GREATER LOWELL DIGITAL EQUITY PLAN
A Collaborative Approach to Digital Equity

NORTHERN MIDDLESEX COUNCIL OF GOVERNMENTS
SERVING THE REGION SINCE 1963

MAPC
METROPOLITAN AREA PLANNING COUNCIL

A component plan of
GREATER LOWELL STRONGER TOGETHER
2025–2030 COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY

MBI
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at the MassTech Collaborative

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Introduction

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—underscored by our post-COVID 19 remote and hybrid reality—means that municipalities throughout Greater Lowell 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.

The digital divide impacts many groups in Greater Lowell's rural, suburban, and urban areas. Vulnerable populations such as immigrants, non-English speakers, people with disabilities, communities of color, older adults, people who make lower-incomes, and others live in each of the region's municipalities. This is why the nine communities of Greater Lowell: **the City of Lowell and the Towns of Billerica, Chelmsford, Dracut, Dunstable, Pepperell, Tewksbury, Tyngsborough, and Westford** came together to create a plan to confront disparities through the collaborative work of planning for digital inclusion—with a focus on regional approaches and on partnerships with community-based organizations to prioritize serving the residents who are most persistently and disproportionately impacted by the digital divide.

WHAT IS DIGITAL EQUITY?

Before we dive into digital equity research and findings for the Greater Lowell region, we first need to establish what exactly we mean by the term "digital equity". The National Digital Inclusion Alliance defines the term as follows:

> "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)

For the purposes of this plan and the process that produced it, we have adopted a definition consistent with that of NDIA. Digital equity means that everyone has access to the online opportunities and resources that they need, regardless of socio-economic status or location.

DIGITAL EQUITY FRAMEWORK: THE THREE PILLARS

Beyond this basic definition, in discussing and analyzing digital equity in Greater Lowell, this plan also adopts the common framework of the "three pillars" of digital equity: broadband connection; device access; and digital literacy.

The table below provides an overview definition of each of these three pillars, along with common barriers and support opportunities. Each pillar is further illustrated with context from the Greater Lowell region.

DIGITAL EQUITY FRAMEWORK: THREE PILLARS			
	Broadband Connection	**Device Access**	**Digital Literacy**
Overview/ 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 personal computing devices with sufficient hardware, software, and features/capabilities to support online needs while respecting user privacy. 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. Device access also includes adaptive hardware equipment or other specialty devices that can support the needs of individuals living with disabilities or experiencing language barriers.	Having the knowledge and skills to operate and maintain devices and confidently navigate the internet and other digital environments to access needed resources and fully participate in modern 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	Broadband infrastructure is insufficient; there is a lack of market competition and consumer choice; high-speed plans have a high cost; and in-building wiring or hardware is inadequate or outdated.	Devices are older and outdated; devices are inadequate for user needs; households don't own devices; shared devices have limited access; devices aren't affordable; and there is a lack of specialty devices with features to accommodate those living with disabilities.	Users may be new to or unfamiliar with digital tools, contributing to fear, distrust, or lack confidence with devices or with navigating the internet; misinformation and scams can confuse residents and pose cybersecurity risks to users, furthering distrust; technology training or support programs and associated educational materials often aren't translated into relevant languages, limiting access for populations in need.
Greater Lowell in context	**7.8%** of households in the Greater Lowell region are without a home internet subscription in the Greater Lowell region. **30%** of Greater Lowell households have access to fiber internet connections. **35%** of residents surveyed reported that it was "Somewhat hard" or "Very hard" to pay their monthly internet bill.	**6.1%** of households in the Greater Lowell region only have access to a smartphone at home without another home computer. Another **4.8%** of households in the Greater Lowell region are without access to any home computer at all, including a smart phone. This means that at least **11%** of households in the region are without access to an adequate computing device at home.	**46%** of survey respondents from the Greater Lowell region said they were concerned about their ability to navigate the internet to do what they need. Over **75%** of survey respondents reported being somewhat or very concerned about internet safety.
Support opportunities	At the municipal level, these may include public broadband infrastructure or services; open access networks; and increased private ISP competition. At the household level, these may include affordable service or subsidy programs like ACP or Internet Essentials. At the personal level, these may include hotspot lending programs and public Wi-Fi.	For the home, these may include device refurbishment and distribution programs and device lending programs. For public spaces, these may include making shared devices available and setting up computer labs and workstations in public spaces. In addition, these may include providing specialty/adaptive devices.	These may include digital literacy training programs; self-service educational materials; accessible IT support; digital navigators; and culturally competent and multi-lingual digital literacy resources.

WHY IS DIGITAL EQUITY IMPORTANT TO GREATER LOWELL?

Digital equity is not an isolated issue but is instead interrelated to many of the core strengths, challenges and disparities present in Greater Lowell. Embracing technology-forward, in-person and digital learning is crucial to a region known for its high-performing school districts, vocational high schools, and for its institutions of higher education, UMass Lowell and Middlesex Community College. Digital access and skills are now a necessity for workforce development and access to opportunity in a region with large technology employers and in an economy where jobs are increasingly remote. Telehealth practices can ensure access to healthcare for an aging population and alongside remote work and remote learning can help address regional issues like traffic and limited public transit or high costs of childcare. In a survey conducted for the 2022 Greater Lowell Community Health Needs Assessment, reliable, high-speed Internet access is ranked 13th out of 37 total health resource priorities.[1] Broadband infrastructure can help support economic development, including by attracting new businesses and meeting the needs of existing STEM clusters, tech companies, and research institutions in Greater Lowell. Online services and hybrid public meetings can help address challenges associated with local government efficiency and civic engagement.

