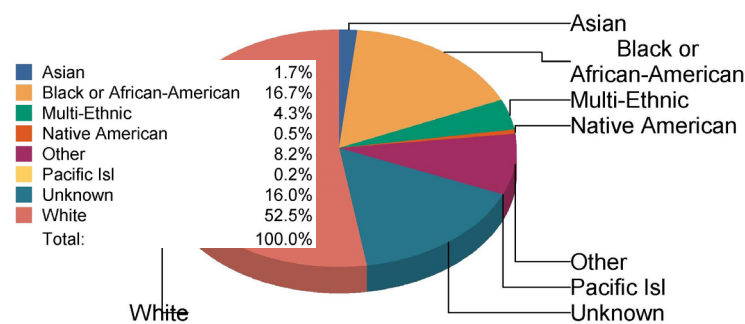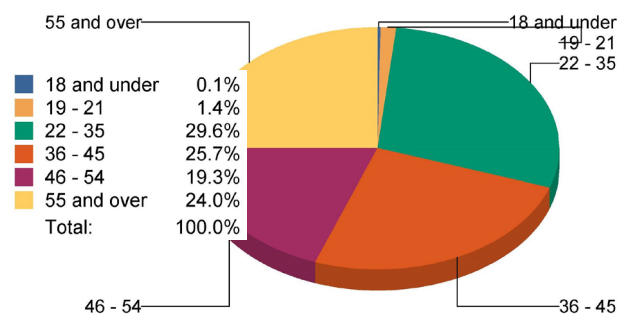## Customers Served by MassHire Workforce Area

Workforce Area	Customers
Berkshire	176
Boston	217
Bristol	142
Brockton	898
Cape and Islands	85
Central	512
Franklin Hampshire	394
Greater Lowell	227
Greater New Bedford	227
Hampden	1,874
Merrimack Valley	741
Metro North	230
Metro South/West	99
North Central	49
North Shore	189
South Shore	284

Referrals by Program Type

Program	Value	Percent
Chromebook	5,609	72.1%
Digital Literacy	1,565	20.1%
Digital Navigator	18	0.2%
FCC- EBB/ACP	427	5.5%
Int Essentials	75	1.0%
Spectrum	26	0.3%
VZW	54	0.7%
Xfinity	4	0.1%

6,323 Total Customers - 586 Internet Subsidies - 5,609 Chromebooks - 1,583 Digital Literacy

Customers by Race

Race	Percent
Asian	1.7%
Black or African-American	16.7%
Multi-Ethnic	4.3%
Native American	0.5%
Other	8.2%
Pacific Isl	0.2%
Unknown	16.0%
White	52.5%
Total:	100.0%

Customers by Age

Age	Percent
18 and under	0.1%
19 - 21	1.4%
22 - 35	29.6%
36 - 45	25.7%
46 - 54	19.3%
55 and over	24.0%
Total:	100.0%

Customers by Education

Education	Percent
Advanced	3.1%
Associate	7.8%
Bachelors	10.2%
HS/GED	43.3%
Info N/A	7.8%
Less Than HS	12.3%
Some College	15.6%
Total:	100.0%
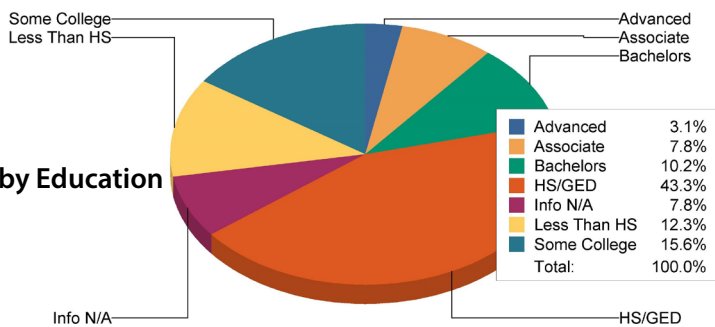
Mass Internet Connect Stats (MIC) Survey Results

Percentage of respondents that found program supports valuable

Internet Subsidy (Comcast or Spectrum): 94%
Verizon Wireless Jet Pack: 86%
Chromebook: 98%
Assistance with Computer & Internet Skills: 95%

How respondents said the program supports helped them

Created a resume or other job search documents: 63%
Accessed online job listings: 81%
Participated in job interviews via video conferencing: 39%
Accessed online courses: 47%
Improved computer or internet skills: 48%
Helped with something else: 22%
Was not helpful: 8%

"It has been very helpful having the Chromebook for taking online classes and searching for a new job."

