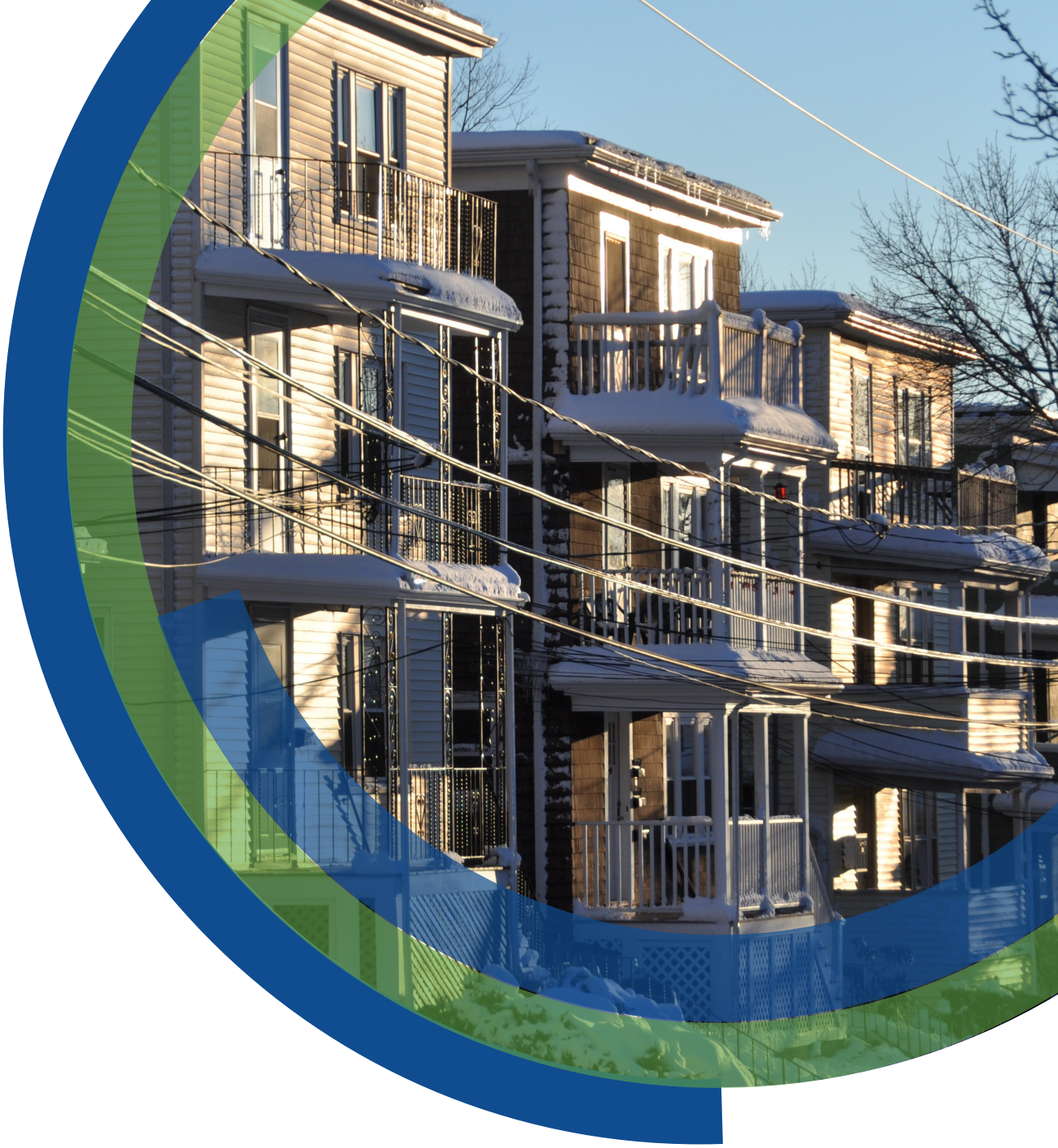


DIGITAL EQUITY IN SOMERVILLE: SHARED RESOURCES, SHARED OPPORTUNITIES

May 2024

Prepared by Metropolitan Area Planning Council (MAPC) on behalf of the
City of Somerville and City of Somerville Digital Bridge Initiative (DBI)

Acknowledgements

The Somerville Digital Equity Plan was developed in collaboration with the City of Somerville and its Digital Bridge Initiative, with critical contributions from residents and community partners. The project was supported by the Massachusetts Broadband Institute (MBI) at the MassTech Collaborative under its Municipal Digital Equity Planning Program. Funding came from state and Local Fiscal Recovery Funds provided under the American Rescue Plan Act (ARPA). The Metropolitan Area Planning Council thanks all who contributed to this effort and appreciates having had the opportunity to work with Somerville staff and community members.

City of Somerville staff

Blair Wong – Digital Equity Project Specialist
Jennifer Mancia – Workforce Development Senior Planner
Luis Quizhpe - Strategic Planning & Equity Manager

City of Somerville Partners

Internal partners
Communications Team
Council on Aging
Department of Racial and Social Justice
Office of Housing Stability
Small Businesses Team
SomerPromise
Somerville Center for Adult Learning Experiences
Somerville Family Learning Collaborative
Somerville Office of Immigrant Affairs
Somerville Public Library

External partners
Beautiful Stuff Project
Bunker Hill Community College
Come to the Table
Community Action Agency of Somerville
Computers 4 People
Food for Free Pantry
Just-A-Start
MassHire Metro North
MACIR
Mystic Learning Center
Per Scholas
Respond
Somerville Community Corporation
Somerville Homeless Coalition
Somerville Housing Authority
Tech Goes Home
Teen Empowerment
The Welcome Project

MAPC Staff

Anagha Devanarayanan – Digital Equity Planner
Will Pfeffer – Civic Technologist
Najee Nunnally – Community Engagement Specialist
Alexa DeRosa – Regional Planning Data Analyst
Stephen Larrick – Digital Services Manager
Jessie Partridge Guerrero – Research Manager / Director of Data Services
Alex Koppleman, AICP – Senior Housing and Land Use Planner
Camille Jonlin – Economic Development Planner II
Gurdeep Kaur- Senior Economic Development Planner
Claire Hoffman- Senior Public Health Planner
Norman Abbott, Senior Government Affairs Specialist

Public agency and community informants

Internet Access Task Force members
Massachussetts Broadband Institute (MBI)
National Digital Inclusion Alliance (NDIA)

Table of Contents

Executive Summary

The Executive Summary outlines the scope of the Digital Equity Plan for Somerville and gives an overview of the findings and recommendations

Executive Summary

Closing the digital divide is a key aspect of achieving equity. Access to the internet is a crucial tool, enabling access to education, healthcare, the economy, friends and family, civic participation, and much more. This 21st century reality means that cities like Somerville increasingly believe in ensuring that all residents have affordable and reliable access to the internet, as well as the social infrastructure, technology support, and device access needed to engage online as a core civic responsibility. But the challenges of the digital divide are not faced equally by all residents. In a dense, diverse urban environment like Somerville the digital divide disproportionately affects vulnerable populations (such as immigrants, non-English speakers, residents with disabilities, communities of color, older adults, people living with disability, low-income residents, and others). This document, Somerville's first Digital Equity Plan, commits the city to the work of confronting these disparities through the work of digital inclusion—with a focus on partnership with community-based organizations to prioritize serving the residents who are most impacted by the digital divide.

Background: Existing Digital Equity Work in Somerville

In 2018, the city of Somerville took steps to begin studying and addressing the digital divide with the formation of the Internet Access Task Force (IATF), a committee of residents who met for a year and provided recommendations on how to expand internet access. Following the COVID-19 pandemic it became clear that the digital divide was more than just an infrastructure or technology problem, but a foundational social challenge that impacts some residents disproportionately in almost all aspects of modern life. The city began coordinating across departments and with community partners to tackle these challenges, and in 2023 the Digital Bridge Initiative was formed dedicating city staff to the goals of-

- Ensuring that no one is left behind simply because they can't afford access to the internet
- Making sure that residents have the right devices to use the internet, and
- Helping residents learn the skills they need to use the internet for all aspects of daily life.

Existing Conditions Analysis

Community Needs Assessment

Findings

Recommendations

Digital Equity Plan: Project Overview + Approach

This report presents research, findings, and recommendations conducted and developed during a nine-month period beginning in June of 2023. During this time, the Metropolitan Area Planning Council (MAPC) partnered with the City of Somerville to conduct planning work focused on issues of digital equity.

Digital equity is generally understood to mean the condition in which all members of a community have affordable and reliable high-speed internet access, as well as the devices and skills to fully participate in online life. The goal of digital equity planning work in Somerville was to better understand the challenges of the digital divide facing the city and to articulate a vision for addressing those challenges through the work of digital inclusion.

To achieve that goal, this project took place in phases, starting with an **existing conditions analysis** that made use of quantitative data to identify context, continuing with a **community needs assessment** that involved stakeholder and resident engagement activities to prioritize key challenges and opportunities, and finally concluding with a synthesis of **findings** and the development of **recommendations**.

Summary of Key Findings

The following represent key findings from the existing conditions analysis and community needs assessment.

Broadband Access and connection

Somerville addresses are nearly all served by broadband, with virtually 100% of serviceable locations having access to a high-speed cable internet option. Around 27% of addresses have access to a fiber internet option.

Overall, Somerville residents have as many or more Internet Service Provider (ISP) choices than surrounding municipalities in Greater Boston, with nearly three out of four addresses having three or more ISP options.

Even so, market competition and consumer choice are still concerns, especially when it comes to fiber. More than 24% of addresses are served only by one or two ISPs (typically, Comcast/Xfinity and RCN/Astound). Only one ISP offers fiber service (RCN/Astound), to only 27.2% of addresses.

Private ISP fiber infrastructure exists in Somerville and download speeds are fast. Private fiber provides the backbone for much of the cable service offered and for limited fiber-to-home service, likely helping to account for higher-than-average download speeds. Xfinity cable offers download speeds of up to 1.2 gbps, and Astound offers download speeds of up to 1 gbps for both their cable and fiber services. While these are "top tier" service offerings and likely don't reflect the actual internet service packages that residents have purchased, Somerville's average download speed of 174 mbps is higher than all the peer communities we analyzed except for Cambridge.

Comcast/Xfinity's fiber backbone is not being used to provide fiber to home service. This, combined with the fact that RCN/Astound only offers fiber service to 27.2% of addresses, likely contributes to Somerville's relatively slow upload speeds, with Xfinity's top package only advertised at 35 mbps up and Measurement Lab (M-Lab) speed tests averaging just 22 mbps upload speeds.

Broadband Affordability

Broadband affordability is perhaps the most pressing need among vulnerable populations impacted by the digital divide in Somerville, with 8.4% of households reporting no internet subscription, and more than half of respondents to a survey targeted at vulnerable populations reporting that it is difficult to pay their internet bill each month.

There are stark differences in internet service subscription rates by income, with over 30% of the lowest-income households in Somerville unconnected while only 2.6% of households earning $75,000 annually or above lack a broadband connection.

In addition to low-income residents, **vulnerable populations most impacted by the digital divide in Somerville also include older adults, and non-English speakers**. These residents have lower rates of internet subscriptions and device ownership and report frequently switching between services.

The wind-down of the federal Affordable Connectivity Program (ACP) means that more than 2,000 income-eligible residents will lose access to a broadband subsidy worth a combined $65,700/month. In Somerville, only 14% of eligible residents were enrolled in the program, indicating that there was a large population of eligible residents who never received this subsidy in the first place.

Device Access

Most households in Somerville (94.5%) have access to one or more computing devices. Even so, that leaves 5.5% of households without a device of any kind, while another 3.6% report having only access to a smartphone.

Elders are especially impacted by a lack of device access. 18.6% of residents over 65 in Somerville do not own a computer, a figure much higher than in neighboring communities of Cambridge (7.1%) and Medford (10.5%).

Older residents, youth, and non-English speaking residents interviewed, reported that publicly available devices in Somerville are often insufficient. This may be due to lack of available devices, limited hours of operation in public computer labs, transit or mobility issues making it difficult to access facilities or programs, outdated devices, or a combination of these factors.

According to the community-based organizations interviewed, where device access programs do exist, these **programs are often underutilized because of a lack of resident awareness.**

Digital Literacy & Support

Vulnerable populations need digital skills and support urgently. Many report that a lack of digital literacy and support has been a barrier for many basic needs, including access to public services, health care, education etc.

Currently, **digital learning and tech support is often accessed through trusted, informal channels like friends, family, and neighbors,** pointing to the strength of community networks, but also to the limited reach of existing formal programming.

There is a need for more formalized support systems, such as digital navigators and IT help desks, and a need for increased awareness of existing programs and resources. These more formalized programs will need to overcome trust barriers by working with existing community-based organizations where possible.

Summary of recommendations

Unsurprisingly, MAPC's research and planning work surfaced the key theme that the digital divide does not impact all residents of Somerville equally. It is most acutely felt by vulnerable communities, including low-income residents, older residents, immigrants and non-English-speakers, disabled residents, and socially disadvantaged residents.

The planning process also surfaced significant opportunities to build on existing efforts in Somerville. The Digital Bridge Initiative currently works to ensure access to reliable internet, adequate devices, and digital skills. Additional partners like the Somerville Public Schools, the Somerville Public Library, and Council on Aging are also focused on closing the digital divide with programs that provide public Wi-Fi, hotspot lending, device lending, digital skills training, and digital navigator support to reach residents most in need. Finally, an ecosystem of trusted community-based organizations supports vulnerable residents more generally across a variety of domains and basic services.

The following guiding principles and recommendations respond to this existing community context with the goal of advancing digital equity by centering the needs of the most vulnerable, building on existing efforts, and facilitating collaboration across organizations:

- Support and coordinate efforts in partnership with community-based organizations
- Pursue municipal programs and policies to better support digital equity
- Empower city staff to pursue resources and implement achievable projects and interventions
- Embrace a formalized, sustainable role for digital equity within city government

	Recommendation	Impact	Resource	Time scale
Municipal resources and programs	Build on Digital Equity asset map to build a public resource directory.	●●○○○	$	Short-term
	Guidelines, resources, program support, and funding for existing and new digital navigator programs.	●●●●○	$$$$	Medium-term
	Develop multi-lingual educational materials on technology basics.	●●●●○	$$	Short-term
	Develop multi-lingual education materials on internet safety and privacy.	●●●●○	$$	Short-term
	Explore opportunities to provide free Wi-Fi in public spaces.	●●●○○	$$$	Medium-term
	Expand hotspot distribution programs.	●●●○○	$$$	Short-term
	Expand device lending programs.	●●●●○	$$$	Short-term
	Organize device donation drives to collect gently used devices.	●●●●○	$$$$	Medium-term
Support community-based organizations	Funding for device distribution programs provided by CBOs.	●●●●○	$$$	Short-term
	Funding and technical support for community computer labs hosted by CBOs and Community Anchor Institutions.	●●●○○	$$$	Medium-term
	Funding, technical support, and connections to workforce and apprenticeship programs to enable CBOs to operate device donation and refurbishment programs.	●●●●○	$$$$	Medium-term
	The same resources and support being made available to digital navigators in municipal departments should also be made available to digital navigators at community-based organizations.	●●○○○	$	Short-term
	Multi-lingual educational materials and internet safety and privacy materials identified above should be made available to community-based organizations, and should be refined in partnership with CBOs to ensure that they are tailored to meet resident needs.	●●○○○	$$	Short-term
	Convene a community of practice to amplify existing work, facilitate resource sharing and coordination, document best practices, and provide a support structure for CBOs not currently doing Digital Equity work to enter the field as their constituents' needs evolve.	●●●●○	$$$	Medium-term
	Explore opportunities to support community-led infrastructure, such as neighborhood mesh networks.	●●●○○	$$$	Medium-term
	Collaborate with Community Anchor Institutions to coordinate and expand service offerings.	●●●○○	$$	Medium-term

	Recommendation	Impact	Resource	Time scale
Policies and infrastructure	Dig Once policies, requiring that network infrastructure (such as fiber conduit or "dark" fiber) be installed whenever a public roadway is opened to facilitate utility work, repaving, or other construction occurs.	●●●●○	$$$$$	Long-term
	Engaging local fiber providers such as Astound, Comcast, and Verizon in dialogue to encourage and facilitate greater private market competition and availability.	●●●●○	$$	Short-term
	Consumer advocacy and protection policies to ensure eligible residents have access to affordable internet service and understand their rights and obligations within existing service agreements.	●●●●○	$$$	Medium-term
	Targeted open access fiber infrastructure could allow the City to make infrastructure investments to improve coverage, competition, or affordability in underserved neighborhoods without the need for costly city-wide infrastructure investment.	●●●●●	$$$$$	Long-term
	Regional partnerships to improve internet infrastructure, including collaboration with neighboring municipalities on shared Digital Equity resources, and shared best practices.	●●●●●	$$	Medium to Long-term
	Connectivity investments in public and affordable housing, funded through the MAPC Apartment Wi-Fi program, the MBI Residential Retrofit Program, and other federal programs.	●●●●●	$$$$	Short-term
Municipal role and infrastructure	Transition temporary and grant-funded Digital Equity staff to permanent positions within the City's Office of Digital Equity.	●●●●●	$$$	Short-term
	Empower municipal Digital Equity staff to seek funding that would support Digital Equity and make recommendations on funding allocations and municipal programs relating to Digital Equity.	●●●●●	$$	Short-term
	Continue work started in the Digital Equity Planning process to identify specific digital equity needs and existing conditions.	●●●○○	$$	Short to Medium-term
	Collaborate across City departments to ensure that the City's Digital Equity goals are reflected as appropriate.	●●●●●	$$$	Short to Medium-term

INTRODUCTION

The City of Somerville holds equity as a central community value. Going beyond the concept of “equality” or treating everyone the same, Somerville defines equity as giving everyone what they need to be successful. By ensuring equity is at the center of strategic policy documents like the Digital Equity Plan, the City continues to acknowledge and strive to mitigate historical discrimination and other factors that prevent people from being successful today.

Digital equity is central to helping individuals and families access adequate social, economic, and civic opportunities today. This section provides background context on Somerville’s existing digital inclusion work and introduces key concepts that define digital equity and its intersection with other core community values and needs.

Background

The City of Somerville, like many US cities, faces stark challenges when it comes to broadband access, inequity, and the digital divide. In 2018, the city took steps to begin studying and addressing these challenges with the formation of the Internet Access Task Force (IATF), a committee of residents who met for a year and provided recommendations on how to expand internet access in Somerville. This committee and its report laid the groundwork for future efforts. However, following the COVID-19 pandemic it became clear that the digital divide was more than just an infrastructure or technology problem, but a foundational social challenge that impacts some residents disproportionately in almost all aspects of modern life. Daily activities like education and remote learning, accessing telehealth, applying for a job or working remotely, civic participation in online meetings, accessing basic services like benefits or transportation, and many others are all difficult or impossible for those impacted by the digital divide. To advance the city's vision for equity, more needed to be done to advance digital equity. To support this expanded vision for internet access and digital equity, in 2023 the City created the Digital Bridge Initiative, designating city staff to address the digital divide.

In mid 2023, the City of Somerville Digital Bridge Initiative joined the Massachusetts Broadband Institute's Municipal Digital Equity Planning program and engaged the Metropolitan Area Planning Council (MAPC) in the development of the city's first Digital Equity Plan. This effort served to research and document current conditions and community needs through qualitative and quantitative data collection, to articulate a vision for digital equity, and, ultimately, to propose a set of actionable recommendations for achieving that vision by addressing the digital divide.

To advance city's vision for equity, more needed to be done to advance digital equity.

The results of this process are contained in this document, the Somerville Digital Equity Plan, representing a significant step forward for the Digital Bridge Initiative and for the City of Somerville in acknowledging the realities of the digital divide, envisioning a more just community built on digital equity, and committing to the work of digital inclusion needed to get there.

What is Digital Equity?