"This program is a life saver during the pandemic. I have a cell phone but cannot fully access what I need/want from JobQuest, etc. There is no availability to free, public use computers because of the virus."

"I am very grateful for the chrome book. It has helped me do my job search with more ease. The websites are easier to navigate from the chrome book rather than from my phone."

"I would not have been able to search for jobs or make a resume or without that chromebook. I'd never be able to afford one on my own and I'm so grateful."

"I'm very grateful for the Verizon jet pack. I would not have been able to access the internet from home without it. It would have been extremely difficult for me to get online because there isn't any free internet access near my home and I don't have a vehicle."

3.1.2. Expansion of WiFi Hotspots in Unserved Communities

MBI and the MassBroadband 123 network operator, Local Linx, worked with Westfield Gas and Electric and other local ISPs to offer indoor and outdoor WiFi hotspots free of charge to unserved municipalities that lack broadband access. The program was established in April 2020 as a response to the COVID-19 pandemic to provide unserved communities in western and central Massachusetts with critical connectivity through outdoor WiFi hotspots while waiting for broadband networks to be built through the state's Last Mile program. In November 2020, MBI offered eligible communities the option to add an indoor WiFi hotspot.

A total of 26 towns participated in the hotspot program. Since the inception of the program, many of the towns have completed construction of their Last Mile-supported broadband networks. As of May 1, 2022, the program continues to support active hotpots in 11 towns with last mile network in various stages of construction.

Ashfield	**Cummington**	**Leyden**	**Sandisfield***	**Windsor**
Becket*	**Florida***	**Monroe***	**Savoy***	**Worthington**
Blandford*(*)	**Goshen***	**New Braintree*(*)**	**Tolland***	
Charlemont*	**Hancock**	**New Marlborough**	**Warwick**	
Chesterfield	**Hawley***	**New Salem**	**Washington**	
Colrain	**Heath(*)**	**Petersham**	**Wendell**	

* Denotes a town with an active hotspot as of May 1, 2022.
(*) Denotes a town with an indoor hotspot as well as an outdoor hotspot.

3.1.3. Gateway Cities WiFi Hotspots & Digital Equity Program

The Gateway Cities WiFi Hotspots & Digital Equity Program was established in 2020 as part of the Baker-Polito Administration's COVID 19 Economic Recovery Plan. Its purpose was to establish and maintain wireless access projects, including indoor and outdoor WiFi hotspots and support digital equity projects in Gateway Cities. A WiFi hotspot is a physical location where people can access the internet via a wireless local area network (WLAN) with a router connected to an ISP. Additional digital equity projects to provide digital literacy, devices, and personal cellular hotspots have been a part of this program.

Following an open solicitation process, MBI awarded grants directly to Gateway Cities and private providers to support wireless access projects in Fitchburg and Cape Cod. MBI also established partnerships with the Essex County Community Foundation (ECCF) to support projects in Haverhill, Lawrence, Salem, Methuen, Lynn and Peabody, and with the Metropolitan Area Planning Council (MAPC) to support projects in Chelsea, Everett, Malden, Revere and Quincy.

By Summer 2022, several MBI-supported wireless access projects will be launching through the partnerships with ECCF, including a mesh wireless project that will provide free internet access to residents of the Point neighborhood in Salem; upgrades of internet capacity to 1 gigabit in public libraries in Lynn, Peabody and Salem; telehealth navigators at two community health centers in Essex County; and the deployment of cellular hotspot devices and Chromebooks to families transitioning from shelters to permanent housing. MBI and MAPC are launching wireless broadband access projects at low income and senior public housing buildings in Chelsea and Revere. Details of these digital equity projects are shown below.
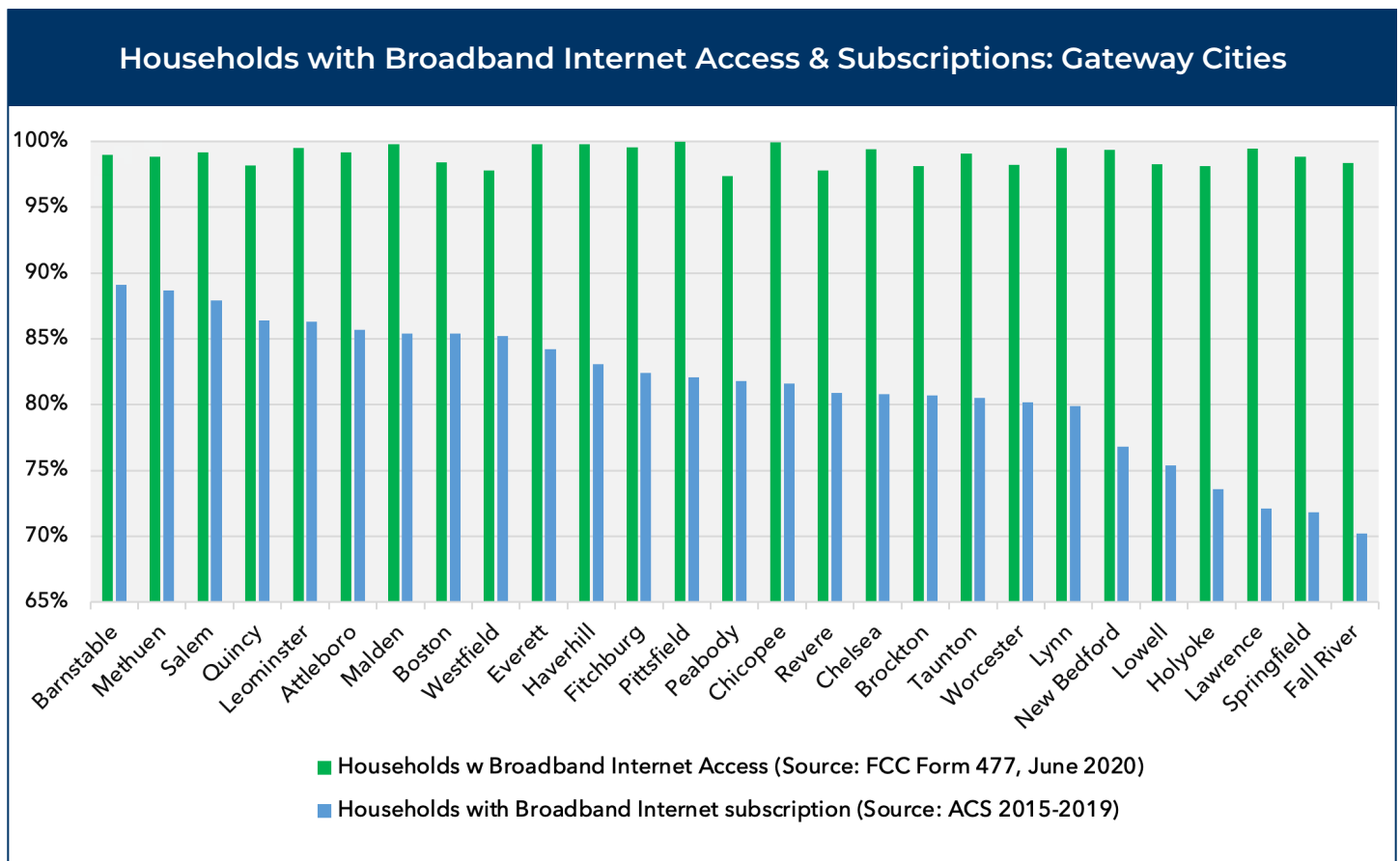
Digital Equity Projects

Neighborhood Mesh WiFi Network
- Free community WiFi for densely populated Salem neighborhood of 3,000 residents

Housing Authority Internet Access
- Housing Authority buys one high-speed internet connection. WiFi Access Points in common areas are linked to connection.
- Residents can access free, high-speed internet in their apartments.