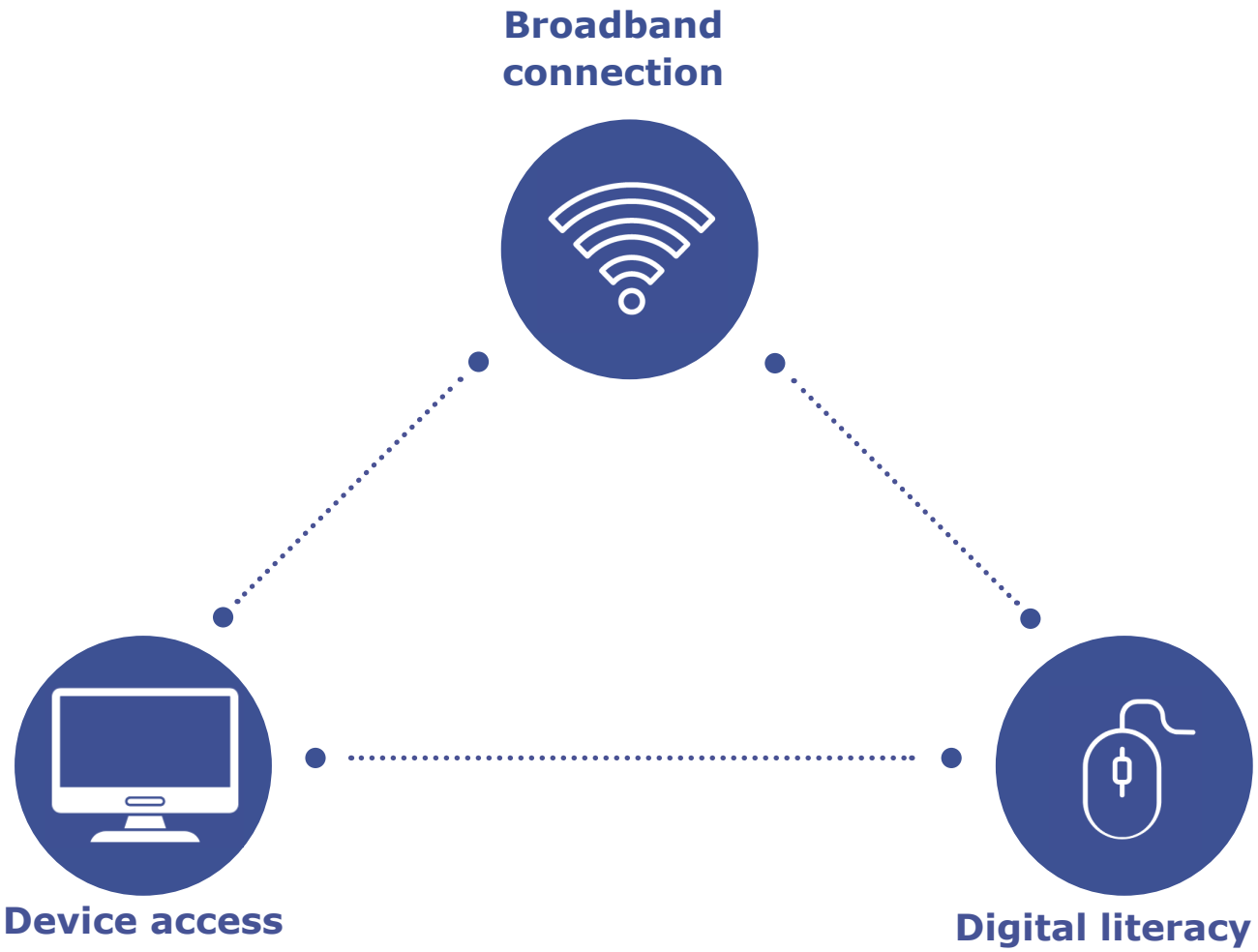
This plan will describe existing conditions, community needs, and a vision and recommendations for digital equity in Somerville. But first, what is digital equity?

Digital equity means that everyone has access to the online opportunities and resources that they need, regardless of socio-economic status or location. It means that everyone has an equitable opportunity to participate in society and the economy, access education and training, and participate in civic life.

> ***"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, employments, lifelong learning, and access to essential services."***
>
> -National Digital Inclusion Alliance (NDIA)

Digital equity framework

In discussing and analyzing digital equity in Somerville, this plan will adopt a common framework of the three pillars of digital equity: internet access, devices, and digital literacy (Appendix 1).



Digital Equity Framework: Three Pillars			
Pillar	**Broadband connection**	**Device access**	**Digital literacy**
Overview and definition	Having a reliable, and affordable internet connection, ideally to the home, fast enough to support the needs of all members of a family or household, simultaneously. Broadband subscription services are most commonly obtained via private internet service providers (ISPs), but in some cases may be offered by a public service provider or as a shared service or building amenity. Broadband is currently defined as 100mbps / 20mbps by the FCC, but advocates also emphasize the importance of symmetrical upload speeds.	Owning or otherwise having access to computing devices with sufficient hardware, software, and features/capabilities to support online needs. Different devices may be needed to support different use cases and individual users. Devices include home desktop or laptop computers, and can also include Chromebooks, tablets, mobile phones, etc., as well as auxiliary devices such as webcams, which may be needed for specific use cases, such as remote learning or telehealth.	Knowing how to confidently navigate and utilize technology and digital environments to fully participate in online life. This means having the individual skills needed to use hardware, software and an internet connection across a variety of use cases, as well as having access to educational resources or even technical support to troubleshoot when there are issues.
Common barriers	Insufficient infrastructure; Lack of market competition and consumer choice; High cost of high-speed plans; inadequate or outdated in-building wiring or hardware;	Older/outdated devices; Inadequate devices; lack of device ownership; limited access to shared devices; device affordability Lack of access to specialty devices with features to accommodate those living with disabilities.	Lack of familiarity with devices; misinformation and scams; lack of educational materials translated into relevant languages; lack of educational/ training opportunities in relevant languages.
Somerville in context	**8.3%** of households are without internet access in Somerville. **27.2%** of Somerville households have access to fiber internet connections. According to M-Lab data, **68.33%** of tests in Somerville were over 100 mbps download speed.	**7.1%** of Somerville residents rely solely on cellular phone connection to access the internet. Citywide, **3.6%** of households have smartphones and no other devices. Citywide, **5.5%** of households have no computer devices.	**35%** of survey respondents said they would be interested in taking a free computer class to learn how to keep their personal information safe and secure online
Support opportunities	Public broadband infrastructure or services; increased private ISP competition Affordable service or subsidy programs like ACP or Internet Essentials Hotspot lending programs; public Wi-Fi	Device refurbishment and distribution programs; Device lending programs; Setting up computer labs in public spaces	Digital literacy training programs, self-service educational materials, accessible IT support, digital navigators

Digital Equity is interconnected to core community issues

In addition to using the "three pillars" digital equity framework described above, in its consideration of digital equity issues in Somerville, this report also recognizes that digital equity is not an isolated issue but is instead interrelated to many of the core challenges communities like Somerville face. By addressing the digital divide and its disproportionate impacts on the most vulnerable Somerville residents, this plan also treats digital equity as an opportunity to drive impact in other intersecting domains. As Somerville's Digital Bridge Initiative states:

> ***Digital inclusion*** *is important because it touches upon many different areas of our lives such as economic stability, access to healthcare, access to education, neighborhood safety, community engagement, and food access*

As more and more of our world moves online—from school to socializing, to work, shopping, healthcare, government and community, access to basic services, and so much more, digital access is not just one more community issue area to be addressed, it increasingly a prerequisite to addressing every issue area.

The following section provides an overview of how Digital Equity relates to various community issue areas.

Digital Equity and Housing

- High speed internet access is an increasingly vital aspect of adequate housing [1]
- A building's wiring and infrastructure can impact the internet options available to residents
- High cost of housing / cost burden can force households to have to choose between basic necessitates sometimes sacrificing internet access
- Applications for affordable housing and other housing related services (such as rent payment portals) are increasingly online.
- Low-income residents of affordable housing experience lower levels of internet access and adoption.
- Housing authority managed sites and other multi-dwelling unit buildings (MDUs) can provide opportunities for shared broadband amenities or services

Digital Equity and Economic Development

- Research increasingly shows that digital inclusion is a prerequisite for economic inclusion and for closing generational wealth gaps[2]
- Digital access is necessary for a variety of important economic activities that increasingly take place online, from working remotely, to searching for a job, upskilling through online training, to e-commerce and online entrepreneurship.
- Digital skills are required for 92% of job opportunities, and jobs that require more digital skills pay more than jobs that require fewer[3]
- A community's broadband coverage and adoption is associated with the number of jobs and economic output[4], and individuals with broadband subscriptions report higher income than those without[5].
- Small businesses owners need digital skills to market and promote their business online
- Tech companies and other employers require top-tier broadband speeds to locate in a community

[1] National League of Cities (2021, December 9). Digital Equity Playbook: How City Leaders Can Bridge the Digital Divide. https://www.nlc.org/resource/digital-equity-playbook-how-city-leaders-can-bridge-the-digital-divide/

[2] Ochillo, F. (2022). The Economic Consequences and Generational Impact of the Digital Divide. Belfer Center for Science and International Affairs. https://www.belfercenter.org/sites/default/files/files/publication/TAPP-Francella_Impact%20of%20the%20Digital%20Divide_Final_220516.pdf

[3] Bergson-Shilcock, A., Taylor, R., & Hodge, N. (2023). Closing the Digital Skill Divide. National Skills Coalition. https://nationalskillscoalition.org/wp-content/uploads/2023/02/NSC-DigitalDivide_report_Feb2023.pdf

[4](2021). Broadband for all: Charting a path to economic growth. Deloitte. https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-charting-a-path-to-economic-growth.pdf

[5] Curtis ME, Clingan SE, Guo H, Zhu Y, Mooney LJ, Hser YI. (2022) Disparities in digital access among American rural and urban households and implications for telemedicine-based services. J Rural Health. 38(3):512-518. doi: 10.1111/jrh.12614. Epub 2021 Aug 6. PMID: 34355427; PMCID: PMC9827725

Digital Equity and Public Health

- Digital equity is a "super" social determinant of health, meaning it influences othes, such as healthcare, education, and employment[6]
- The COVID-19 pandemic spotlighted the internet's impact on these domains, when medical appointments, school, and certain jobs moved online during lockdown and made digital access vital to meeting many daily needs associated with health outcomes.
- With the rise of telehealth appointments, online patient portals, and secure messaging services for communicating with medical staff, access to healthcare is increasingly predicated on digital access.

Digital Equity and Education

- Remote learning allows students to attend school, complete assignments, and experience educational programs form home.
- Middle and high school students without home internet access or who depend on a cell phone for internet access tend to have lower GPAs, lower homework completion rates, and lower standardized test (like SAT) scores, and are less likely to plan to attend college or pursue STEM-related careers.[7]
- Education expose students to digital skills that can expand learning and introduce future career pathways.

Digital Equity and Civic Participation

- Digital access and inclusion also enable civic participation, especially as online government services expand[8]
- Government permits and services are increasingly accessed online via program websites and online application forms.
- Many public meetings can now be accessed via online videoconferencing, allowing more flexible remote participation, but also presenting challenges for those without digital access.
- Public announcements and community alerts are shared online on websites and via online applications
- Community organizing and other forms of social participation in civic life increasingly take place on social media.

[6] Turcios, Y. (2023, March 22). Digital Access: A Super Determinant of Health. https://www.samhsa.gov/blog/digital-access-super-determinant-health

[7] Hampton, K. N., Fernandez, L., Robertson, C. T., & Bauer, J. M. Broadband and Student Performance Gaps. James H. and Mary B. Quello Center, Michigan State University. https://doi.org/10.25335/BZGY-3V9

[8] Hovik, S., Giannoumis, G.A. (2022). Linkages Between Citizen Participation, Digital Technology, and Urban Development . In: Hovik, S., Giannoumis, G.A., Reichborn-Kjennerud, K., Ruano, J.M., McShane, I., Legard, S. (eds) Citizen Participation in the Information Society. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-99940-7_1

Digital Equity in Somerville

While this report marks Somerville's first Digital Equity Plan, Somerville is not starting from square one. The city has engaged with issues of internet access and the digital divide for the past several years, notably via the Internet Access Task Force, and with the more recent formation of the Somerville Digital Bridge Initiative. This report seeks to build on these existing efforts in Somerville that have already laid the groundwork with research, recommendations, and values.

Internet Access Task Force

In 2018, the City of Somerville established the Internet Access Task Force- a committee of residents- supported by staff from the City's IT, Communications, and SomerStat Innovation and Analytics departments who met for a year to explore ways to preserve and expand affordable and neutral internet service across Somerville. After meeting with experts, conducting research, and participating in various discussions the Task Force developed a report and in October 2019 concluded their charge by submitting "recommendations for expanding internet access and supporting net neutrality" to the mayor's office and to City staff. The report's central recommendation was that the city facilitate the build-out of an open access fiber network with the ability to serve all addresses citywide in order to encourage a more competitive marketplace for internet service. To undertake such an ambitious effort, the Task Force considered various business models for the envisioned open access network, including municipal and private ownership and operation models.

In addition to its central focus on open access fiber infrastructure, the report also recommended a variety of additional "complimentary" technologies and approaches that could increase internet access in the shorter term, such as the deployment of community mesh networks, Wi-Fi networks implemented at public facilities, expanded device and hot-spot lending programs, the encouragement of building-hosted internet services, and the development of educational materials connecting residents to resources.

Lastly, the report advocated for a number of policies and for additional data collection. These recommendations included supporting net-neutrality policy and values statements, establishing a point-person for regional collaboration, adopting a dig-once policy, and collecting and mapping data on existing fiber conduit as well as collecting data on resident support for net neutrality.

While the work and research began an important conversation in Somerville and laid the groundwork for future digital equity efforts, the recommendations—particularly those focused on ambitious, complex,

1

Spring 2018

Formation of the Internet Access Task Force

2

October 2019

Publication of Internet Access Task Force Report

3

March 17, 2020

COVID-19 pandemic, Somerville Public Schools close in-person learning and move to remote-only

4

April 22, 2020

City of Somerville and Somerville Public Schools receive a COVID 19 Assistance grant from the Somerville Job Creation and Retention Trust to support closing the digital divide for SPS students, launching new programs to lend chromebooks and tablets, and help families without home internet sign up for service and lending hotspots/ jetpacks to families.

5

2023

Formation of Digital Bridge Initiative

6

Summer 2023

Application for MBI's digital equity planning program/engagement with MAPC

7

Early 2024

Hiring of Somerville's first full time Digital Equity staff

8

April 2024

Publication of Somerville's Digital Equity Plan

and expensive technology and infrastructure projects—were put on pause during the COVID-19 crisis.

Somerville Public Schools

With the outbreak of the COVID-19 pandemic in Massachusetts and across the country, Somerville public schools (SPS) moved to remote-only learning on Mach 17, 2020. At the same time, the schools and city staff wanted to ensure equitable access for all students. Through a COVID-19 Assistance grant from the Somerville Job Creation and Retention Trust, SPS grew its capacity to address the digital divide among its diverse student population, which includes 41.8% of students considered "economically disadvantaged" and 70% of students receiving free or reduced lunch.

Somerville Public Schools loaned more than 1,100 Chromebooks, 184 tablets, and 34 iPads for families without devices to support students' remote learning and schoolwork.

Through a survey and outreach, the schools identified that approximately 450 families in the district had no internet service at home. The City and District worked with Comcast to offer home internet service at no cost to families and to provide Verizon Jetpacks to families not eligible for Comcast service. Support for these disconnected families also included personal outreach coordinated by the Somerville Family Learning Collaborative and its multilingual team of liaisons. Many families lacked adequate devices at home, but in the span of just over a month SPS loaned more than 1,100 Chromebooks, 184 tablets, and 34 iPads to families without devices to support their students' remote learning and schoolwork.

The COVID-19 crisis catalyzed digital equity approaches within SPS that have continued even with the return of in-person learning. In their technology plan for 2023 – 2026, SPS focuses on system maintenance, replacement cycles, and service renewals. Additional grant funds and donations will focus on providing an adequate number of computers for students and staff. In the effort to close the digital divide, the school district continues to assist families in obtaining stable Internet through public Wi-Fi, hotspots, and reduced rate home internet service.

The SPS also maintains a multi-lingual website with technology support resources for parents and guardians, and even has a remote tech support submission form through which families can request help with technology related issues.

Digital Bridge Initiative

The Digital Bridge Initiative addresses Somerville residents' digital needs by recognizing digital inclusion as a critical determinant of health that intersects with economic stability, education, healthcare, and neighborhood and community context. In the city of Somerville, where access to internet, devices, and skills varies across different population groups, addressing digital inclusion focuses on vulnerable

Digital Bridge Initiative prioritizes initiatives targeting the needs of socially disadvantaged populations, aiming to bridge the digital gap and enhance overall community health.

and disadvantaged residents. In response, the digital equity efforts in Somerville through the Digital Bridge Initiative prioritizes initiatives targeting the needs of socially disadvantaged populations, aiming to bridge the digital gap and enhance overall community health.

The Digital Bridge Initiative has established a set of priorities, delineating their core values, operational limitations, timeline considerations, and the precise digital equity objective they aim to accomplish (Appendix 1). The Digital Equity Plan incorporates those priorities and includes additional recommendations as gleaned from the planning process findings.

Digital Equity Plan

This Digital Equity Plan serves as a strategic document articulating a vision and recommendations that emerged from a process of assessing the community's digital equity needs, interests, and assets. It builds on the digital equity framework and the existing foundation of digital equity work in Somerville that is detailed above. This framework will serve as a guide for future municipal decision-making, potential investments, and new programs to support digital equity efforts. Ultimately, the goal of this plan is for its vision and recommendations to enhance internet access and usage, particularly for populations most socially and economically disadvantaged in Somerville.

Data Informed and Community Led

To understand residents' access to opportunities and services, the planning team gleans insights from quantitative data, as well as the community voice through resident surveys and focus group discussions.

Planning for Action

The focus of digital equity planning services is to set the foundation for future project implementation and program planning. The plan connects Somerville's digital needs to ongoing MAPC programs like Wi-Fi procurement in public housing and advising on future funding resources for program support.

Public, Multidisciplinary, Collaborative, and Regional:

The planning process and recommendations are designed for Somerville to collaborate with neighboring municipalities through regional strategies in digital equity service delivery.

The planning process guides and outlines actions for closing the digital divide in Somerville through data analysis and community needs assessment. The plan centers the needs of Somerville residents and is tailored to fit the capacity of municipal staff and other local implementers. MAPC envisions that the plan will help inform the following goals-

Prioritize residents' digital equity needs as a pre-requisite to further accessing essential services like healthcare, education, job opportunities, transportation, and social services. The assessment identifies existing conditions, including assets, needs, and opportunities. In conclusion, the action Plan develops an implementation strategy to address the digital divide with concrete projects, resources, and other interventions.

Identifying and advocating policy decisions: Municipalities have the regulatory capacity in permitting and licensing internet services. This plan guides how regulatory authority can enhance digital access, empowering municipalities to advocate for state-level policy changes.

Future funding and capital investment: The American Rescue Plan and Infrastructure Investment and Jobs Act offer significant funds for broadband infrastructure from the federal government. This plan provides an inventory of existing available funding for near term and long-term actions specifically focused on Digital Equity. Additionally, it identifies funding that addresses broader community and economic development actions where digital equity fits in.

Ongoing program needs: Achieving and maintaining digital equity requires continual effort. Municipalities, central to funding and coordination, can refer to this plan for ongoing guidance in addressing digital access challenges.

In addition to these principles from MAPC's planning practice, this plan is also guided by the Digital Bridge Initiative's Equity Statement, specifically

Prioritize the needs of socially disadvantaged populations: the digital divide does not impact everyone in Somerville equally. Therefore our planning process seeks to center the voices and needs of those most impacted.

Planning process and timelines

1 Existing Conditions and Data Analysis

May 2023 – December 2023

Identify and analyze the existing data sources for internet service availability, connection speed, device accessibility, and socio-economic census data.

2 Community Needs Assessment and Qualitative Research

June 2023 – January 2024

Analyze the needs through direct community engagement via key informant interviews with municipal staff, surveys, and focus group discussions. It identifies the most vulnerable population groups in Somerville and highlight their digital equity needs.

3 Action Plan Development

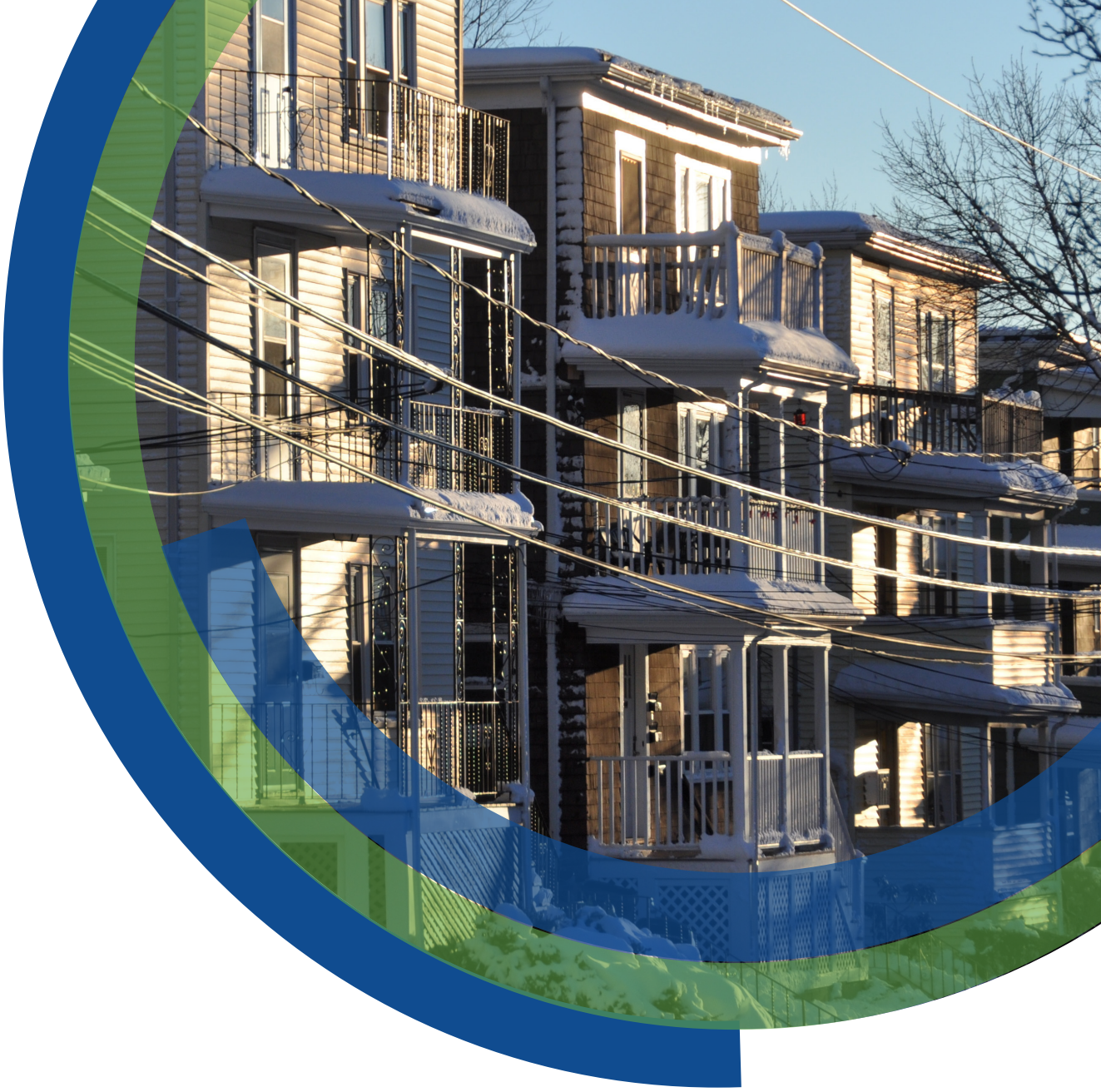
November 2023 – February 2024

Review findings from existing conditions and community needs assessment to identify areas of intervention and improvement to match the plan goals.