Telehealth Navigator
- Digital navigator at two community health centers
- Supports access to telehealth/RPM
- Identify and address patient technology needs

Homeless Families in Transition
- Internet access and Chromebooks for 20 families transitioning from shelters to permanent housing in Peabody.

Public Library WiFi Capacity Upgrades
- Upgrade WiFi capacity to 1GB at public libraries in 3 Gateway Cities

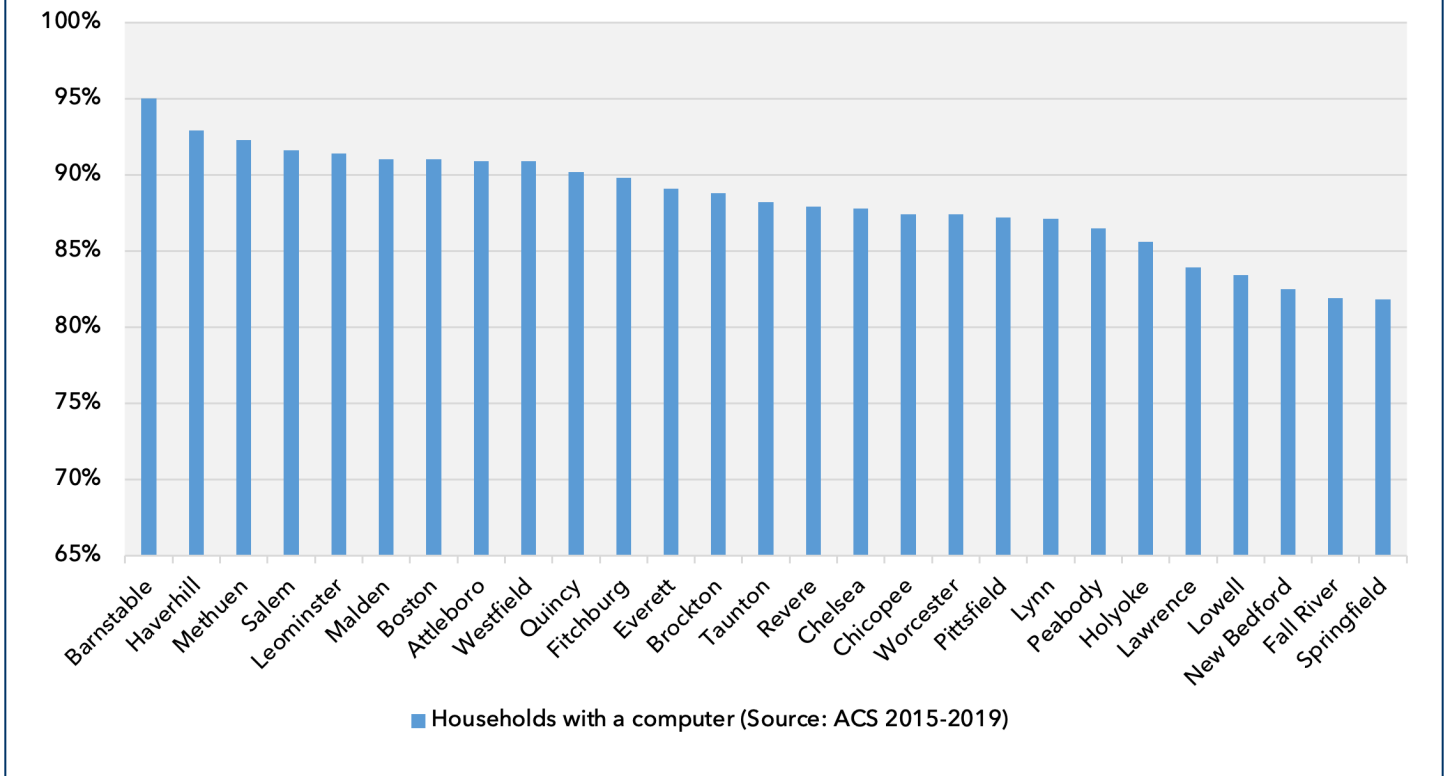## 3.2. Current State of Digital Equity in Massachusetts

Although broadband infrastructure is widely available across the Commonwealth, there are segments of the population that cannot afford the cost of monthly internet service or the devices (computers, tablets, etc.) needed to access the full breadth of the internet. According to Angela Siefer of the NDIA in testimony before the Massachusetts Senate on April 6, 2021, 30% of Massachusetts households with incomes below $35,000 do not have broadband subscriptions of any kind, while only 3% of households with incomes over $75,000 are without broadband subscriptions. As noted by the Brookings Institution, this disparity disproportionately impacts majority-black neighborhoods in the U.S., which have a broadband adoption rate of 67.4% compared to 83.7% in majority-white neighborhoods (**2020 Brookings Institution**). This disparity in broadband adoption to applies to other communities of color as well. According to a **survey conducted by the Pew Research Center** last year, only 65% of Hispanic adults had home broadband service.

An additional, and often overlooked, hurdle to the adoption of internet usage is the lack of digital literacy skills. Digital literacy is the possession of basic digital skills that enable people to use computer devices and the internet. These basic skills are the building blocks for the attainment of more advanced skills needed in the modern workplace, as well as to navigate health care, banking, and other essential services.

There is a distinct gap in the Commonwealth's Gateway Cities between the household's access to broadband infrastructure and household subscription to broadband service. According to MassINC, at the beginning of the pandemic, nearly 25% of Gateway City households did not have a subscription to internet service at home and 28% did not have a computer at home. The graph below and on the following page illustrate these gaps.

Households with Broadband Internet Access & Subscriptions: Gateway Cities

Legend:
- ■ Households w Broadband Internet Access (Source: FCC Form 477, June 2020)
- ■ Households with Broadband Internet subscription (Source: ACS 2015-2019)

Households with Computer: Gateway Cities

Households with a computer (Source: ACS 2015-2019)

3.3. Digital Equity Investment Strategy Moving Forward

As part of Governor Baker's ARPA legislation filed in June 2021, the Administration proposed allocating $100 million for digital equity investments.

The legislation was ultimately signed to include $50 million to:

- Close the digital divide by facilitating equitable broadband service adoption in unserved and underserved communities;
- Expand digital literacy for residents experiencing economic hardship; and
- Empower communities to use digital tools through the provision of devices, connectivity and training to low-income populations.

This funding will allow the Administration, supported by MBI, to invest more deeply in proven programs and expand offerings to individuals in need of support. The programs will also be informed by the data collection and mapping process outlined in section 2.3 to ensure that access to secure and reliable service is the backbone to the additional support outlined on the following page.

Digital Equity Investment Strategy

PROGRAM: Digital Literacy Initiative

Goal	Project Parameters
Implement digital literacy services, including digital navigators, through partnerships that serve low-income communities to increase broadband adoption and ensure target populations have the skills to use devices, online resources and digital tools.	• Partners and Sites to be targeted will include (but not be limited to): community-based & social service organizations, healthcare facilities, libraries, senior centers & Councils on Aging, and adult education facilities. • Tie in access to internet-connected devices and/or personal cellular hotspots on a case-by-case basis.

PROGRAM: WiFI Access

Goal	Project Parameters
Provide free in-home internet access through WiFi deployments.	• Example target locations: high density low-income and senior housing facilities, as well as low-income neighborhoods in underserved communities. • Tie in digital literacy services and/or access to internet-connected devices on a case-by-case basis.