4 Plan Documentation

February 2024- March 2024

Synthesize the findings and recommendations to a comprehensive document that outlines the barriers and needs of the Somerville community along with the future roadmap for the Somerville community



EXISTING CONDITIONS ANALYSIS

The first step in the Somerville Digital Equity Planning process was to identify and analyze existing conditions in the city. This meant starting with understanding demographic context with a focus on the populations most impacted by the digital divide, and continuing with research focused on digital infrastructure and digital equity in Somerville

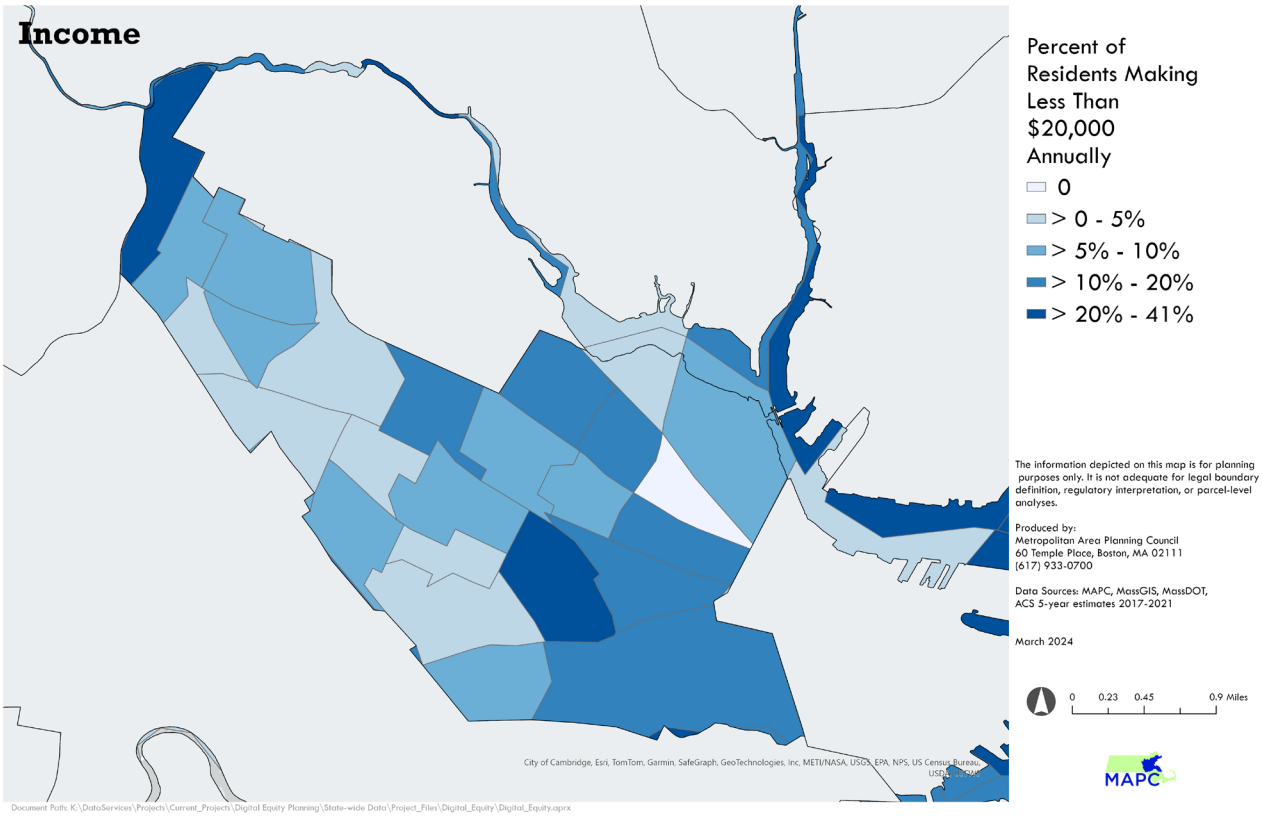
Community context and vulnerable populations

Somerville's unique community context and demographics provide an important backdrop for digital equity planning and ongoing digital inclusion work. Because the digital divide does not impact all residents equally, this plan considers population characteristics associated with residents most impacted with a focus on low-income residents, socially disadvantaged residents, immigrants, non-English speaking residents, and on older residents and those living with disability.

Low-income residents

Affordability is the number one barrier to closing the digital divide in Massachusetts. The vast majority of homes have the underlying broadband infrastructure to connect, so those without a broadband subscription often go without high-speed internet simply because they can't afford it. With this in mind, factors like income, poverty, and cost-burden are some of the most important population characteristics to consider to understand and plan for digital equity in Somerville.

15%
of Somerville residents spend over
50%
on housing



The 3,733 households earning less than $20,000 annually in Somerville are mainly concentrated in West Somerville near Clarendon Hill, Prospect Hill, East Somerville, and Ten Hills Neighborhood, with a significant presence in public and affordable housing areas.

The city's median household income is $120,778, but despite the relatively high average income, 10.2% of Somervillians live below the poverty line. More than 1-in-10 households earn under $20k per year, and one in three households earns less than $75k per year. Thirty-five percent of households in Somerville are cost-burdened, spending more than 30% of their income on housing. Fifteen percent spend over 50% on housing. This financial pressure means that basic necessities like groceries, rent, or transportation can compete with lower income Somerville residents' ability to afford internet service subscriptions, or up-to-date computing devices. (ACS)

Income Level	Number of households	% of households
Households with Income under $20,000	3,733	10.8%
Households with Income $20,000 to $74,999	7,907	22.9%
Households with income $75,000 to $124,999	7,856	22.8%
Households with Income $125,000 to $199,999	8,200	23.8%
Households with Income $200,000 or more	6,827	19.8%

Cost Burden	Number of households	% of households
Cost Burdened Households	11,762	35%
Cost Burdened Households paying 30-50% of Income	6,671	20%
Cost Burdened Households paying 50% or more of Income	5,091	15%

Socially disadvantaged populations

The digital divide disproportionately impacts socially disadvantaged residents who experience racial or ethnic prejudice or cultural bias[9]. The following map depicts the percentage distribution of population who identify as American Indian, Pacific Islander, Asian, Black, Hawaiian, Hispanic or Latino, or some other race. Even when accounting for income, residents of color are less likely to have a broadband subscription and are more likely to depend on mobile wireless internet. Those with limited English language proficiency may face barriers to accessing the internet and needed information. Newly arrived individuals may have had less access to technology in their country of origin and/or may have less trust in government programs, as well as more concerns about privacy.

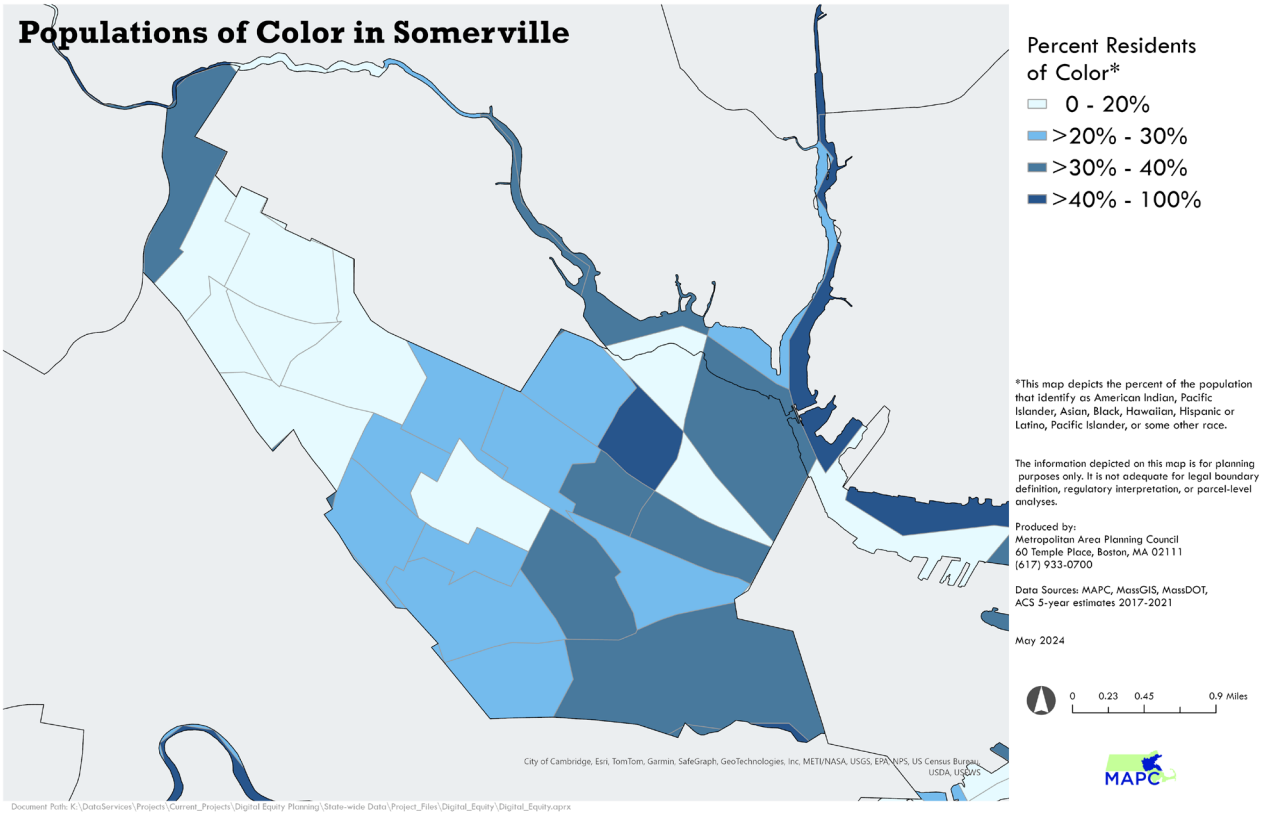
Nearly sixty-nine percent of Somerville residents identify as non-Hispanic white, 10.5% of residents identify as Asian, 4.1% of residents identify

[9] 13 CFR 124.103 https://www.ecfr.gov/current/title-13/part-124/section-124.103

as Black or African American, and 0.4% identify as American Indian or Alaska Native. Roughly eight percent identify as two or more races, and 10.9% of the population identifies as Hispanic or Latino. A quarter of Somerville's residents were born in a country other than the United States. Twenty-nine percent of residents speak a language other than English at home, and of those, 4.1% report not speaking English well, and 1.9% report not speaking English at all—meaning about 6% of the Somerville population have limited English language proficiency. (ACS)

29.1%

of residents speak a language other than English at home



A higher percentage of residents of color are concentrated in West Somerville, Assembly Square, East Somerville, and Prospect Hill neighborhood.

Older residents and residents with disabilities

Older residents and those with disabilities also face significant barriers to digital equity, including physical limitations and inadequate access to supportive technologies and devices. A little more than nine percent of the Somerville population is over 65 years old. Eight percent of the Somerville population reports living with a disability, including 4% with ambulatory disability, 3% with independent living difficulty, 3% with cognitive difficulty, 2% with hearing disability, 1% with visual disability, and another 1% with self-care difficulty. (ACS)

Digital Equity data

Beyond reviewing demographic data, the existing conditions analysis explored digital equity-specific data as well. This included research into infrastructure and ISP availability, analysis of American Community Survey data, and other available data such as the FCC's Form 477 data and openly available internet speed test data. This research was then contextualized through a community engagement process which included survey research, focus groups, and individual interviews.

Internet service availability in Somerville

Relative to other municipalities in the region, Somerville is comparatively well served by Internet Service Providers using cable technology. Fiber to home technology is more limited, and there are also multiple fixed wireless providers in the city.

Provider	Technology	% of addresses served
Comcast	Cable	99.99%
Astound (RCN)	Cable	69%
Astound (RCN)	Fiber	27.2%
netBlazr	Fixed Wireless	81.7%
Starry	Fixed Wireless	29.1%
T-Mobile	Fixed Wireless	7.1%
T-Mobile	Fixed Wireless (non-broadband)	30.9%

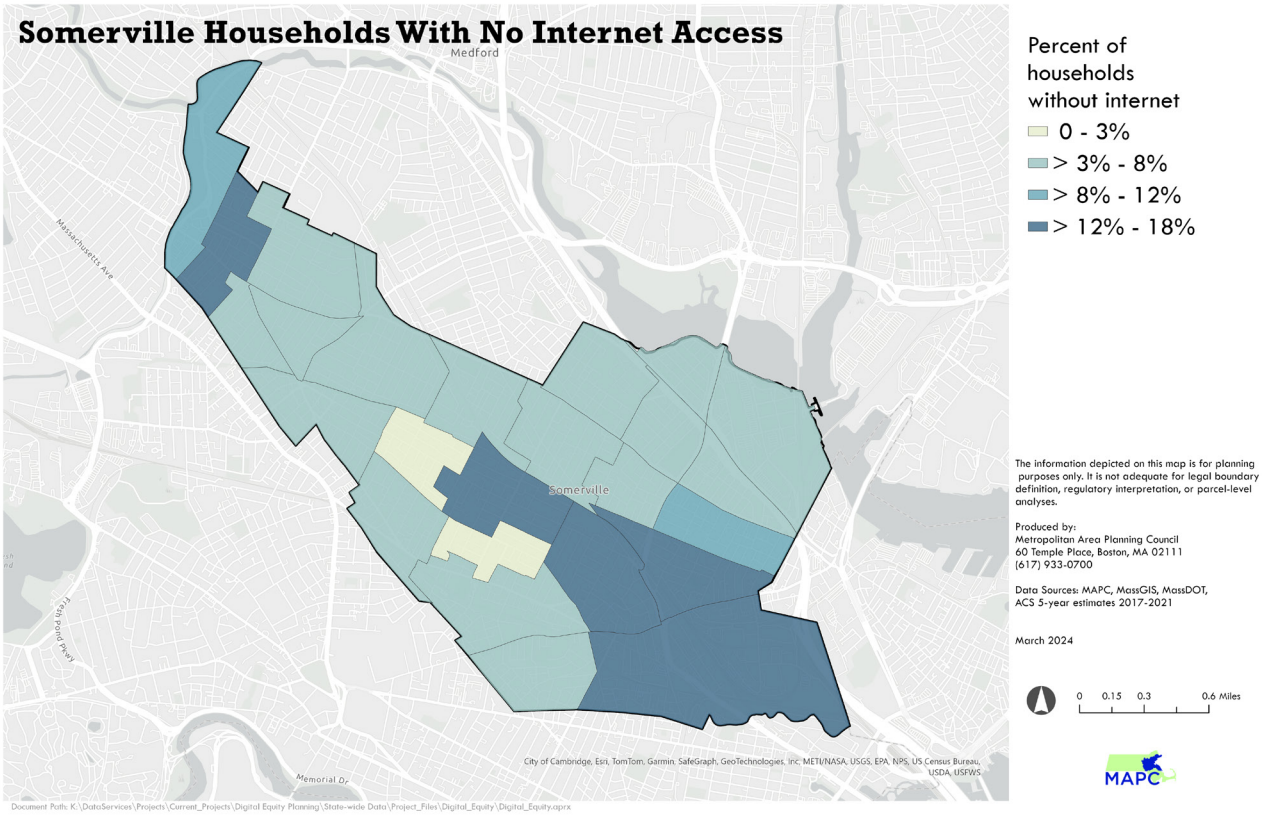
Source: FCC Form 477 Data: https://mapping.massbroadband.org/map

Cost of service in Somerville

Cost of service is a larger issue in Somerville. According to a Massachusetts Broadband Institute survey that reached 92 Somerville residents, the median reported monthly internet bill in Somerville cost $50. Sixteen percent of these survey respondents reported that it was "somewhat hard" or "very hard" to pay their monthly internet bill. A second survey targeting more vulnerable populations conducted by the Somerville Digital Bridge Initiative in partnership with multiple community-based organizations found that 52% of the survey's 234 respondents said that it was "somewhat hard" or "very hard" to pay their monthly bills.

52%

of DBI survey respondents said that it was "somewhat hard" or "very hard" to pay their monhtly bill



This map shows the percent of households without internet in each Somerville Census Tract according to the ACS. Citywide, 8.3% of households are without internet access in Somerville.

Internet Infrastructure and Market in Somerville

A key factor in whether it is possible to provide reliable, high-speed broadband access is infrastructure on which that service relies. While this Digital Equity Plan is not a broadband or infrastructure plan, evaluating the existing infrastructure is a key component of understanding root causes and potential solutions to low or unevenly distributed service quality.

The vast majority of individuals who access the internet do so via an Internet Service Provider, or ISP. ISPs provide the link between a personal computing device (computer, tablet, smartphone, or any number of connected devices like televisions, gaming consoles, smart home devices, etc.) and the broader internet. In Somerville (as in most of the United States), these ISPs are all private companies. There are several technologies used to bring internet service into peoples' homes: fiber, cable, fixed wireless, and satellite. People may also access the internet using a mobile device (a dedicated hotspot or a smart phone with "tethering" capabilities) or may rely exclusively on Wi-Fi signals provided in public spaces by libraries, schools, cafes, or other establishments. Each of these different modes of connection has an impact on speed,

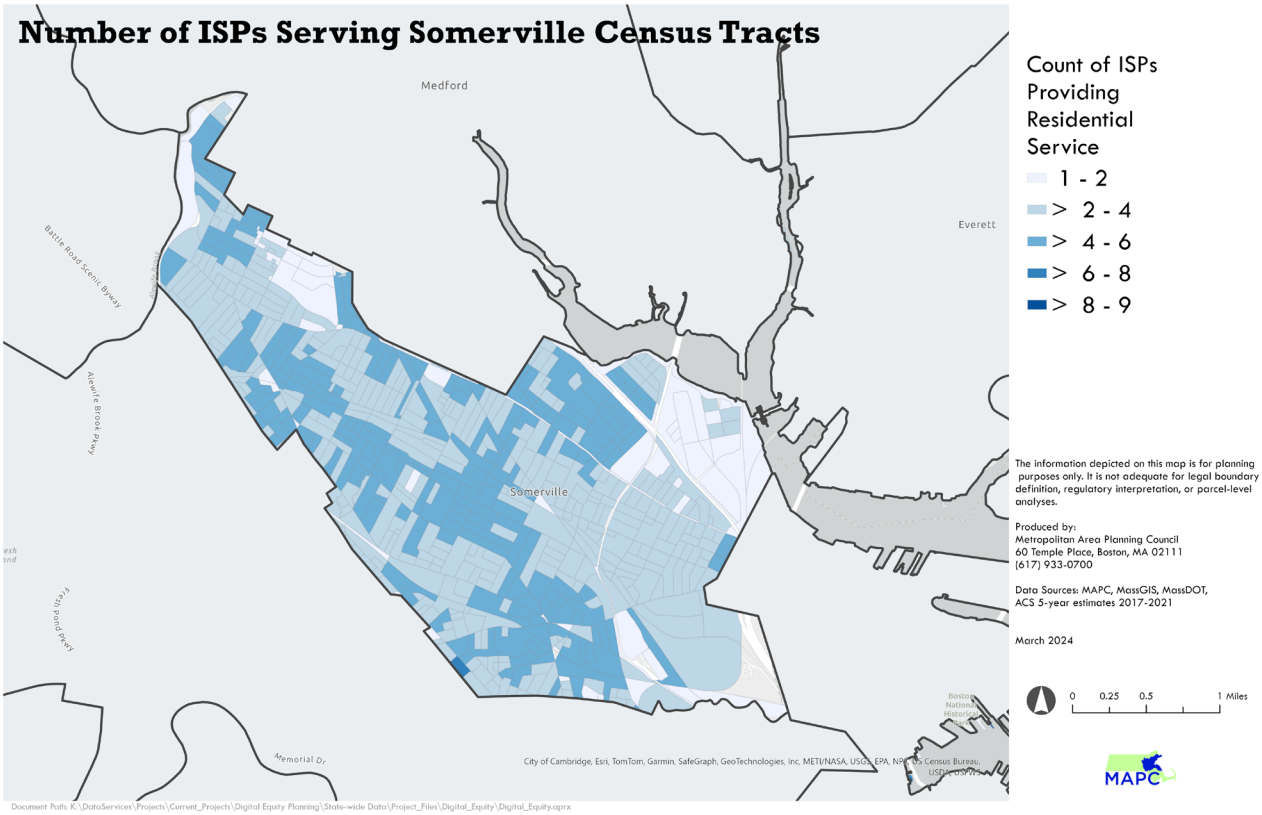
cost, and reliability. (For more information about network speed and technology, refer to Appendix 2, Network Technology, and Appendix 3, How is speed measured and reported.)