PROGRAM: Public Space Internet Modernization Initiative

Goal	Project Parameters
Enhance inadequate WiFi and public computing resources in public spaces that serve low-income populations.	• Provide grants to public spaces, such as libraries, to improve WiFi capacity and public computing workstations that are inadequate to meet demand.

PROGRAM: Connectivity Initiative for Economic Hardship

Goal	Project Parameters
Provide free internet access for individuals and families experiencing economic hardship including individuals lacking stable housing.	• Deploy cellular hotspots through organizations that serve individuals with economic hardship, such as homeless individuals/families. • Tie-in internet connected devices and digital literacy training on a case-by-case basis.

PROGRAM: Device Distribution and Refurbishment Initiative

Goal	Project Parameters
Provide low income residents with free, refurbished internet-connected devices, such as laptops, while also utilizing/training disadvantaged people to perform the refurbishing process.	• MBI will seek partners to perform one or more of these activities: secure donations of devices that can be refurbished; train individuals to refurbish these devices; oversee refurbishing of devices; distribute refurbished devices to low-income individuals/ families.

PROGRAM: Education, Outreach and Adoption Support Initiative	
Goal	**Project Parameters**
Support outreach and engagement activities designed to increase success of digital equity programming.	• Accelerate adoption of FCC's Affordable Connectivity Program and promote awareness and enhance success of digital literacy programs, device programs and WiFi or hotspot connectivity programs.

PROGRAM: State Internet Subsidy	
Goal	**Project Parameters**
Promote affordable home broadband service for low-income residents.	• Provide monthly state subsidy to Massachusetts residents that qualify for and are receiving federal subsidy for broadband service through the FCC's Affordable Connectivity Program (ACP). This will supplement the ACP subsidy, which has a $30 per month cap (except for residents of tribal lands). • Internet Service Providers participating in federal ACP may participate in this program by applying to MBI to receive direct payments. ACP rules, qualification and eligibility procedures will apply.

PROGRAM: Municipal Broadband Planning Assistance	
Goal	**Project Parameters**
Assist communities in identifying and evaluating opportunities to expand broadband access and promote broadband adoption.	• Deploy pre-approved contractors to support broadband planning efforts by eligible municipalities.

These programs will be implemented with a wide variety of partners throughout the Commonwealth and the state will rely on and bolster the capacity of these partners to reach the communities that are most in need of these services. Additionally, EOHED and MBI will work closely with the other state agencies to provide the overarching structure and accountability to ensure that federal funds are expended in a coordinated and cohesive manner that maximizes impact and outcomes.

4. Conclusion

The nation-leading work of the Baker-Polito Administration on the Last Mile effort has set the strong foundation for the multi-pronged effort to deploy the unprecedented amount of federal broadband funding being made available to the Commonwealth. These efforts to bridge the digital divide will not only address the gaps in internet infrastructure across the state, but will strive to expand access to affordable, reliable broadband service, the devices to connect to it, and the digital literacy to adopt all that the internet has to offer in order to fully engage in today's society.

This Broadband Plan will be updated periodically to reflect the Commonwealth's continuing progress in its wide-ranging investments, and as federal spending and grant plans are approved by the appropriate federal agency.

5. Glossary of Terms

This glossary provides a basic list of broadband related terms used in this document. Below are some additional online resources that may be helpful:

- **BroadbandUSA's Broadband Glossary**
- **NDIA's Digital Equity and Digital Inclusion Definitions**

Broadband Adoption means "daily access to the Internet (i) at speeds, quality and capacity necessary to accomplish common tasks, (ii) with the digital skills necessary to fully participate online, and (iii) on a personal device and secure convenient network." (Source: **NDIA**)

Digital divide is a term that describes "the gap between those who have affordable access, skills, and support to effectively engage online and those who do not. As technology constantly evolves, the digital divide prevents equal participation and opportunity in all parts of life, disproportionately affecting people of color, Indigenous peoples, households with low incomes, people with disabilities, people in rural areas, and older adults." (Source: **NDIA**)