All internet service providers must self-report information about the service they provide to the Federal Communications Commission (FCC) using Form 477. This form requires an ISP to report the fastest plan they offer within a given census block (for Cable, Fiber, or Fixed Wireless providers), or provide a coverage map (for Satellite and Cellular providers). Form 477 lists the number of "Broadband Serviceable Locations," or BSLs served by each technology. The FCC defines a BSL as "a business or residential location in the United States at which mass-market fixed broadband Internet access service is, or can be, installed." In Somerville, there are nearly 18,000 BSLs. The form does not collect information about cost, how many people subscribe to the plan being listed, or what the other "lower" plans are; it only provides information about the fastest plan available for at least one location within a census block.

In Somerville, there are

18,000

Broadband Servicable Locations (BSLs)



This map illustrates the count of ISPs providing non-DSL residential services with at least 100 mbps download and 10 mbps upload speeds by census block. (Source: FCC Form 477) .

Form 477 Reported Service Availability in Somerville

Fiber Internet

In Somerville, Astound (the trade name for RCN) offers fiber optic internet to 4,822 BSLs in Somerville, or 27.2% of the total BSLs. Their advertised maximum speed is 1 gigabit symmetrical service, or 1,000 megabits per second upload and download. While Verizon also offers fiber internet (advertised at 940mbps download and 880 mbps upload), they only serve 126 BSLs, or 0.7% of the total. This is likely due to a census block in a neighboring municipality served by Verizon fiber being split between two municipal boundaries, with only 126 addresses falling within Somerville.

Provider	Technology	Covered BSLs	% coverage	Max speed
Astound	Fiber	4,822	27.2%	1gbps/1gbps
Verizon	Fiber	126	0.7%	980mbps /880mbps

Source: FCC Form 477 Data: https://mapping.massbroadband.org/map

Cable Internet

In Somerville, 99.99% BSLs have Comcast cable internet available. Comcast's maximum advertised speed for this service is 1,200 megabits per second download and 35 megabits per second upload.

Astound/RCN also serves 69% of BSLs with a cable internet service at an advertised maximum of 1,000/20.

Provider	Technology	Covered BSLs	% coverage	Max speed
Comcast	Cable	17,706	99.99%	1.2gbps /35mbps
Astound	Cable	12,217	69%	1gbps/20mbps

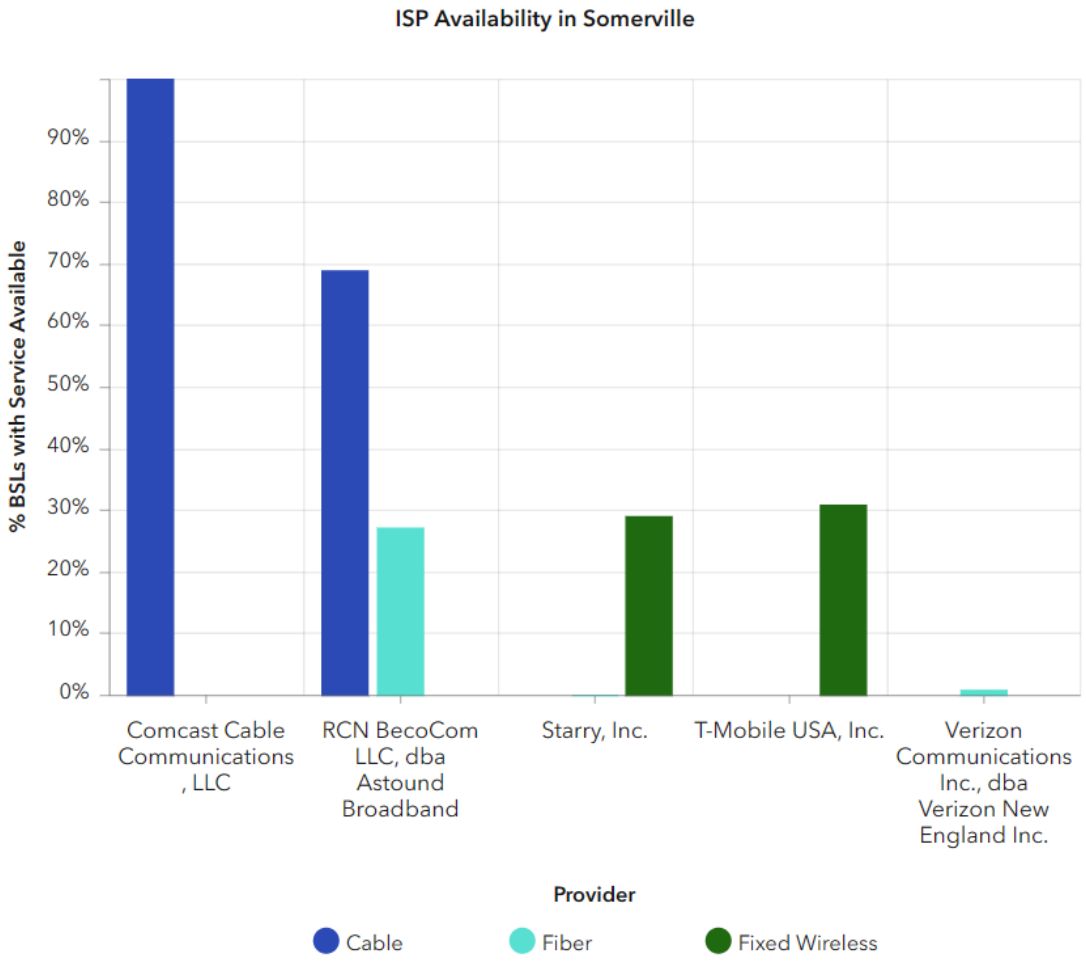
Source: FCC Form 477 Data: https://mapping.massbroadband.org/map

Fixed Wireless internet

In Somerville, netBlazer provides service to 81.7% of BSLs, offering an advertised maximum of 50 mb/s symmetrical service. Starry serves 29.1% of BSLs with an advertised maximum of 200/100, while T-Mobile offers 7.1% of BSLs a maximum 100/20 service and 30.9% of BSLs a sub-broadband 25/3 connection.

Provider	Technology	Covered BSLs	% coverage	Max speed
netBlazr	Fixed wireless	ADD	81.7%	50mb/50mb
Starry	Fixed wireless	5,155	29.1%	200mb/100mb
T-Mobile	Fixed wireless	1,261	7.1%	100mb/20mb
T-Mobile	Fixed wireless (sub-broadband)	5,475	30.9%	25mb/3mb

Source: FCC Form 477 Data: https://mapping.massbroadband.org/map

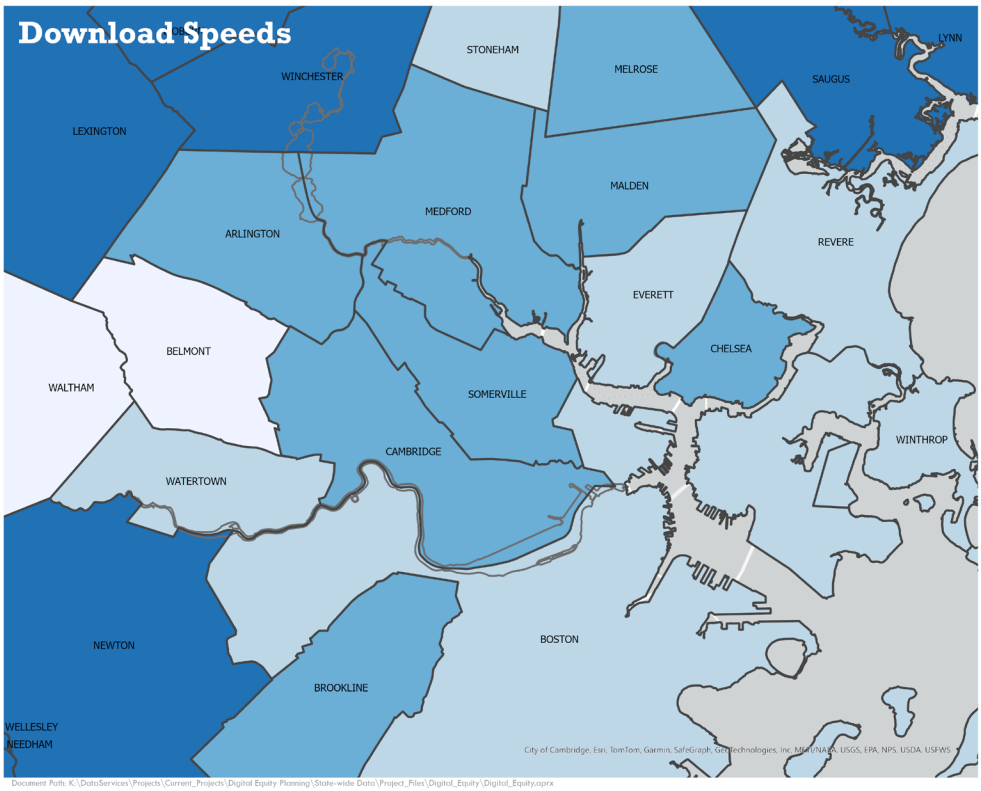


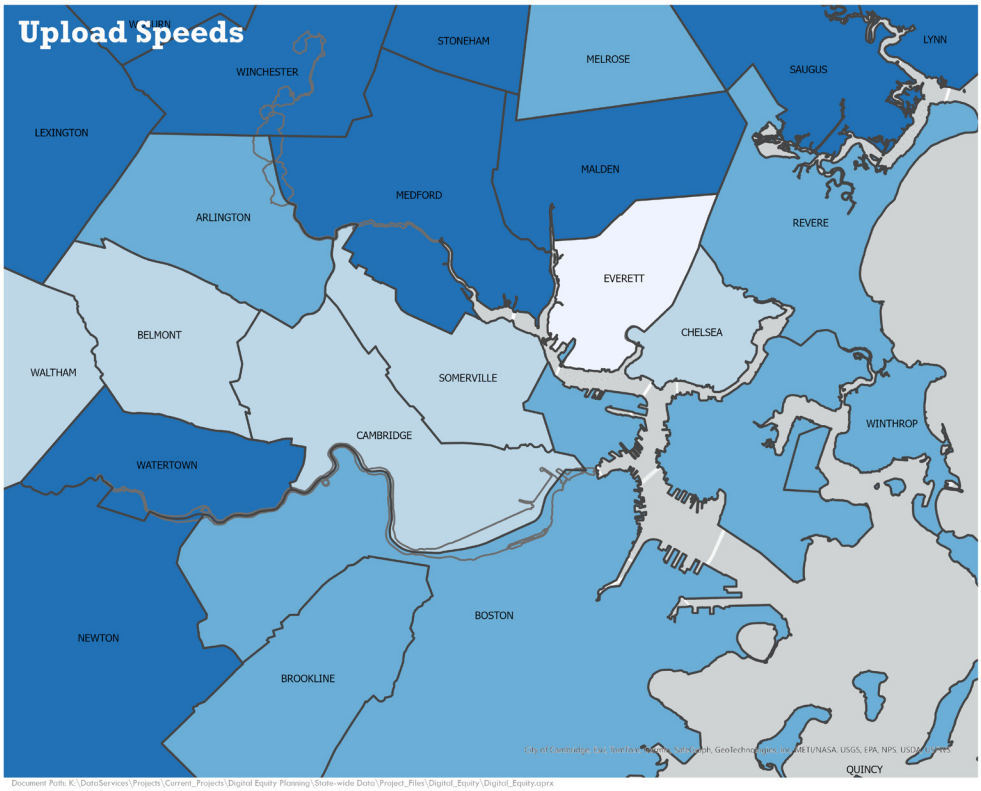
The chart above shows the percent of Broadband Serviceable Locations (BSLs) that each Internet Service Provider (ISP) serves with at least 25 mbps download and 3 mbps upload speeds, and the technology they use to provide service. Source: FCC Form 477 Data: https://mapping.massbroadband.org/map

Connection Speed

According to speed test data collected by Measurement Lab (M-Lab, a nonprofit that provides free, open-source internet speed test data), between January and September 2023 the median download speed in Somerville was 174 mbps (n = 4,894), with 68.33% of tests over 100 mbps and 86.06% over 25 mbps. The median upload speed was 22 mbps, which represents a potentially limiting level of upload performance. These speeds exceed the FCC definition of Broadband service (100mbps/20mbps) for all but the remaining 14% of tests which fell below these thresholds. Speeds of 100mbps/20mbps should be sufficient for many individual use cases, though they will likely fall short of the needs of a household in which multiple people need to connect to bandwidth-intensive applications (like video conferencing) simultaneously.

These speed test results place Somerville relatively in line with





The two maps above compare the download and upload speeds for Somerville with neighboring municipalities

neighboring municipalities, with Cambridge residents experiencing higher median upload and download speeds, and Medford, Everett, and Chelsea residents experiencing lower download speeds. Medford residents (who performed M-Lab speed tests between January and September 2023) experienced surprisingly high upload speeds of 100 mbps; this is likely due to the fact that Verizon offers fiber internet to 93.4% of addresses in Medford compared to less than 28% of addresses in Somerville having access to fiber internet from Astound or Verizon.

Community	Median upload speed	Median download speed
Somerville	174 mb/s	22 mb/s
Cambridge	227 mb/s	33 mb/s
Medford	143 mb/s	100 m/s
Everett	93 mb/s	13 mb/s
Chelsea	134 mb/s	23 mb/s

Median upload and download speeds for Somerville and nearby communities (source: M-Lab)

In-building infrastructure also has an impact on connection speed. Modern wiring (either fiber optic data cables or CAT6A ethernet cables) offer the fastest connection, while older technologies have a lower maximum data throughput and can reduce data transfer speeds available to connected devices. Wireless infrastructure and setup also impact connection speed: older wireless routers may not only limit data transfer speeds, but also limit the distance from the wireless router a device can be located and still receive a usable connection. Finally, placement of wireless equipment and building materials can have a major impact on network speed: a Wi-Fi signal that has to travel a long distance or pass through dense building materials such as masonry will be much slower than a signal which travels a short distance without obstruction (or through less dense materials, such as drywall).

All of these factors work together to mean that it is less likely that a resident in an older, multi-unit apartment building (such as those common throughout Somerville, especially in public and affordable housing) will be able to experience fast, reliable internet—even if they are able to afford a fast service plan from a provider. This is an area where data is not broadly available, as it is entirely dependent on local conditions and equipment. There are, however, grant programs designed to address obsolete building wiring (see recommendation 3.6 and Appendix 6: Funding Memo).

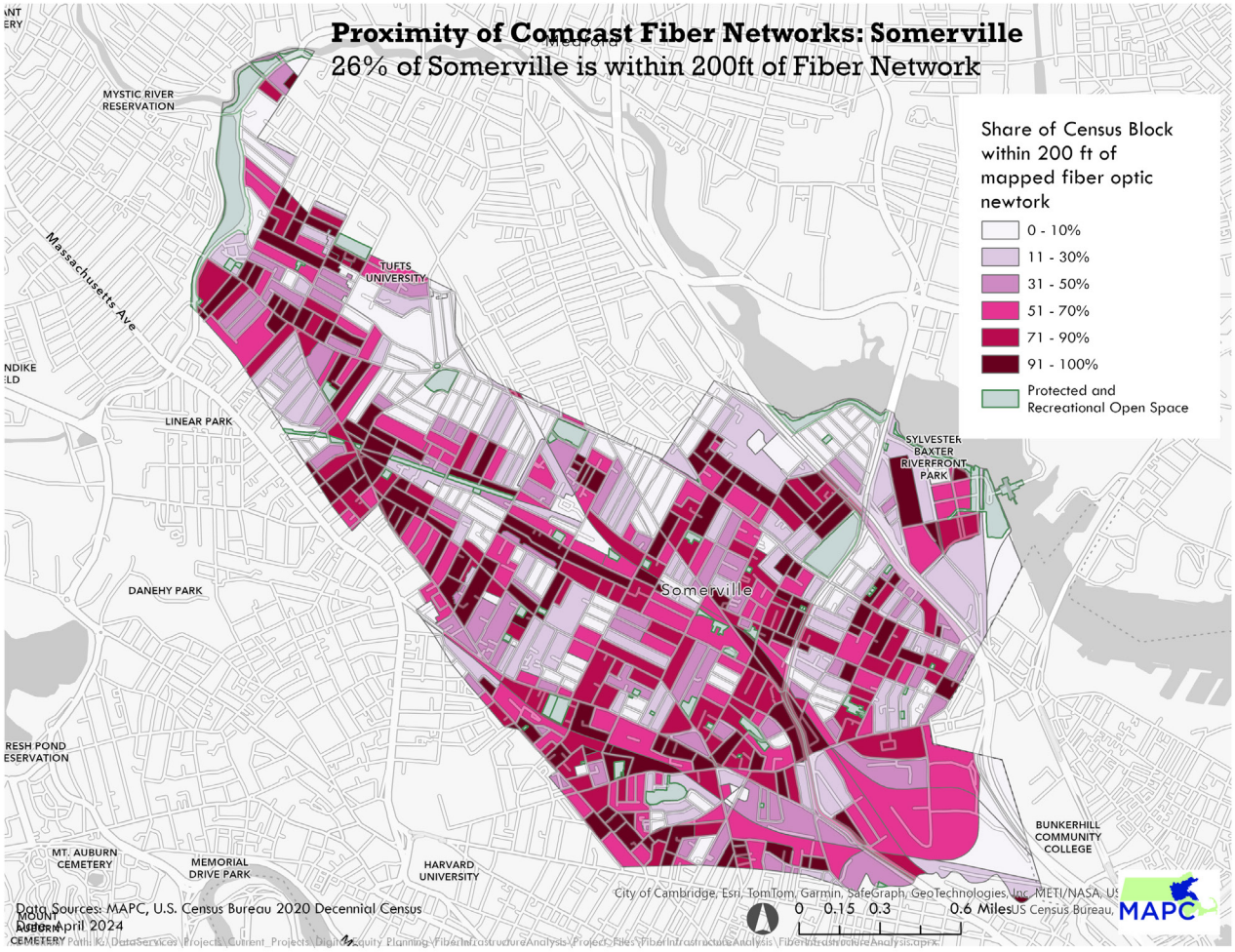
Geographic distribution of service

While private ISPs do not make maps of the infrastructure they own publicly available, it is a standard provision of municipal cable franchise agreements that the municipal government may request these maps from providers that use the public right-of-way. By analyzing these maps, it is possible to determine a "best case scenario" for which households could be served by fiber infrastructure. This is particularly relevant in a city like Somerville, in which only 27.2% of households have access to fiber connections. Mapping the location of this infrastructure and analyzing it in context with neighborhood demographic, income characteristics, and other indicators makes it possible to assess whether high-quality infrastructure is equitably distributed, and can uncover inequitable practices like digital redlining (similar to housing redlining, in which high quality service is offered only to whiter, wealthier areas, while lower income residents and communities of color are left behind).

In Somerville

27.2%

of households have access to fiber connections



The map gives a measure of proximity of census blocks to the fiber optic cable. Data Source: Comcast.

To determine the "best case scenario" given existing private infrastructure, MAPC analyzes the percentage of addresses within a given census block that fall within 200 feet of a mapped fiber line. Two hundred feet is roughly the maximum transmission distance over which a signal can be sent using non-fiber infrastructure without experiencing service degradation. As of the date of publication, MAPC has received an infrastructure map from Comcast, but not from Astound.

While Comcast does not offer fiber to the home connections in Somerville, the Comcast network "backbone" in Somerville is largely made up of fiber. This allows Comcast to offer high-speed download connections (1.2gbps), but the lack of fiber to home availability is likely a limiting factor that explains the lower upload speeds (35mbps). The fiber map illustrates the distribution of fiber infrastructure at the census block level within Somerville. It highlights that the neighborhoods in West Somerville, Ball Square, Magoun Square, and Ten Hills are poorly served by fiber infrastructure.

Affordability

Service affordability is a major and consistent challenge in Somerville, as it is in many urban environments that are considered by the FCC to be "served" with broadband. The cost of home internet in Somerville is one of the hardest aspects of broadband connection to quantify. Because the FCC does not require companies to report prices, surveys and other qualitative research are the only way to determine what cost burden residents bear for internet service.

Survey Data

According to a survey from the Massachusetts Broadband Institute (n = 92), the median monthly internet bill paid by households in Somerville was $50, with 16% of respondents reporting that it was "somewhat difficult" or "very difficult" to pay their bill. A second survey conducted by the Somerville Digital Bridge Initiative in partnership with multiple community-based organizations (which was shared with vulnerable populations specifically, reaching 234 residents) found that 52% of this population said that it was "somewhat hard" or "very hard" to pay their monthly bills.

According to a survey by Massacusetts Broadband Institute (MBI), the median monthly internet bill paid by households in Somerville was

$50

Affordable Connectivity Program

The Affordable Connectivity Program (ACP) was a federal subsidy program available to households living at or below 200% of the Federal Poverty Line ($60,000 for a family of four), which provides a $30 monthly subsidy towards any qualifying internet service plan. This program was enacted in 2021 as part of the Bipartisan Infrastructure Law, and originally

funded with $14.2 billion. As of January 2024, the FCC announced plans to wind down the ACP program because Congress had not appropriated additional funding to sustain the program. The FCC stopped accepting new sign-ups or renewals for the program in February 2024, and the program is expected to run out of money in or around April 2024.

According to the Institute for Local Self Reliance, of an estimated 15,670 households in Somerville that meet this income requirement, only 2,190 were enrolled in the subsidy, or 14%. This lags far behind the ACP enrollment rate for Greater Boston as a whole (28%), which itself has the 4th lowest enrollment rate of any metro area in the country. For comparison, in the highest enrollment metro area, Detroit, 65% of eligible households are enrolled in the subsidy program.

The wind-down of the ACP will mean that the 2,190 enrolled households in Somerville will lose access to this subsidy in April, 2024. This represents a loss of approximately $65,700 in subsidies every month, or $788,400 annually, exclusively for low-income households. While internet service providers do offer some low-cost, income qualified plans (Comcast offers "Internet Essentials" at $10/month for a 50mbps/10mbps connection or $30/month for 100mbps/20mbps broadband service, and Astound offers "Internet First" at similar rates), many families who relied on the ACP subsidy did so in conjunction with these plans, making their internet service free.

The wind-down of ACP represents a truly urgent need for Somerville's most vulnerable residents, as well as an opportunity for the city to step in to help address the digital divide at a local level, in the wake of federal inaction.

The ACP wind-down represents a loss of approximately

$65,700

of subsidies every month, exclusively for low-income households

Internet Connection by Income

The American Community Survey (ACS) provides data about internet connection by income. While more than 95% of the overall Somerville population does have an internet connection, lower income residents make up a large portion of the households with no internet connection:

Household Income	% with no internet connection
Under $20,000	30.2%
$20,000 - $75,000	14.4%
Over $75,000	2.6%

Device Access

Of the three pillars of digital equity (internet access, device access, and digital literacy), internet access can be the easiest to quantify because it relies on regulated infrastructure. Data about digital literacy and device access primarily comes from qualitative sources, such as survey research and community engagement.

The ACS contains some useful questions about connection and device access, which give a broad overview of how Somerville residents access the internet. The following table contains data from the most recent (2018-2022) ACS 5-year Estimates:

Community	Percent household with a computer	Percent household with a Broadband connection	Percent population over 65 with no computer	Population
Somerville	95.5%	93.1%	18.6%	80,608
Cambridge	97.3%	91.8%	7.1%	116,892
Medford	95.4%	92.3%	10.5%	60,708
Everett	94.2%	92.0%	15.7%	48,368
Chelsea	90.8%	82.7%	24.4%	40,025
Middlesex County	95.9%			
Massachusetts	94.3%	90.7%	11.5%	6,991,852

The ACS data provides more detail about how residents connect to the internet, and with what devices. According to the 2017-2021 ACS 5-year estimates, 7.1% of residents relied solely on a cellular phone connection to access the internet. ACS data does not differentiate between fiber, cable, or DSL broadband connections, but given the infrastructure data available from FCC Form 477 (see more detail in the Infrastructure section above) it's safe to assume that something less than 27.2% of households connect using fiber, with the remaining connected households using either cable or fixed wireless technology.

Finally, the ACS provides limited information about device access, with the 2017-2021 5-year estimates showing that 94.5% of residents have one or more computing device, 3.6% have a smartphone only, 2.1% have a laptop or desktop computer only, and 0.4% have a tablet only. This data is not available broken down by income or demographic characteristics.

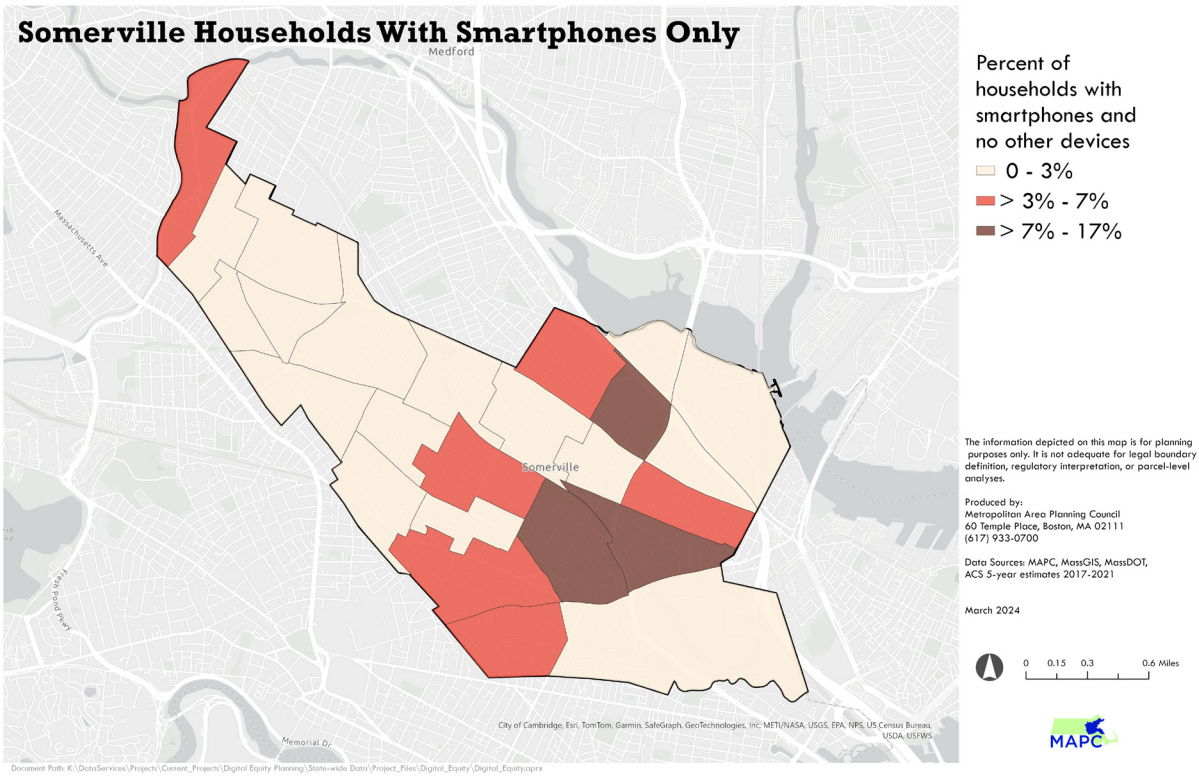
According to the 2017-2021 ACS 5-year estimates,

7.1%

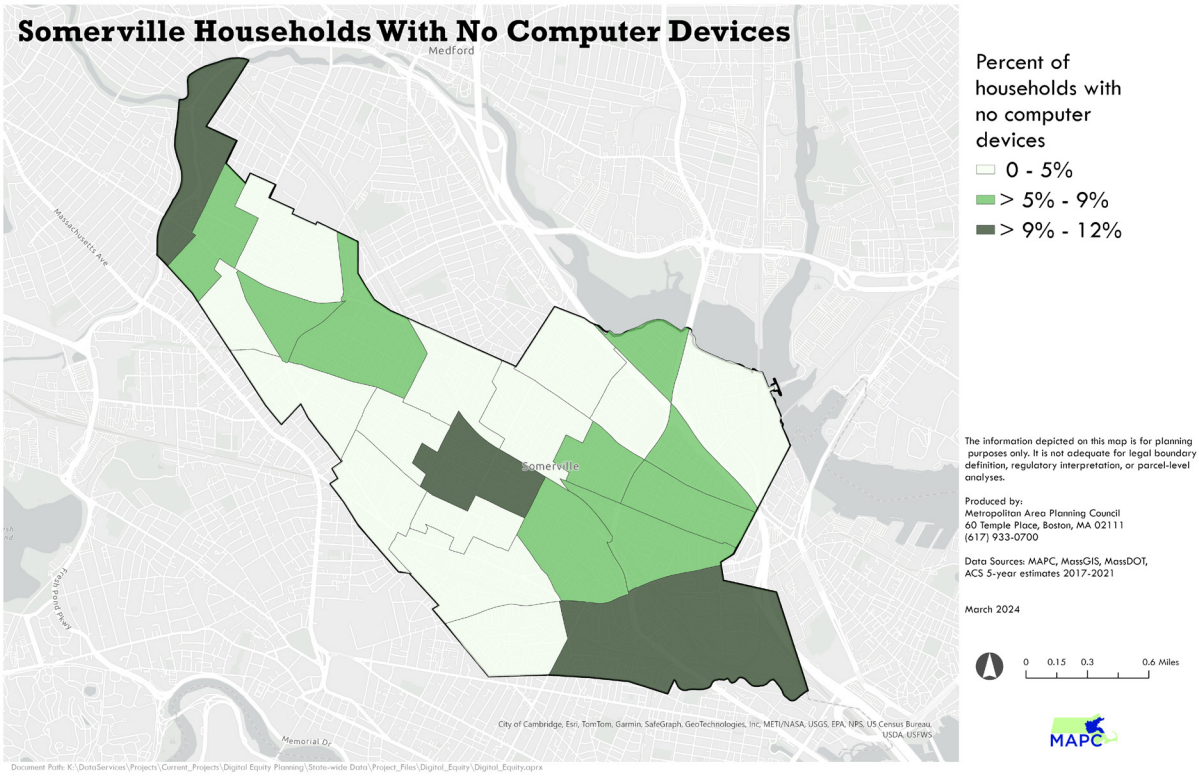
of residents relied solely on a

cellular phone connection

to access the internet



This map shows the geographical distribution of percentage of households with smartphones and no other devices. Citywide, 3.6% of households have smartphones and no other devices. Data source: Amercian Community Survey (ACS).



This map shows the geographical distribution of percentage of households with no computer devices. Citywide, 5.5% of households have no computer devices. Data source: Amercian Community Survey (ACS)

Because ACS 5-year estimates ask a limited number of questions related to internet and computer use (and do not contain any information about digital literacy), it's necessary to gather additional data to get a complete picture of digital equity in Somerville. The ACS data do show however, that the digital divide does not impact all individuals, all households or all neighborhoods equally in Somerville; but rather a smaller, often single digit, percentage of the population experiences the brunt of the challenges related to internet and device access.

To supplement ACS data and other data sources, additional data was gathered via surveys conducted by both the Massachusetts Broadband Institute, the Somerville Digital Bridge Initiative, and through a series of focus groups conducted with residents. For the reasons described above, additional this more qualitative information was targeted at those most impacted. For more detail, see the **Community Needs Assessment** section.

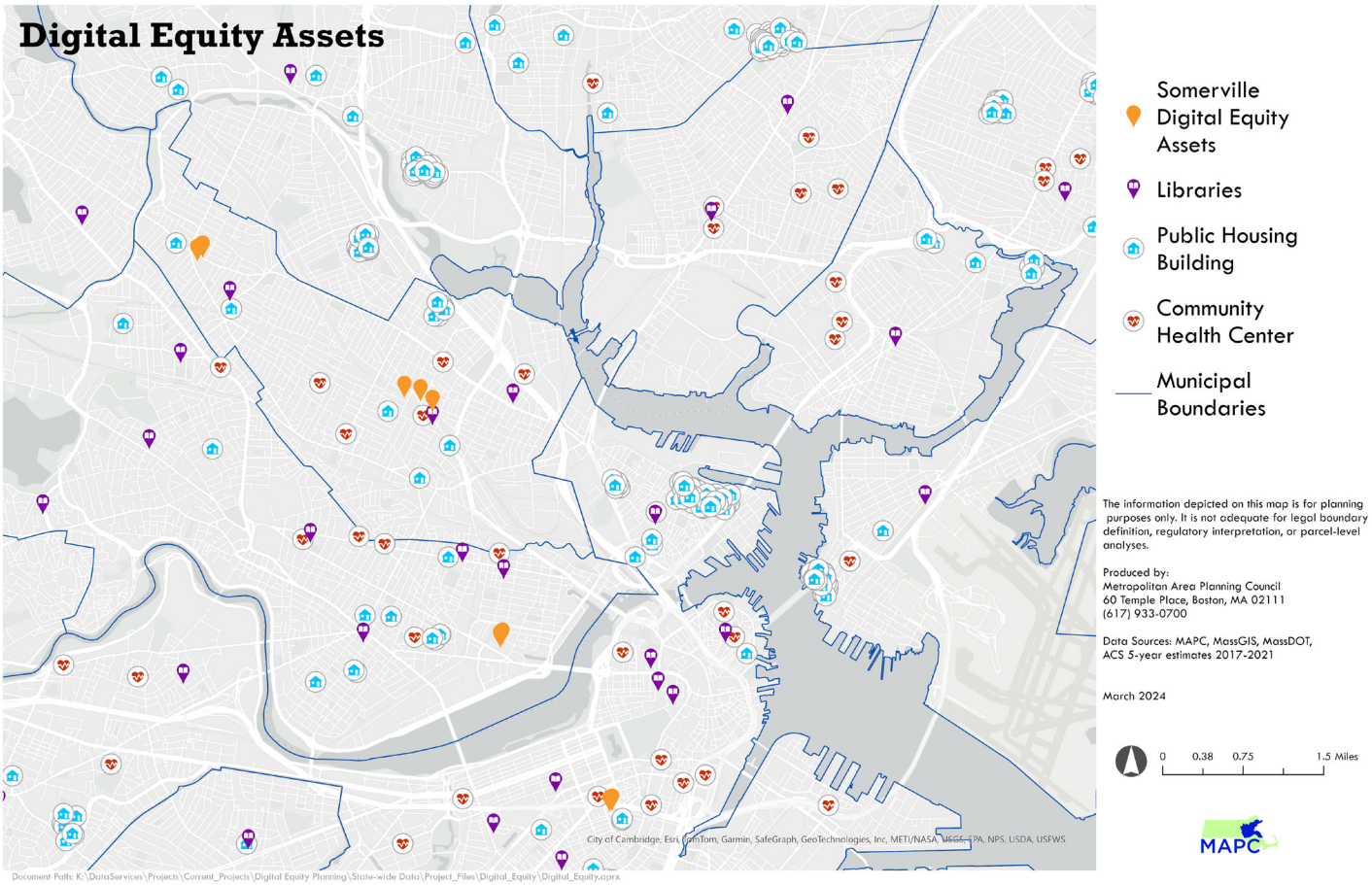
Digital Equity Assets

Beyond infrastructure, broadband connection, device access, and digital literacy, there is a group of digital equity "assets" that support residents' access to the internet. These assets can be formal, digital equity-specific assets like computer training programs, hotspot or laptop lending programs, or even public spaces with free Wi-Fi. There are also many informal digital equity assets, which might include a librarian who provides help setting up an email account, a housing authority staff member who assists a resident in filling out online benefit forms, or a financial literacy and tax assistance workshop at a senior center.

Somerville, with its existing foundation of digital equity efforts, addresses the digital needs of its residents through a diverse set of organizations, programs, and facilities. The Somerville Public Library addresses the three pillars of digital equity through public Wi-Fi, hotspot lending programs, technology lending programs, and technology support and instruction sessions. The Somerville school district is also a key player in the community to address the device access and technology needs of students and youth. The Council on Aging, through its iPad lending program and tech support efforts, aids in meeting the digital needs of older adults in Somerville The workforce development office also provides digital literacy coaching through the post-secondary success program as well as through Somerville Fab lab.

In addition to these institutional support systems, Somerville's local nonprofits and community organizations provide a rich landscape of

digital literacy and education support. Table 4 in the appendix details the digital literacy programs provided by Somerville Center for Adult Learning Experience (SCALE). They provide introductory training to IT landscape, English Language Learning classes, adult basic education classes, and online certification for using Excel for basic accounting. Per Scholas Greater Boston is another local nonprofit that provides digital literacy training through IT Support, cybersecurity, and software engineering courses. Additionally, digital navigators form an additional layer of support across different stakeholders including SomerPromise, the Somerville Public Library, SOIA, and the Council on Aging. The map below codifies the community's digital equity assets, while also highlighting the assets in neighboring municipalities.



Summary of Key Existing Conditions Findings

Internet service availability

Somerville residents have more choice in the ISP market than residents in many neighboring municipalities, although nearly one in four residents has only one or two options.

While fiber infrastructure within Somerville city limits is prevalent, fiber to home ISP service is limited, with only a single provider which provides service to less than 30% of addresses. This represents an opportunity to work with existing ISPs to extend this “last mile” service to residents, increasing potential download and upload speed and improving reliability

Connection speed

Median upload speeds are on par with neighboring municipalities, although median download speeds indicate that service may not be sufficient for all uses.

Residents of neighboring municipalities with more fiber to home service available also experience higher median upload speeds.

Affordability

Affordability is a major concern in Somerville, with over half of respondents to a survey targeted to vulnerable populations reporting that it is difficult to pay their internet bill each month.

The wind-down of the federal Affordable Connectivity Program means that over 2,000 income-eligible residents will lose access to a subsidy worth a combined $65,700/month. In Somerville, only 14% of eligible residents were enrolled in the program, indicating that there was a large population of eligible residents who never received this subsidy in the first place.

There are stark differences in internet service subscription rates by income, with over 30% of the lowest-income households in Somerville unconnected while only 2.6% of households earning $75,000 annually or above lack a broadband connection.

Device Access

Most households in Somerville have access to one or more computing devices.

Device reliability and quality are larger concerns, with many residents reporting challenges with the devices they do own (see more in the Community Needs Assessment section, below).

The City of Somerville and MAPC worked to complete this assessment through a series of focus groups and a targeted survey of over 200 residents with outreach focused on vulnerable populations most impacted by the digital divide. The survey was conducted through the fall and winter of 2023. The survey was distributed through multiple municipal and community channels and was conducted both online and in person (Appendix 7.1).

COMMUNITY NEEDS ASSESSMENT

To further understand the specific experiences of Somerville residents in accessing and using the internet, MAPC worked with community partners on a community needs assessment. The assessment was designed to identify key daily activities for which the internet was used, assess residents' current level of digital literacy, and identify barriers or challenges impacting their ability to use the internet.

The Digital Bridge Initiative and MAPC worked to complete this assessment through a series of focus groups and a targeted survey of more than 200 residents with outreach focused on vulnerable populations most impacted by the digital divide. The survey was conducted through the fall and winter of 2023. The survey was distributed through multiple municipal and community channels and was conducted both online and in person (Appendix 6.1).

Survey respondent demographics

In total, the Digital Bridge Initiative collected 234 surveys, of which 65% (152 count) of the respondents reported living in the Somerville zip code (Appendix 5.1). The following details highlight the breakdown of population groups we reached out to through the community outreach process.

Race and Ethnicity

42% of the survey respondents self-identified as Hispanic/Latino

30% as White or Caucaisan

18% as Black or African American

12% as Asian or Asian-American

2% as Nepali

1% as Native American

1% as Mixed race

42%
of survey respondents self-identified as Hispanic/Latino

Age

27% of the respondents surveyed fell in the 35-44 age range, forming the significant proportion of the respondents.

21% were between 45-59

19% were between 60-74

17% between 18-24

17% were between 25-34

4% were younger than 18

27%
of survey respondents were between 35-44 years of age

Languages

The survey was made available in :

English
Spanish
Haitian Creole
Traditional Chinese
Simplified Chinese
Portuguese
Nepali

The survey was made available in

7 languages

Focus Group Demographics

Over two months from December 2023 to January 2024, the Digital Bridge Initiative and MAPC engaged in focus group outreach, conducting six focus group discussions collectively involving 38 Somerville residents. The discussions, spanning 60 to 90 minutes each, were conducted through a mix of online and in-person formats. Three focus groups took place virtually, while the remaining three occurred in-person at housing authority and food pantry venues. This diverse array of focus groups provided an inclusive platform for various community segments to share their insights. Participants included service providers, youth, low-income residents, older adults, individuals with disabilities, and those with limited English proficiency. Perspectives were also gathered from Spanish, Vietnamese, and Nepali-speaking residents, helping uncover additional barriers to achieving digital equity for those who speak a language other than English.

There were 6 focus groups, collectively involving

38

participants

Key Findings

Internet Access

Internet quality and reliability is a priority need in comparison to internet access

The community outreach data emphasizes that the internet is an essential service for meeting the needs of residents in multiple facets of their life. In this context, the primary concern for most Somerville residents is not internet access alone, but in access to internet service that is both high-quality and dependable. Twenty-six percent of Somerville residents who responded to the survey said that their internet cannot be reliably used by all members of their household when they need it.

This may be partially attributed to the high cost of higher speed internet plans, as many households are unable to afford a level of service sufficient for household devices. However, in focus group discussions many residents (including those in low-income housing) expressed frustration with poor internet quality, even when paying for high-tier service packages. Whether due to affordability or reliability issues, the lack of reliable internet hinders access to essential services such as healthcare, education, and job opportunities.