Digital equity is "a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services." (Source: **NDIA**)

Digital inclusion "refers to the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs). This includes 5 elements: 1) affordable, robust broadband internet service; 2) internet-enabled devices that meet the needs of the user; 3) access to digital literacy training; 4) quality technical support; and 5) applications and online content designed to enable and encourage self-sufficiency, participation and collaboration. Digital Inclusion must evolve as technology advances. Digital Inclusion requires intentional strategies and investments to reduce and eliminate historical, institutional and structural barriers to access and use technology." (Source: **NDIA**)

Digital literacy is "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills." (Source: **American Library Association's Digital Literacy Taskforce**)

Digital navigators "are trusted guides who assist community members in internet adoption and the use of computing devices. Digital navigation services include ongoing assistance with affordable internet access, device acquisition, technical skills, and application support." (Source: **NDIA**)

Last Mile is a telecommunications term that describes the local network infrastructure closest to the end-users (e.g. residents, businesses, and community facilities)

Middle Mile is a term used by the telecommunications industry to describe the network infrastructure that connects last mile (i.e., local) networks to high speed national and major regional internet backbones.

Open access means that any service provider can interconnect with the network and provide services to any end users on a nondiscriminatory basis.

6. Attachments

Massachusetts Broadband Investments & Commitments to Date

Investment Category	Project Description	State Investments & Commitments	Additional Leveraged Investments & Commitments	Source of Additional Investments	Total Investments & Commitments
Data Collection & Mapping	State Broadband Initiative (2009 -2014)	$0	$6,068,000	NTIA	$6,068,000
TOTAL Data Collection & Mapping		**$0**	**$6,068,000**		**$6,068,000**
Last Mile Infrastructure	Last Mile Network Builds in 44 Unserved Towns	$53,765,300	$35,800,000	Individual municipalities	$89,565,300
Last Mile Infrastructure	Last Mile Network Extensions in 9 Underserved Towns	$4,000,000	$0		$4,000,000
Last Mile Infrastructure	Other Last Mile Projects	$1,434,700	$0		$1,434,700
TOTAL Last Mile Infrastructure		**$59,200,000**	**$35,800,000**		**$95,000,000**
Middle Mile Infrastructure	MassBroadband123 Network	$44,300,000	$45,400,000	NTIA Broadband Technology Opportunities Program	$89,700,000
Middle Mile Infrastructure	Open Cape Network - State Match for Federal BTOP Grant	$5,000,000	$32,000,000	NTIA Broadband Technology Opportunities Program	$37,000,000
Middle Mile Network Operations	MassBroadband123 Network - Third Party Contract Fees & Capital Upgrades	$3,800,000	$0		$3,800,000
TOTAL Middle Mile Infrastructure & Operations		**$53,100,000**	**$77,400,000**		**$130,500,000**
Economic Recovery & Digital Equity	Wireless Community Hotspots / Device, Internet Access & Digital Literacy Support	$4,565,000	$0		$4,565,000
TOTAL Economic Recovery & Digital Equity		**$4,565,000**	**$0**		**$4,565,000**
GRAND TOTAL		**$116,865,000**	**$119,268,000**		**$236,133,000**

Massachusetts Broadband Future Investments Planned

Funding Source	Amount
Economic Recovery Funds (remaining)	$4,635,000
EDA Planning & Local Technical Assistance Program	$1,000,000
State ARPA Appropriations Bill (Coronavirus State Fiscal Recovery Funds)	$50,000,000
U.S. Treasury Capital Projects Fund	$175,000,000
Federal Infrastructure Investment & Jobs Act*	$100,000,000
TOTAL	**$330,635,000**

Base amount from BEAD Program, total for the state, including Digital Equity Act, will be greater.

Produced by the Massachusetts Broadband Institute (MBI)
at the Massachusetts Technology Collaborative
broadband.masstech.org