26%

of Somerville residents who responded to the DBI survey said that their internet cannot be reliably used by all members of their household when they need it.

"I had a kid home from college as a music school [student] and it would cut out her vocal lesson tutoring. Thankfully her professors understood but that's not always guaranteed. Our quality and access to internet should not be determined by our income." – *Low-income housing resident*

Vulnerable population groups face a disparate negative impact of unreliable and poor-quality internet

The concept of virtual spaces was frequently discussed in relation to internet access. Since the COVID-19 pandemic, many in-person activities have moved online to digital spaces, such as remote classes and public meetings. This has underscored access to the internet and these virtual spaces as necessities to fully engage in society. For those who can access a reliable broadband connection who know how to navigate virtual spaces, this transition has had the benefit of creating an inclusive environment for individuals from diverse cultural backgrounds, those with childcare and elder care needs, and varying cognitive abilities. In focus group discussions, older adults shared the benefits of using digital tools to connect with family and friends, improved access to entertainment, and having the ability to attend classes remotely. However, they also expressed concerns regarding accessing essential needs like healthcare, transportation, or public assistance when their service is unreliable. Youth have also expressed challenges in adapting to remote learning and feelings of social exclusion due to the shift to online activities.

> ***"I go to a Virginia school for the blind and it's the only place I can get what I need, and they send lessons out and I have to do it over the internet plus we have focus groups that goes on too for Braille which I take. There's another one that deals with blind getting used to sight loss. It's hard when you can't get into the room where people are talking so I miss half of it."*** *– Low-income housing resident*

Vulnerable groups require extra support in navigating digital spaces.

The concept of virtual spaces was frequently discussed in relation to internet access. Since the COVID-19 pandemic, many in-person activities have moved online to digital spaces, such as remote classes and public meetings. This has underscored access to the internet and these virtual spaces as necessities to fully engage in society. For those who can access a reliable broadband connection who know how to navigate virtual spaces, this transition has had the benefit of creating an inclusive environment for individuals from diverse cultural backgrounds, those with childcare and elder care needs, and varying cognitive abilities. In focus group discussions, older adults shared the benefits of using digital tools to connect with family and friends as well as improved access to entertainment and attending classes remotely. However, they also expressed concerns of accessing essential needs like healthcare, transportation, or public assistance, when their service is unreliable.

Youth have also expressed challenges in adapting to remote learning and feelings of social exclusion due to the shift to online activities.

Internet access through mobile hotspots provides an interim solution for residents

Mobile hotspots have been used to mitigate negative impacts on residents facing internet accessibility challenges. During the COVID-19 pandemic, Somerville Public Schools lent out hot spots to meet the internet access needs for students and families. The Somerville Public Library also has an ongoing hotspot lending program.

While some residents find hotspots convenient for accessing the internet anywhere, others have noted limitations and their inability to replace a reliable internet source. This indicates that while hotspots are not a long-term solution to internet accessibility issues and can't compete with a reliable, broadband speed in-home connection, they can play a vital role in temporarily meeting the needs of residents until a more reliable internet connection is accessible to them.

> ***"During the pandemic, we had access to hot spots so people could access internet no matter where they were."*** *-Practitioner/ service provider*

Affordability

Somerville residents expressed concerns about the affordability of devices and internet service.

Device affordability is a critical challenge for older residents

Device affordability and digital literacy issues affect older adults. Many older adults on a fixed income may be either unable to afford an up-to-date device or unaware of the privacy and security risks presented by out-of-date devices. Older adults with limited mobility may also be more vulnerable to overcharging, as they may struggle to address issues in person.

> ***"In my case I'm not mobile and can't return equipment. Comcast is charging me for two boxes because I can't get the box to them."*** *-an older resident*

> ***"My mom was paying for a 10-year-old router like a $100 a month. They don't tell you that it's not rent-to-own and that you could buy it and not pay a rental fee."*** *– a low-income housing resident*

Internet service affordability is a pressing and widespread issue

Service affordability is a widespread and pressing issue, like device affordability. Survey results show that 52% of respondents from Somerville said it was "somewhat hard" or "very hard" to pay for their internet bills. Additionally, our focus group data shows that even when residents qualify for low-cost programs like Xfinity's "Internet Essentials" program, the cost is still unaffordable to many. Residents also shared experiences of deteriorated and unreliable service through the Internet Essentials program. This indicates an opportunity for long-term program support to aid residents in addressing their affordability concerns.

Low-income residents, especially older adults and non-English speaking residents, face additional layers of affordability challenges. They are at risk of sudden price hikes and often lack the ability to communicate and resolve issues with their internet service providers. Residents identified a need for a formal, trusted support system that is easier to navigate and understand than the customer service systems provided by internet service providers.

> ***"The service from RCN – sometimes we don't understand the service. They raise the price very high ($120, $130). My son has to call to get them to lower it. But I can't read the bill."***
> *– A non-English speaking resident, via an interpreter*

Due to the high cost of internet service, many residents report changing frequently between providers. This was particularly emphasized by residents in low-income housing authority and respondents from food pantry sites. Additionally, low-income residents expressed concerns that their neighborhoods or buildings, typically low-income, do not receive good quality service and infrastructure.

52%

of Somerville residents who responded to the DBI survey said it was "somewhat hard" or "very hard" to pay for their internet bills.

Device access

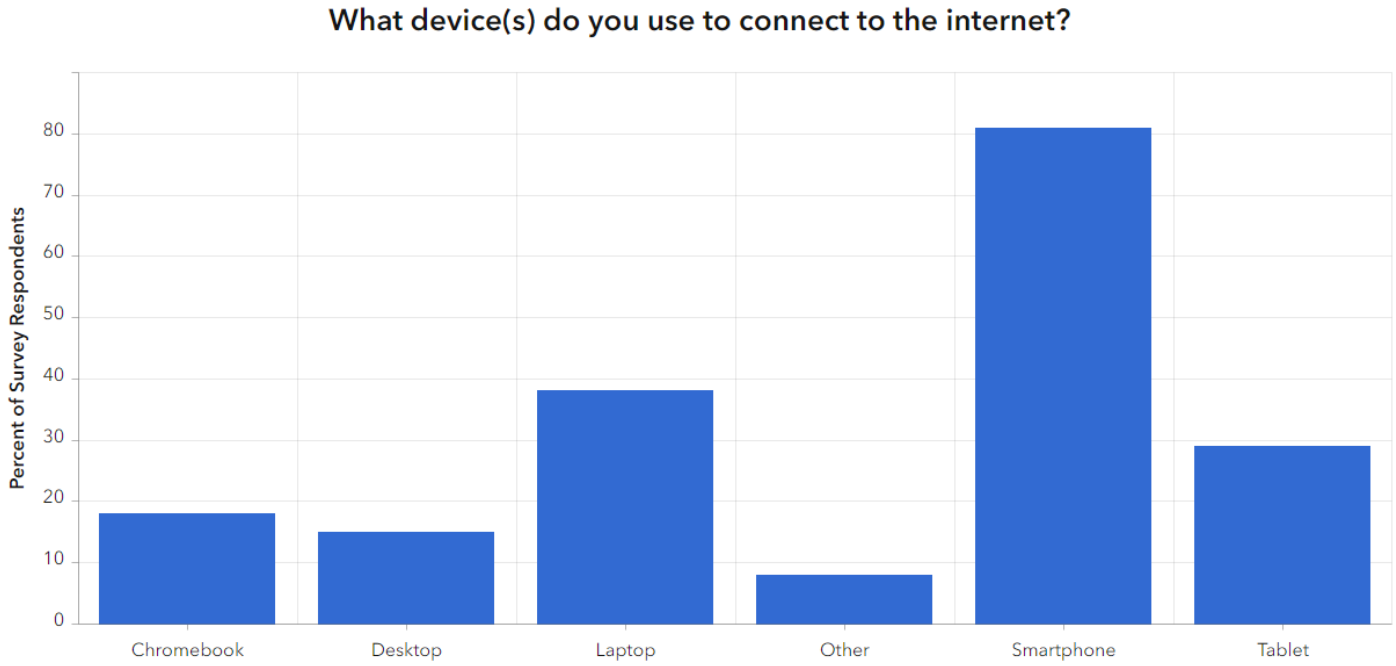
According to our survey findings, 81% of respondents use smartphones. Additionally, 38% use traditional laptops, 18% use Chromebooks, and 29% use tablets to meet their device needs. The chart below illustrates the device access use from the survey respondents.

81%

of survey respondents use smartphones to meet their device needs.

Current devices don't meet residents' needs

Vulnerable residents often find that their current devices do not meet their needs, with many heavily relying on smartphones. Primarily relying on phones for internet use limits an individual's capacity to navigate various services for telehealth, banking, government services, and much more.



The chart above illustrates the responses from the Digital Bridge Initiative survey on the device access needs of the residents.

While many children and youth have access to Chromebooks from their school, these devices can also be restrictive (and do not help those not enrolled in a school with access to them). There are not enough computer labs or devices available through lending programs to meet the needs of people who do not own a device. Service providers have also shared that the existing devices being used in computer labs and lending programs are often obsolete and not usable.

"The lab only has a few computers and there are hundreds of residents." *- housing authority resident*

"The computers in the space are not useable; The computers are really old." *– service provider*

"When you only have one device and more than one person in the house someone always has to sacrifice. So, you have kids, and they get priority but you have to make dr. Appointments and have to work around that." *– low-income resident*

Need for technical support with device access

In addition to device access, many residents require technical support and skills development to effectively use the devices. Support needs vary, ranging from basic assistance in device setup to advanced training in addressing safety and security concerns. In that context, some community-based organizations that provide device distribution or device access services are considering allocating funds for technical support in their grant proposals to include software setup with the devices.

Focus group discussions also highlighted the unique need of device access for older adults and residents with disabilities. These residents often need additional support programs, adaptive devices, or accommodations that allow them to more readily access devices.

> ***"With my limited eyesight it's a problem with the keyboard and small print."*** *– an older resident.*

> ***"Consider people with disabilities in developing support programs."*** *– an older resident with disability*

Digital literacy

Community outreach data shows that some residents would participate in training to better use available digital tools to meet their needs. Thirty-five percent of survey respondents said they would be interested in taking a free computer class to learn how to keep their personal information safe and secure online.

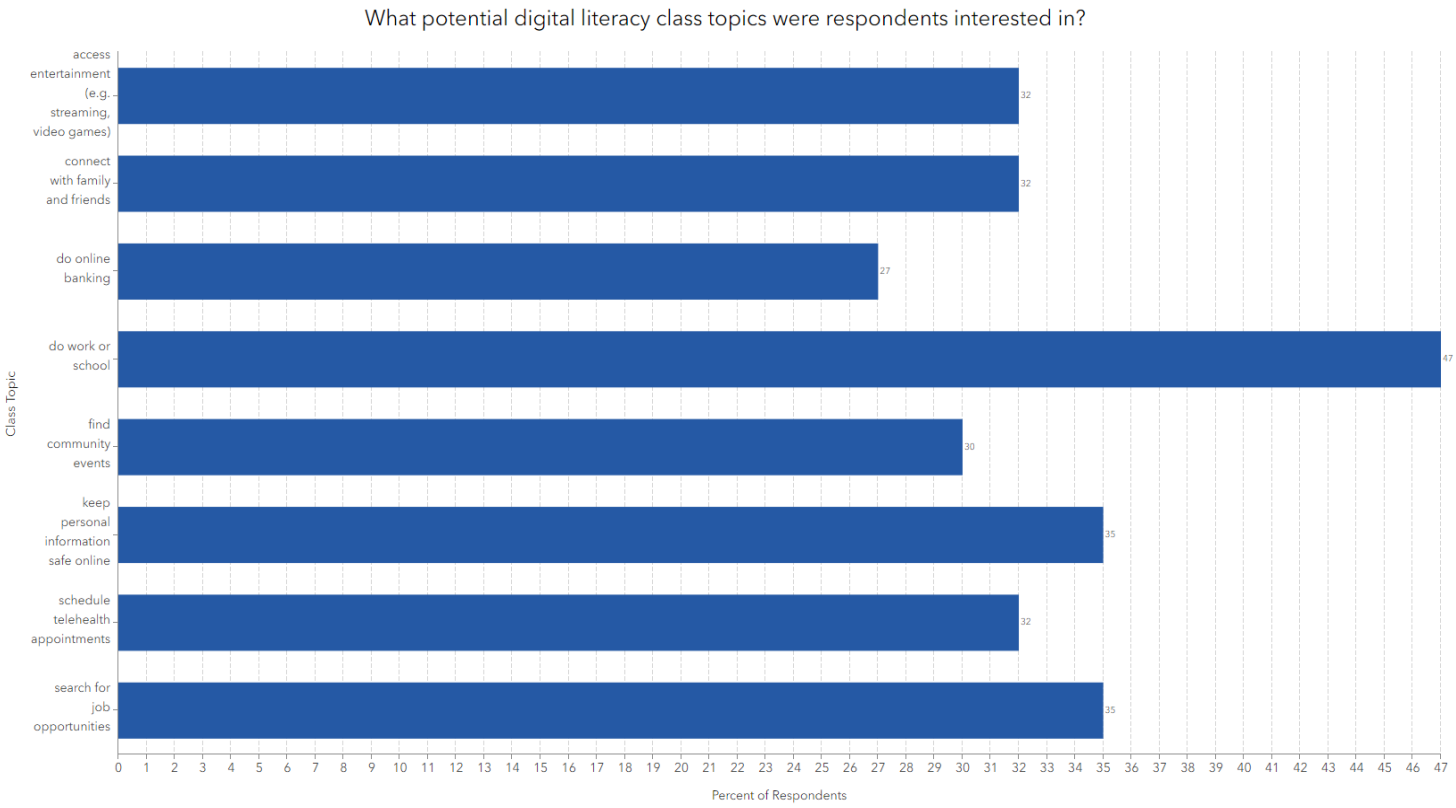
The chart below also demonstrates other class topics that survey respondents expressed interest in. Different groups of people have different needs and preferences. Approximately 50% of respondents expressed a need for assistance in using the internet for work or school, with 35% showing interest in job searching and an additional 35% in enhancing internet safety. About 30% of respondents indicated a need for support in scheduling telehealth appointments, while around 25% sought help specifically with online banking.

35%

of survey respondents said they would be interested in taking a free computer class to learn how to keep their personal information safe and secure online.

Systemic challenges and layered barriers to accessing internet and devices make digital literacy need higher among vulnerable population groups

Vulnerable population groups often face a higher need for digital literacy support. This can be attributed to the layered barriers they face, ranging from susceptibility to high pricing and misinformation, support that doesn't align with their needs, to a lack of access to devices. These vulnerable population groups include students facing challenges with device access



The chart above demonstrates the result from the Digital Bridge Initiative survey, where respondents answered their interest in digital literacy classes.

and reliable internet, their parents who engage with their schoolwork, older adults, and non-English speaking residents.

> ***"It's a lot harder for the parents if they need to fill out forms on the phone, lack of computers and Wi-Fi. Can be difficult without access to the internet when parents need to fill out forms."*** *– a service provider*

Digital literacy and training requirements vary, and there's no one-size-fits-all solution. In focus group discussions, older adults and non-English speakers in Somerville voiced interest in classes that enhance basic skills like using devices and scheduling medical appointments. Digital literacy is a key support tool for small business owners, particularly immigrant small business owners. It allows them to support their business ownership through online legal and financial documents as well as build their online business presence. Young professionals are also interested in more advanced topics such as Excel and PowerPoint to meet academic and career goals. Older adults shared their awareness and interest in participating in technology support classes offered by the public library and the community-based organizations at local community spaces. To address varying levels of digital literacy needs, a service provider

shared a helpful approach of assessing residents' needs before a digital literacy training program starts. They identified this as a best practice to ensure that digital literacy programs align with the skills residents are seeking. This intake assessment allows service providers to give required resources to residents with higher digital literacy need and ensure that the training adapts to the residents need.

> ***"...there are people here who are older or non-English speakers or come from a place without as much access to technology. So basic classes. How to use a computer, how to use programs on it. I don't know how to make a spreadsheet."*** *– an older resident*

> ***"I would like to take one for work - apply for jobs, make a resume"*** *– a non-English speaking housing authority resident, via an interpreter*

Geographical and logistical barriers to accessing digital literacy tools

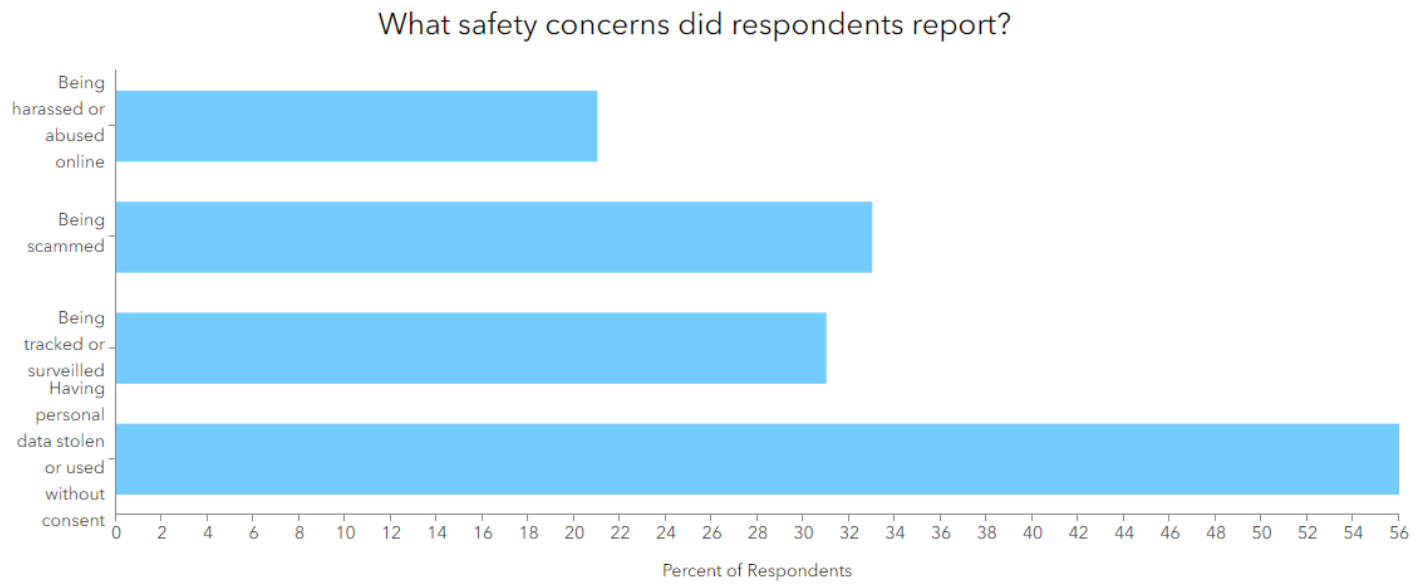
Low-income residents highlighted challenges in attending classes, particularly when it requires them to travel or when they have childcare needs. Many parents shared their inability to go to digital literacy classes when their childcare needs are unmet. Older adults, individuals with disabilities, and those with limited financial resources find it especially burdensome when classes are located farther away. Many residents expressed a preference for bringing support and literacy training to them, through classes and shared devices in easily accessible locations.

> ***"I learned how to use a computer from the Welcome Center, and for English class too. When I finished, they sent me to another location, but it was too far away. There's no convenient transportation."*** *- a non-English speaking housing authority resident*

Safety and privacy concerns

Community engagement data underscored residents' concerns about safety and privacy. Some residents have past experiences with online scams, have had their personal data stolen, or experienced online abuse or bullying.

This particularly stands out for residents who are low-income, older adults, and non-English speaking. The concern is particularly pronounced among non-English speakers who worry about scams targeting their community due to language barriers.



The chart above depicts the reports the safety residents' safety concerns as responded in the Digital Bridge Initiative survey

"We have to be very careful because we heard lots of bad stories about scams targeting Asian communities because of the language barriers. My son told me not to click anything I don't know." *- non-English speaking housing authority resident*

"I think that some people that don't speak Eng as a first language, or viruses. I get spam texts. But I feel like I know how to recognize them." *- housing authority resident*

The survey results highlighted that 63% of respondents were "somewhat" or "very" concerned about internet safety. Fifty six percent were concerned about personal data being stolen or used without consent, 33% were concerned about being scammed, 31% of being tracked or surveilled and 21% of being harassed or abused online.

63%

of survey respondents were "somewhat" or "very" concerned about internet safety.

Support

Residents seek support across all aspects of digital equity, including internet connection, device access, and digital literacy. This includes technical support like redressing poor internet services, solving device issues, and language support. Additionally, many residents also seek support in accessing and navigating other assistance programs like SNAP, MEDICAID, public housing assistance, and many more that are now online.

Residents rely on immediate and informal support mechanisms

Residents typically turn to family, friends, and neighbors for help with technical issues, primarily engaging with this informal support rather than engaging with formal assistance channels. Residents reported seeking assistance to enhance self-sufficiency, and assistance for those who lack the capability to independently resolve issues. The latter requires personalized helpdesk style support, allowing residents to interact with someone who can guide them on a one-on-one basis. This aligns with the finding that most residents are not inclined to interact with ISP customer service. Non-English speaking residents face language barriers, and residents with disabilities need different support than what is generally provided by a customer support agent.

Language support is crucial when it comes to support systems—learning new, technical concepts is enough of a challenge without the added barrier of language access and imperfect translation. Non-English-speaking residents shared their reliance on services like Google Translate when interacting with online content in their native language. This underscores the absence of intentional tools to overcome language barriers, especially when residents need to use the internet and digital tools to access essential online services like healthcare, education, banking, etc.

> ***"I don't always understand the language. I try to translate but I don't always understand."***
> *-non-English speaking housing authority resident*

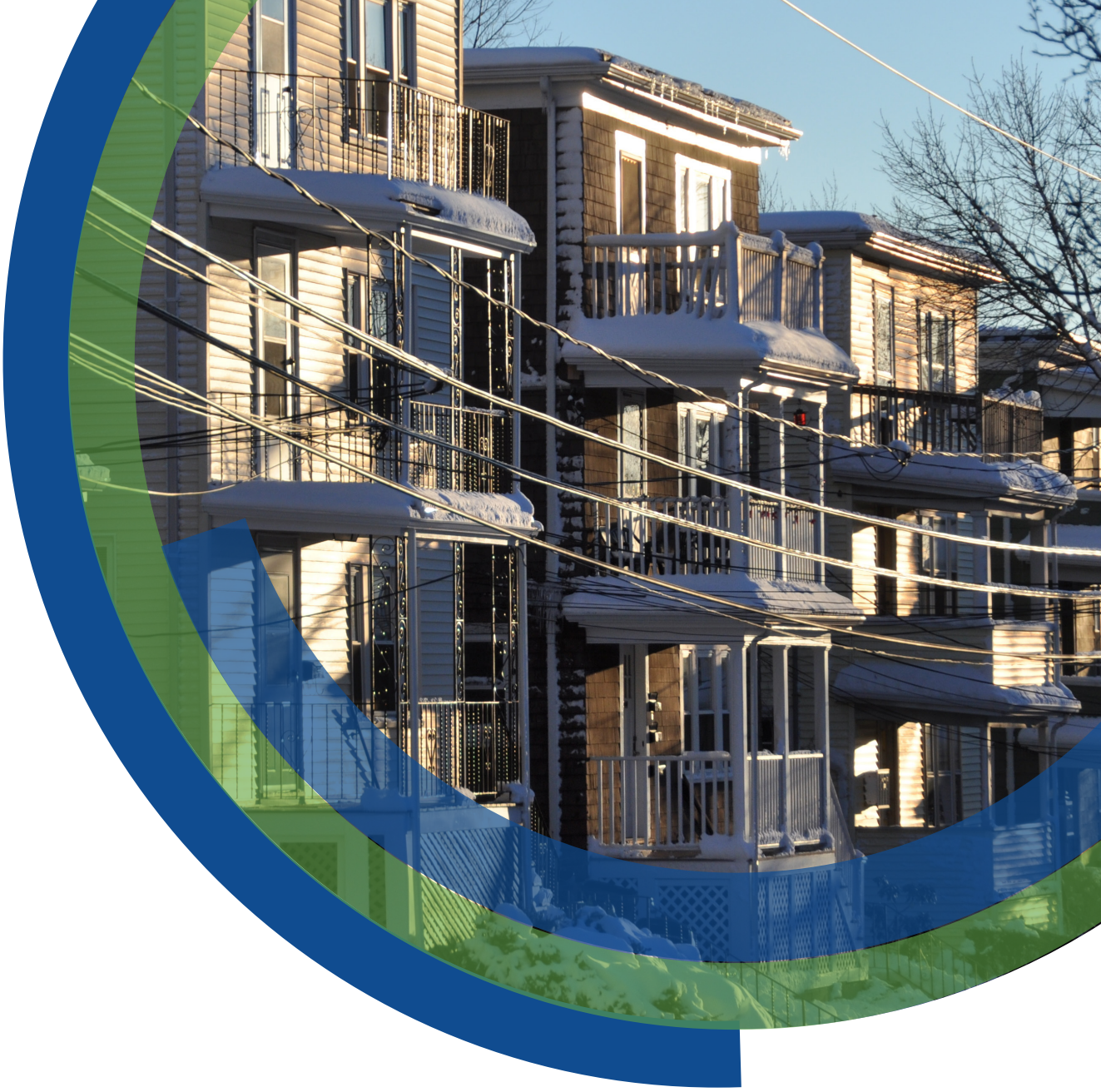
Lack of awareness about existing support

Somerville is home to a wide range of community-based resources, whether for connecting to the internet, accessing devices, learning new tools, or accessing assistance programs for housing, health care, education, and other essential services. Numerous community organizations have developed programs tailored to reach populations in need, aiming to enhance their proficiency in using digital tools. Unfortunately, limited capacity and frequent lack of awareness of these resources, ongoing programs, and initiatives indicate that they do not currently meet all individuals' needs. Moreover, simply disseminating information is insufficient; many residents also require personalized assistance in applying to these advertised programs.

Conclusion

The Community Needs Assessment delved into the experiences of the residents most impacted by the digital divide, including low-income residents, older adults, residents with disability, and non-English speaking population. Through focus groups and a targeted survey, the assessment focused on key activities, digital literacy levels, and barriers affecting internet use.

The key findings underscore the significance of internet quality and reliability over just internet access, particularly impacting vulnerable groups. Affordability concerns in Somerville extend to both devices and internet service, with vulnerable residents facing greater barriers in resolving affordability challenges. The widespread issue of service affordability also impacts vulnerable residents who are more likely to experience sudden price hikes, communication barriers with providers, and a lack of community support. The study highlighted the heightened need for digital literacy support, especially among vulnerable populations, with varying preferences for training topics. Additionally, focus group discussions identified safety and privacy concerns, reliance on informal support networks, language barriers, and lack of awareness about existing programs. The assessment recommends targeted interventions to address these multifaceted challenges and enhance digital equity within the Somerville community.



RECOMMENDATIONS

The recommendations contained in this plan are based on findings from the existing conditions analysis, community engagement, and interviews with service providers and other stakeholders. They are also informed by national best practices and a review of Digital Equity plans adopted by other communities in Massachusetts and across the country. They consider both Digital Equity's place within City government and community-based organizations, and highlight specific programs, resources, and interventions that the City and community-based organizations could implement to better serve Somerville residents.

Categories of recommendation

The recommendations in this document are divided into four broad categories, focused on programmatic interventions inside and outside of city government, policy and infrastructure recommendations, and organizational changes at the municipal level.

Category 1: Municipal Resources and Programs

These recommendations focus on ways the City of Somerville can develop resources and programs that serve residents directly and are designed to empower City staff to pursue achievable projects and interventions as well as the resources needed to implement them. They range from producing materials that could be accessed by residents to developing digital navigator programs with full-time staff.

Funding for these programs could come from federal sources such as the Broadband Equity, Access, and Deployment (BEAD) Program and other digital equity-specific funding approved in the Bipartisan Infrastructure Law (BIL). All these federal funds will be administered at the state level by the Massachusetts Broadband Institute and include funding sources such as Municipal Digital Equity Planning Implementation funds, Digital Equity Partnerships funds, and others.

Category 2: Support Community-Based Organizations (CBOs)

Somerville is home to many CBOs, some of which are already actively engaged in digital equity work. Throughout the planning process, Somerville city staff and other stakeholders expressed a desire to support and amplify the good work already being done by CBOs rather than pursue municipal programs that would replicate or replace existing community work. In practice, this means taking on a mindset of sharing and facilitation, with resources and programs developed by the City of Somerville being made available to CBOs, and in some cases with resources developed by or with CBOs amplified or even reused by the City Hall to support both community and municipal programs.

Funding sources for these programs and resources vary, and include many of the same federal Digital Equity funds available for municipal programs. The City of Somerville could also access federal funding and in turn act as a grant maker to CBOs to support their digital equity work. Flexible local funds, or certain federal funds such as the Community Development Block Grant (CDBG) program have also been a traditional source of grantmaking to community non-profits and could be utilized to support digital equity work. Philanthropic funding may also be an attractive option to increase support for CBO-led programs and resources.

Category 3: Policies and infrastructure

Municipal governments can enact local regulations and make investments in infrastructure in a way that is not possible for CBOs or other stakeholders. This section explores a set of structural changes that the City of Somerville could make, in pursuit of long-term systemic changes, rather than near-term interventions at the individual resident level. Policy changes include "dig-once" and other policies aimed at improving access to publicly-owned communications infrastructure, consumer protections, and investments in internet access for low-income and other vulnerable communities.

In some cases, implementing policy change does not require financial resources in the immediate term, but depends instead on the willingness of policymakers to champion specific reforms. The longer-term implementation of these policies often requires financial resources, which can be quite significant in the case of fiber and other infrastructure investments. Some funding may be available for this purpose via the Community Compact Municipal Fiber Program and other statewide grant programs. For internet access in affordable housing, funding is available through the MAPC Apartment Wi-Fi program and the MBI Residential Retrofit program.

Category 4: Municipal Capacity

These recommendations focus on ensuring that the City of Somerville has the capacity to pursue funding opportunities, develop resources and programs, and make the pursuit of Digital Equity a sustainable, permanent aspect of city services. The recommendations include actions like transitioning temporary or grant-funded City staff into permanent positions, empowering City staff to pursue funding, develop programs, and advocate for policies aligned with supporting digital equity, and collaborating across City departments to develop sustainable approaches to implementation.

Because these changes are primarily long-term and structural, it would not be appropriate to only seek funding for them via short-term grant opportunities. To the extent that these changes require hiring permanent staff, the funding for these staff positions would need to be included in the municipal budget. Like Category 3, some of these recommendations require political and administrative buy-in rather than financial resources.

What follows is a list of specific recommendations, divided into the same four categories listed above. Estimated impact, level of resources required, and potential implementation timelines are also provided for each recommendation to aid in prioritization.

1: Municipal resources and programs

The City's digital equity staff can devote time in collaboration with other City departments to develop resources that will support residents' access to the internet. This could include both building on existing Digital Bridge Initiative efforts and incorporating digital equity into existing efforts housed in other City departments. Recommended interventions related to the municipal provision of resources and programs include the following:

IMPACT

●●○○○

RESOURCE

$$$$$$

TIME SCALE

Short term

IMPLEMENTER

DBI

CATEGORY

Digital Literacy

Device access

Broadband access

1. Build on the digital equity asset map that was created during the planning process to serve as an up-to-date "Directory" resource for residents.

a. Develop associated promotional materials, identifying existing community digital equity resources. This map and directory should act as both a public resource and as a tool for service providers to connect their clients with services. Mapped resources include:

   i. Digital Navigator programs
   ii. Digital literacy classes and published educational resources
   iii. Computer labs
   iv. Device lending programs
   v. Device distribution and ownership programs
   vi. Workforce training programs relating to digital skills

Additional directory resources should include:

b. Develop a distribution plan for the digital equity asset map and directory, including posts on popular Somerville social media pages, distribution via Somerville Media Center, distribution to community based organizations and partners, and inclusion on existing resource pages, such as the Moving to Somerville "New Residents 101" guide and the Somerville Community Resources Hub.

2. Foster new and existing digital navigator programs with guidelines, resources, program support, and funding.
Actions to advance this recommendation might include:

a. Starting new programs in partnership with community-engaged organizations in response to local resident needs.

b. Expanding hourly and location availability, in partnership with community anchor institutions and community-based organizations already located in high-priority/high-need neighborhoods and/or serving high-need populations.

c. Provide digital literacy and other digital equity resources and materials to social service providers to enable residents to better access basic services online (ex. SNAP's online purchasing program) and develop digital skills in the process.

d. Expanded service offerings to include connectivity audits which would assess the quality and functionality of devices, network equipment (router quality and placement), availability of lower-cost service options, and digital literacy needs.

e. Expanded multi-lingual availability, working with SOIA/SomerViva to ensure that all residents have access to a digital navigator who speaks the language they're most comfortable with.

f. A communications plan to ensure that the residents who could benefit from access to a digital navigator know that the program is available and know how to access services.

IMPACT
●●●●○
RESOURCE
$$$$$
TIME SCALE
Medium term
IMPLEMENTER
DBI, Navigator programs
CATEGORY
Digital Literacy

3. Develop multi-lingual educational materials on technology basics, including information on how to set up home internet, where to find digital literacy resources, how to stay safe online, and other topics.

a. Resources like these could be developed in partnership with existing digital literacy providers such as Tech Goes Home, and be made available to residents directly by the city via existing channels like the Moving to Somerville "New Residents 101" Guide as well as through community-based organizations already doing digital equity work. The materials developed should be written in plain language. Definitions for technical language should be provided along with any additional visual aids to accompany text.

IMPACT
●●●●○
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
DBI, SOIA
CATEGORY
Digital Literacy

4. Multi-lingual education materials on internet safety and privacy, including consumer protection resources, parental content controls, cybersecurity, etc. Similiar to recommendation 3, materials developed should be written in plain language with definitions for technical language as well as any additional visual aids.

5. Explore opportunities to provide free Wi-Fi in public spaces like libraries, parks, and downtown areas, and evaluate the resources needed to expand Wi-Fi in other public space/areas. Where possible, explore partnerships with Somerville Main Streets, friends of parks groups, business improvement districts, and other relevant organizations.

a. Public space Wi-Fi is a program area in the MBI Digital Equity Partnerships program, and additional funding may be available. These kinds of projects might also be a fit for the Somerville Participatory Budgeting process.

IMPACT

●●●○○

RESOURCE

$$$$$

TIME SCALE

Medium term

IMPLEMENTER

DBI, Parks, Econ Development

CATEGORY

Broadband access

6. Expand hotspot distribution programs through schools and libraries, to ensure that residents without consistent or reliable home internet access have a means of connection available to them when they need it.

IMPACT

●●●○○

RESOURCE

$$$$$

TIME SCALE

Medium term

IMPLEMENTER

DBI, Internal stakeholders

CATEGORY

Broadband access

7. Expand device lending programs provided by institutions such as the Council on Aging, schools, and libraries to provide more devices to residents. Ensure that the devices being distributed are both high quality and the appropriate type to meet resident needs.

a. A digital literacy needs assessment could be paired with device distribution to match residents with appropriate services based on individual needs.

IMPACT

●●●●○

RESOURCE

$$$$$

TIME SCALE

Short term

IMPLEMENTER

DBI, COA, other internal stakeholders

CATEGORY

Digital Literacy

Device access

8. Organize device donation drives to collect gently used devices for distribution to CBO-led device refurbishment and distribution programs.

a. This could be done in partnership with internal stakeholders. Devices that are new enough to refurbish could be donated to CBO programs. This program could be linked to CBO-run device distribution program, described in recommendation 2.1 below

IMPACT

●●●●○

RESOURCE

$$$$$

TIME SCALE

Medium term

IMPLEMENTER

DBI, IAM/ Engineering, Other Stakeholders CBOs/ Workforce groups

CATEGORY

Device access

2: Support community-based organizations

Somerville is already home to a robust ecosystem of community-based organizations, many of which are already engaged in digital equity work—both as an explicit, formal part of their work and as de facto digital equity service providers that meet resident needs as they arise. Municipal staff should not attempt to replicate or absorb this work, but rather find ways to support, amplify, and learn from it. Resources the City could provide directly to these community-based organizations include:

1. Funding for **device distribution programs** provided by CBOs.

IMPACT
●●●●○
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
DBI, CBOs
CATEGORY
Device access

2. Funding and technical support for **community computer labs** hosted by CBOs and community anchor institutions such as schools, libraries, and the Council on Aging.
    a. This could include both upgrades and maintenance at existing computer labs and expansion to new sites.

IMPACT
●●●○○
RESOURCE
$$$$$
TIME SCALE
Medium term
IMPLEMENTER
DBI, Internal Stakeholders, COA, CBOs
CATEGORY
Device access
Broadband access

3. Funding, technical support, and connections to workforce and apprenticeship programs to enable CBOs to operate **device donation and refurbishment programs.**
    a. Programs like this could accomplish two goals, both providing digital literacy and career training for people engaged in refurbishment and providing free or low-cost devices to residents who need them.

IMPACT

●●●●○

RESOURCE

$$$$$

TIME SCALE

Medium term

IMPLEMENTER

DBI, Internal Stakeholders, CBOs/ Workforce groups

CATEGORY

Device access

4. The same resources and support being made available to digital navigators (identified in recommendation 1.2 above) linked to municipal departments should also be made available to digital navigators at community-based organizations.

5. Multi-lingual educational materials and internet safety and privacy materials identified above in recommendation 1.3 and 1.4 should be made available to community-based organizations, and should be refined in partnership with CBOs to ensure that they are tailored to meet resident needs.

IMPACT

●●○○○

RESOURCE

$$$$$

TIME SCALE

Short term

IMPLEMENTER

DBI

CATEGORY

Digital Literacy

6. Convene a community of practice to amplify existing work, facilitate resource sharing and coordination, document best practices, and provide a support structure for CBOs not currently doing digital equity work to enter the field as their constituents' needs evolve. Specific strategies and resources relating to this recommendation include:
   a. Convene a working group with CBOs already doing digital equity work to create space for sharing best practices and resources.
   b. Share information about city and state resources with CBOs that could support their work.
   c. Provide a connection to SOIA, RSJ, and other municipal agencies doing language and disability access work to ensure CBOs have the resources they need to effectively engage with these populations.
   d. Share and improve educational materials and other collateral for use by CBOs as they engage their communities.

IMPACT
●●●●○
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
DBI
CATEGORY
Capacity

7. Explore opportunities to support and community-led infrastructure, such as neighborhood mesh networks or other community networks.

IMPACT
●●●○○
RESOURCE
$$$$$
TIME SCALE
Medium term
IMPLEMENTER
DBI
CATEGORY
Broadband access

8. Collaborate with community anchor institutions to coordinate and expand service offerings. Community anchor institutions include:
   a. Schools
   b. Libraries
   c. Medical and healthcare providers
   d. Community Colleges and other institutions of higher education
   e. Public housing sites
   f. Other community support organizations and entities

IMPACT

●●●○○

RESOURCE

$$$$$$

TIME SCALE

Medium term

IMPLEMENTER

DBI

CATEGORY

Digital Literacy

Device access

Broadband access

3: Policies and infrastructure

There are a range of policies that the City could enact and infrastructure investments that the City could make to help meet its digital equity goals. Recommended policy related interventions include:

1. **Dig Once policies**, requiring that network infrastructure (such as fiber conduit or "dark" fiber) be installed whenever a public roadway is opened to facilitate utility work, repaving, or other construction occurs. These policies could be city-wide, targeted to high-need neighborhoods, or simply allow the City the opportunity to install conduit or fiber but not require it in all cases.

IMPACT

●●●●○

RESOURCE

$$$$$

TIME SCALE

Long term

IMPLEMENTER

DBI, IAM/ Engineering

CATEGORY

Broadband access

2. **Engage ISPs** such as Astound, Comcast, and Verizon in dialogue to encourage and facilitate greater private market competition and availability, especially of fiber-to-the-home service, as well as continued and expanded provision of low-cost internet plans like Comcast's Internet Essentials.

IMPACT

●●●●○

RESOURCE

$$$$$

TIME SCALE

Short term

IMPLEMENTER

DBI, Mayor's Office

CATEGORY

Broadband access

Capacity

3. **Consider consumer advocacy and protection policies** to ensure eligible residents have access to affordable internet service and understand their rights and obligations within existing service agreements.
4. **Provide direct support for households having trouble affording broadband.** Policies or programs could, for example, build on Somerville's Universal Basic Income pilot to ensure universal basic internet access. Such a program may be especially needed in the wake of the end of the federal Affordable Connectivity Program (ACP).

IMPACT

●●●●○

RESOURCE

$$$$$

TIME SCALE

Medium term

IMPLEMENTER

DBI, Mayor's office

CATEGORY

Broadband access

Capacity

Infrastructure investments that should be explored include:

4. Targeted open access fiber infrastructure could allow the City to make infrastructure investments to improve coverage, competition, or affordability in underserved neighborhoods without the need for costly city-wide infrastructure investment.

IMPACT
●●●●●
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
DBI, IAM/ Engineering
CATEGORY
Broadband access

5. Regional partnerships to improve internet infrastructure, including collaboration with neighboring municipalities on shared digital equity resources, and shared best practices.

IMPACT
●●●●●
RESOURCE
$$$$$
TIME SCALE
Medium to Long term
IMPLEMENTER
DBI, Mayor's office, neighboring municipalities
CATEGORY
Capacity

6. **Connectivity investments in public and affordable housing,** funded through the MAPC Apartment Wi-Fi program, the MBI Residential Retrofit Program, and other federal programs (see recommendation 1.2, above)

IMPACT
●●●●●
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
SHA, MAPC, MBI
CATEGORY
Broadband access

4: Municipal role and approach

To effectively meet residents' needs, and to enable the three previous recommendation categories, the City of Somerville should formalize and make permanent the role of the Digital Bridge Initiative. The DBI, or its permanent successor, should act as the City's Office of Digital Equity, and be empowered to define the City's digital equity agenda, identify and deploy resources, advise on policy, and collaborate with other City departments, public agencies throughout the region, and community-based organization to advance the City's digital equity goals.

To achieve these goals, the City and digital equity staff should adopt the following strategies:

1. **Transition temporary and grant-funded digital equity staff to permanent positions within the City's Office of Digital Equity.** This would allow staff to spend their time identifying, developing, and deploying resources and strategies to support residents and the community-based organizations that are already engaged in Digital Equity work, and less time chasing the resources they need to fund their own salaries.

IMPACT
●●●●●
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
City
CATEGORY
Capacity

2. Empower municipal digital equity staff to seek funding to support digital equity including pursuing grants and designing associated programs and budgets. The current level of federal resources available for programs supporting digital equity is at an all-time high. Such funding requires staff time to pursue, administer and manage, but staff time invested could provide hundreds of thousands of dollars in benefits to Somerville residents.

- **MBI Municipal Digital Equity Implementation grants** can provide up to $100,000 to municipalities which have participated in the Municipal Digital Equity Planning program to recommendations made during the planning process.
- **The MAPC Apartment Wi-Fi Program** is already working with the Somerville Housing Authority to provide a free access Wi-Fi network to residents of the Mystic View and Mystic River public housing sites. There may be opportunities in the future to expand this program to additional public or affordable housing sites in Somerville.
- The **MBI Residential Retrofit program** provides funding and procurement support for public and affordable multifamily housing owners to upgrade in-building wiring to allow for higher speed, reliable internet access for residents.
- Additional funding opportunities are detailed in Appendix 6, Funding Memo.

IMPACT
●●●●●
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
DBI
CATEGORY
Capacity

3. Continue work started in the Digital Equity Planning process to identify specific digital equity needs and existing conditions. By gaining and maintaining a clear and documented picture of the state of digital equity in Somerville, municipal digital equity staff can develop intervention strategies and resources that are appropriately scoped and targeted to deliver services to the neediest residents first. This continued work could include:

a. A connectivity audit in public and affordable housing, identifying the highest need housing sites to connect with programs such as the MAPC Apartment Wi-Fi program and the MBI Residential Retrofit program.

b. Ongoing analysis of community needs and available infrastructure, to facilitate program evaluation and allow municipal Digital Equity staff to continue to target resources towards communities who need them most.

IMPACT
●●●○○
RESOURCE
$$$$$
TIME SCALE
Short term
IMPLEMENTER
DBI
CATEGORY
Capacity

4. Collaborate across City departments to ensure that the City's Digital Equity goals are reflected as appropriate. Digital Equity staff should collaborate with:

a. SomerViva: Office of Immigrant Affairs, to support language justice and reach immigrant communities.

b. Department of Racial and Social Justice, to align Digital Equity objectives with the City's broader equity priorities.

c. RSJ Accessibility Services Division to ensure that adaptive and disability-friendly devices are available for residents who need them.

d. Executive Office of Communications, to ensure that cable franchise agreements are managed in a way that is consistent with the City's Digital Equity goals.

e. Information Technology, to continue to coordinate the use of publicly owned network infrastructure to support resident needs and increase access to quality, affordable internet service.

f. IAM/Engineering, to coordinate policies and initiatives which impact public infrastructure.

g. Council on Aging, to support their efforts on digital literacy and device access programs serving Somerville's older adults.

h. Mayor's Office to support effective and impactful policymaking.

i. Other City departments as appropriate.

j. Non-municipal public agencies, including Somerville Public Schools, Somerville Public Library, independent and State agencies such as the Massachusetts Broadband Institute, and others.

IMPACT

●●●●●

RESOURCE

$$$$$

TIME SCALE

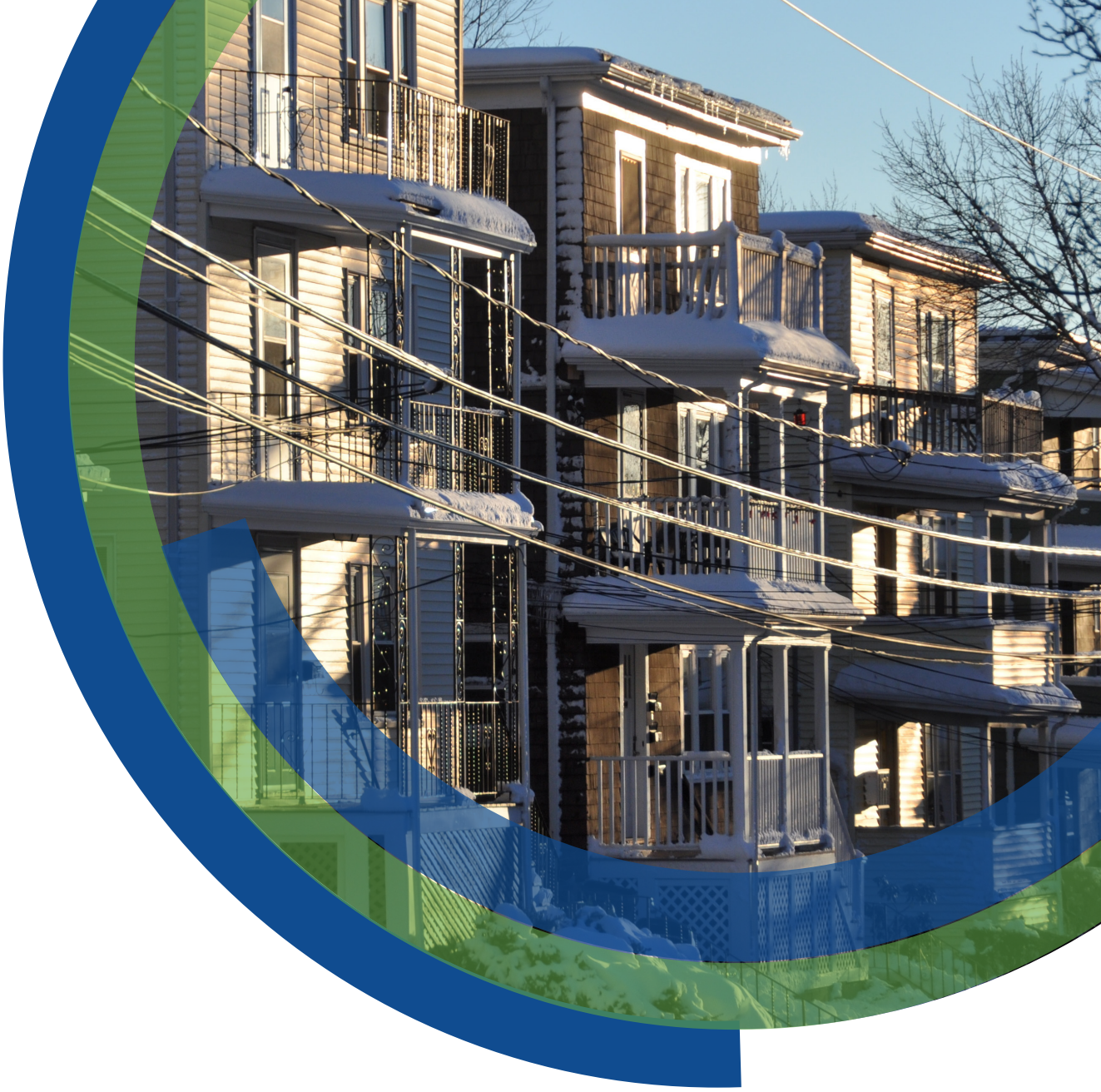
Short to medium term

IMPLEMENTER

DBI, collaborating city departments

CATEGORY

Capacity



APPENDIX

1. Digital Equity framework

Access to affordable and reliable bradband

The first pillar of the digital equity framework is access to an internet connection. Somerville residents expect and deserve fast and reliable internet service that allows them to fully take advantage of online life. This means having an affordable internet connection with sufficient upload and download speeds to support data transfer and the use of modern web applications and services by all members of a family or household, often simultaneously.

The term used for this kind of high-speed internet is “broadband”, but because what counts as “fast” is often relative—it changes depending on what kind of internet uses need to be supported—the exact definition of “broadband” has been contested and evolving over time. As of March 2024, the FCC’s definition of broadband internet is speeds of 100 megabits/second (mbps) download and 20mbps upload. While this definition represents a significant update to previous definitions, some digital equity advocates continue to push for a higher bar. In particular, a 100mbps/100mbps benchmark may also be used by those who cite the importance of symmetrical download and upload speeds as key to ensuring not just equitable consumption of internet content, but equitable creation of internet content as well. This report will use 100mbps/20mbps as our primary broadband speed benchmark but will also consider the other broadband benchmarks at times where relevant.

Many factors can compromise broadband access, including insufficient infrastructure, the high cost of high-speed plans, unreliable connections, inadequate or outdated in-building wiring or hardware (e.g., modems and routers), or when the demands of multiple users within a household overwhelm the available bandwidth. It is crucial to ensure that every household in Somerville has access to a connection fast and reliable enough to meet an individual’s or family’s needs. And it is crucial that that internet connection is affordable without requiring sacrifices in meeting other essential needs, such as rent, transportation, groceries, or healthcare.

As we see in our “Existing Conditions Analysis” and “Community Needs Assessment” sections, Somerville has relatively strong broadband coverage and infrastructure connecting nearly all households. However, despite near-universal broadband service availability, according to the American Community Survey (ACS) 8.3% of households lack an internet subscription. That figure does not include households whose broadband subscription may be too slow to meet an individual or family’s needs, or households that subscribe to a sub-broadband internet plan (for example, Comcast’s Internet Essentials plan is a lower-cost, income restricted plan, but only offers speeds of up to 50mbps/10mbps, half of the current definition of “broadband” internet).

Affordability remains a critical challenge for this first, and most foundational pillar of digital equity in Somerville, especially for low-income residents already burdened by rising costs of living.

Device access

Beyond a broadband internet connection, individuals need access to appropriate computing devices to access critical personal services like education, healthcare, online work and job searches, and other online applications. This means that devices need to have sufficient hardware, software, dimensions, and capabilities to cater to the needs of individuals and families in Somerville across a variety of online use cases.

As with internet speed, what constitutes "appropriate" varies depending on use cases. For instance, individuals participating in remote work or remote learning via videoconference will need access to a modem/router, quality webcam, and a computing device—likely a desktop or laptop—with an up-to-date web browser and any required video conferencing software. On the other hand, someone filling out an online form or participating in social media may be able to do so at a much lower bandwidth potentially using a smartphone or tablet. Similarly, the specific needs and abilities of an individual internet user may also dictate device needs. For instance, older residents or individuals living with disabilities may require special devices with larger buttons or screens, simpler interfaces, or specialized screen reading software to fully take advantage of online resources.

However, while different devices may be suitable for different users and applications, as more and more aspects of social, economic, and civic life move online, a baseline level of device access for every household should also be considered a necessity under our digital equity framework—including access to a desktop or laptop computer in the home, rather than just a mobile device, or a shared device only available in a public setting. While smartphones have enabled millions to communicate using the internet, a smartphone is no substitute for devices like laptops, desktop computers, or even tablets which are often needed for full participation in online life. For example, students often require devices with full-size screens and keyboards for schoolwork, and many essential websites or applications are not available or optimized for smartphones. As we will see in our “Existing Conditions Analysis” despite this reality, according to the ACS, 5.5% of households in Somerville have no computing device at all, and another 3.6% only have access to a smartphone.

In addition to devices being appropriate for individual needs and use cases, it’s important that any device be new enough to receive regular software updates. Older devices that do not receive software updates can pose significant cybersecurity risks to their users, potentially exposing sensitive personal data.

For all these reasons, it is crucial to ensure that residents of Somerville can obtain and maintain a dedicated personal computing device that caters to their specific needs.

Digital literacy skills

Even with a broadband internet connection and appropriate devices to access the internet, residents still need to know how to confidently utilize technology and navigate digital environments to fully participate in online life. That’s why the third pillar of our digital equity framework is digital literacy, which is achieved by making sure residents have the individual skills needed to use hardware, software and an internet connection across a variety of use cases. This also includes ensuring that residents have access to educational resources or even technical support to troubleshoot when there are issues.

While many Somerville residents are accustomed to connecting to and navigating the internet daily, some are less experienced. A lack of digital literacy can limit access to resources or even expose residents to risks, such as scams, misinformation, and malware. Digital literacy skills include proficiency using a computing device, navigating the internet, being a discerning consumer of information, and avoiding online dangers. Today, these skills are essential for social, economic, and civic life, as they are needed for fundamental tasks like operating a device, obtaining an email address, working online or applying for a job, communicating with a doctor, and connecting with family members. Ensuring that all residents possess these skills means implementing training

programs, developing educational materials, providing accessible IT support and other support tailored to the needs of individual communities and subgroups.

2. Network technologies

The technology used to transmit data to and from the internet impacts how fast that data moves. Companies which provide internet service using either Cable or Fiber Optic infrastructure must hold a Cable Franchise Agreement with the municipal government in which they operate, because this kind of infrastructure must use the public right of way. These agreements originally governed the operation of Cable Television providers; they still do, but because the transmission technology used for television and internet is largely the same, the same agreements apply. Because Fixed Wireless and Satellite providers do not rely on physical infrastructure to connect a home to the internet, they don't require these same municipal agreements.

Fiber internet

Fiber optic cables are currently considered the "gold standard" of internet infrastructure. While any internet technology has a maximum transmission speed, the theoretical maximum transmission speed of fiber is so high that it is at present functionally unlimited (some experts theorize that a single strand of fiber optic cable could transmit as much as 44 terabits per second, or 44 million megabits).

Cable internet

The most widespread ISP technology used in the United States is cable—the same coaxial copper cable infrastructure that brings cable television into homes. Because these cables have been in use for so long, they're extremely widespread. However, they do have a much lower transmission capacity than fiber, topping out at about 10 gigabits per second under laboratory conditions. In practice, it is uncommon to see cable internet speeds above 1 gigabit per second.

Fixed wireless internet

Unlike cable or fiber, fixed wireless internet uses point-to-point terrestrial microwave (radio) signals to move data around. An apartment building might have a fixed wireless antenna on the roof, which sends and receives data from a central hub which is connected to the internet at an existing fiber optic node. The data is then transmitted through the building using ethernet cables connected to wireless routers or other devices. This technology has the benefit of not requiring the ISP to invest in costly buried infrastructure but can be more expensive to operate and less reliable.

Satellite and mobile (cellular) internet

While all internet connection technologies must at some point be physically connected to the broader internet, satellite and mobile internet transmit wirelessly over a much longer distance, and as such are not regulated at the municipal level. Data about coverage using these technologies is not available at a municipal level.

Satellite connections have the advantage of being usable in more remote locations, out of range of cable/fiber infrastructure and far from cellular towers. However, most satellite ISP service is both expensive and quite slow, while newer "low earth orbit" technologies which do provide faster speeds are extremely dependent on horizon sightlines, meaning that they are impacted by topography, tree cover, and the built environment. In an urban environment like Somerville, with widespread availability of cable internet service, satellite internet is not an

attractive option.

Cellular internet, while nearly ubiquitous in smartphones, has disadvantages for home internet connections. Because of the high demands on the cellular network, most plans have data caps (limits on the amount of data that can be transmitted each month) and higher subscription costs. A dedicated hotspot can provide flexible internet access if traditional connections are not available, and individuals may forego home internet for financial reasons in favor of relying on the mobile hotspot already built into their smartphone. The same is often true for people without a stable home address, which would preclude them from subscribing to a traditional home internet service provider.

Digital Subscriber Link (DSL) internet

DSL internet is an outdated technology that relies on copper telephone wire infrastructure, in much the same way that cable internet relies on cable television infrastructure. It differs from "dial-up" internet in that it offers faster speeds and can be used simultaneously with a telephone call, but it does use the same physical infrastructure. While DSL was once considered "high speed" internet, the maximum transmission speeds possible using this infrastructure are well below the capacity of even cable internet. There are no DSL providers currently serving Somerville.

3. How is speed measured and reported?

Bits vs. Bytes

Internet speed is generally measured using multiples of bits: kilobits per second, megabits per second, and gigabits per second. A bit is a single character of binary code: a 0 or a 1. This differs from how file size is measured, which is generally in multiples of bytes. A byte is 8 bits, which is the maximum amount of data needed to transmit a single character of text. A text document containing 1,000 characters of text would have a file size of about 1 kilobyte and would take 8 seconds to transmit over a 1 kilobit per second connection.

Broadband speed is measured using two numbers: an upload speed and a download speed. A connection listed as 100/30 means that the download speed (the speed of receiving data from the internet) is 100 megabits per second, and the upload speed (the speed of sending data to the internet) is 30 megabits per second. Upload speeds are generally lower, because most home uses for the internet involve receiving more data than sending. However, the increased usage of video conferencing means that upload speed requirements for the average user are higher now than they have been historically. There's no technical reason uploads need to be slower than downloads, this is just one way that ISPs manage data transfers to preserve higher download speeds.

Regulation, reporting, and speed tests

The FCC updated their definitions of what speed constitutes "Broadband" internet in 2023. Speeds at or above 100/20 are considered "served" with broadband, while anything between 25/3 and 100/20 is considered "underserved." Speeds below 25/3 are considered "unserved."

While FCC Form 477 (the source of the maximum advertised speeds listed per ISP) lists the maximum advertised speed available at a given address, these numbers do not tell the full story. First and foremost, a speed listed in a Form 477 filing indicates only that the ISP is willing to sell a subscription at that speed; it does

not indicate how many people (if any) purchase that service, nor does it indicate the price at which it is provided. For most home use, a 100/30 connection is sufficient, while 300mbps download speeds may be desired for heavier uses such as remote work/school when multiple connections are active simultaneously.

Internet speed tests are one source of data available to determine the real-world experience of home internet users in Somerville. However, speed test data is not without its limitations. A person is most likely to take a speed test when something is not working the way they expect it to, which may bias the data towards slower speeds. These speeds are also impacted by a large number of factors beyond the ISP service, including device condition, age, and quality, wireless router placement, condition and quality of in-building wiring, etc. For people who do take a speed test, the test results are a fairly accurate representation of their experience using their internet connection; they do not tell us why their experience is what it is, or how much of that experience is caused by their internet service provider.

4. Digital Equity assets

Organization name	Organization type	Program name
Council on Aging	Local Government	Tech Time iPad Lending
Workforce Development	Local Government	Post-Secondary Success Program: Digital Literacy Coaching FabVille
Somerville Public Library	Library	Technology Lending Program Long-term Hotspot Loaning Program Publicly Available Wi-Fi One-on-One Technology Help Group Technology Instruction In-Library technology
Somerville Center for Adult Learning Experiences	Local Nonprofit	Basic Accounting with Spreadsheet Preparation & Quickbooks Online Certification Introduction to the I.T. Landscape Adult Basic Education Classes English Language Learning Classes
Per Scholas Greater Boston	Local Nonprofit	Software Engineering Course IT Support Training Cybersecurity Training
Franklin Cummings Tech	Higher Education	Computer Information Technology Associates Degree Software Development Certificate/Associates Degree Pathway

5. Community outreach methodology

Surveys

18% of respondents reported an invalid zip code or skipped the question. 18% of respondents reported living in another MA municipality (Boston, Cambridge, Medford, Arlington, Revere, Belmont, Saugus)

1. Total number of responses: 234
2. Languages:
    i. English
    ii. Spanish
    iii. Haitian Creole
    iv. Traditional Chinese
    v. Simplified Chinese
    vi. Portuguese
3. Population groups reached
    i. Adult learners through education centers
    ii. Senior population through Council on Aging
    iii. Older adults in Chinese community through SOIA
    iv. Childcare need population (Moms) through Spanish speaking communities
    v. Teenagers through Teen empowerment
4. Methods of administering surveys
    i. WhatsApp groups through SOIA- language communities
    ii. Newsletters- Portuguese, Chinese, Spanish communities
    iii. Flyers at the YMCA
    iv. East Somerville Facebook group
    v. Small Business Owners
5. Agencies/ nonprofits
    i. SCALE
    ii. SOIA
    iii. Council on Aging
    iv. Teen Empowerment
    v. Beautiful stuff project
    vi. RSJ: Nepali community
    vii. CAAS

viii. Small business team in East Somerville
ix. Somerville Family Learning Collaborative
x. Enroot- recent arrivals
xi. Women's Money Matters
xii. Just-A-Start
xiii. Post Secondary Success Coaches
xiv. SomerPromise Home Visits

6. Events/ meetings
   i. LGBTQIA+ December social
   ii. Teen volleyball hosted by Somerville Recreation
   iii. COA Tech time
   iv. Come to the Table (Food pantry)

Focus groups

Practitioners focus group

- Number of participants: 8
- Languages: English
- How we reached them: Through contacts and City's relationship from past work
- Format: Online

Department of Racial and Social Justice (RSJ) Ambassadors focus group

- Number of participants: 4
- Languages: English
- How we reached them: RSJ
- Format: Online

Department of Racial and Social Justice (RSJ) Youth focus group

- Number of participants: 3
- Languages: English
- How we reached them: RSJ
- Format: Online

Food pantry focus group

- Number of participants: 7

- Languages: Spanish
- How we reached them: Through the City contacts
- Format: In-person

Clarendon Towers Housing Authority residents focus group

- Number of participants: 8
- Languages: English
- How we reached them: Through City and MAPC

Somerville Housing Authority Mystic Towers residents focus group

- Number of participants: 8
- Languages: Spanish and Vietnamese
- How we reached them: Through MAPC

5. Funding landscape memo

Attached in the following page