Given the importance of digital access, devices, and literacy to participation in all these aspects of broader society in Greater Lowell, it's crucial that communities embrace digital infrastructure and approaches. However, it is also critical to ensure that no one is left behind in a diverse region home to many populations who face challenges accessing online tools and resources on a daily basis.

HOW CAN MUNICIPALITIES AND ORGANIZATIONS USE THIS DIGITAL EQUITY PLAN?

This Digital Equity Plan is a strategic document motivated by a vision of a Greater Lowell region without a digital divide and ultimately focused on advancing that vision by providing practical recommendations. It has prioritized recommendations that emerged from assessing the community's existing digital equity assets, its needs, and the gap between them. Alongside recommendations, the plan also lists resources that can be used to support implementation.

The plan has been designed to specifically guide and support the following activities:

- **Identify priority projects and initiatives suitable for grant proposals:** The Infrastructure Investment and Jobs Act (IIJA) provisioned significant funds for digital equity and broadband infrastructure from the federal government via the Broadband Equity Access and Deployment (BEAD) program. This plan will provide Greater Lowell's communities with plans, programs, and projects that can form the basis of strong grant proposals to ensure the region is able to take advantage of these once-in-a-generation funding opportunities.

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[1] 2021 Community Health Needs Assessment, Community Teamwork, Inc.

- **Target and secure future funding and capital investment:** 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.
- **Guide ongoing programs:** Achieving and maintaining digital equity requires continual effort. Municipalities and regional organizations, central to funding and coordination, can refer to this plan for ongoing guidance in addressing digital access challenges.
- **Advocate for policy change:** Municipalities have regulatory capacity in permitting and licensing internet services. This plan offers guidance and direction for how local regulatory authority can enhance digital access, empowering municipalities to implement local reforms and support state-level policy changes.
- **Coordinate and track progress regionally:** The plan recommends various approaches to regional coordination, including the formation of a regional task force composed of representatives of the nine municipalities. This committee can share resources, coordinate actions, and track progress ensuring greater efficiency and impact through regionalism.

Additionally, the plan includes a detailed memo for each of the nine municipalities of Greater Lowell. The memos include data that can be used for targeting programs and supporting grant applications. The memos also include a prioritized list of actions specific to that municipality's context. The actions each connect to larger goals and suggestions on resources available to complete the action. Finally, the actions list a lead actor, which in some cases may be municipal staff and in others elected or appointed officials.

The plan isn't just for Greater Lowell's municipalities. Outside organizations and individuals can consult the plan to understand the priorities of the region and how they can best "plug into" the actions. They can utilize the list of assets and resources in the plan to coordinate and enhance their own programs and services. Additionally, the vision and data within the plan can be used to support grant applications and program development while strategies and recommendations ensure that community-based organizations are "rowing in the same direction" as municipal and regional goals.

BACKGROUND: EXISTING DIGITAL EQUITY WORK IN THE GREATER LOWELL REGION

This is the first time the nine communities have come together for a collaborative approach to closing the digital divide, but this plan does not represent the first digital equity work that has taken place in the Greater Lowell region. Libraries and Councils on Aging have been leading the charge through direct technical assistance, classes, and device and Wi-fi access. Many public-school systems now distribute Chrome books, tablets, or laptop computers to all students, emphasizing technology and digital skills as a crucial part of education and job readiness. Local cable access corporations have been reimagining their missions beyond television, offering training and support for digital media. Community-based organizations serving specific populations such as youth, cultural groups,

newcomers/immigrants, people with disabilities, and others have also provided classes, devices, and technical assistance to ensure vulnerable populations have equal access to online life.

The region's communities have also previously expressed concerns about digital equity at the municipal level. For example, in their latest Master Plan, the Town of Pepperell worked with the Dukakis Center of Northeastern University on an Economic Development Self-Assessment Tool (EDSAT) Study. The study found that the Town could be better positioned to attract business investment and jobs by upgrading its digital infrastructure. The Town of Tyngsborough's Media Department is working to increase its use of social media and digital content providers such as YouTube. The Town of Westford is looking to develop a digital backbone for redundant fire systems to ensure continuity of operations during emergencies and to improve reception for hand-held police radios to keep up with digital upgrades. The City of Lowell has been exploring ways to improve broadband access and infrastructure for at least two decades, offering Wi-fi hotspots for public use and providing Wi-fi access at visitor attractions.[2]

The COVID-19 pandemic further highlighted and intensified the digital divide's disparate impact on certain populations. Some students were unable to access online learning due to poor bandwidth or lack of private space to use it, other individuals and families had digital literacy challenges blocking them from telehealth and scheduling vaccination appointments, some couldn't access remote work opportunities or online services, and others were excluded from online civic engagement due to technology barriers compounded by language or accessibility barriers.

In response to these concerns and others, the Greater Lowell region has stepped up, with school districts furthering their support for digital access for students and families and with libraries, senior centers and other organizations feeling even more pressure to provide computers, internet, and training. To meet this demand, University of Massachusetts, Lowell (UML) has received grant funding from the MBI Digital Equity Partnership program and has been providing digital literacy training and device access in partnership with community based organizations in Lowell, including the YWCA, the Abisi Adult Education Center, the African Community Center, Coalition for a Better Acre, and Pollard Memorial Library.

In this post-COVID context and in response to these concerns and others, the nine municipalities decided to take a collaborative approach to enhance existing services, break down barriers, and close the digital divide across the region.

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[2] https://www.lowellma.gov/AgendaCenter/ViewFile/Item/19384?fileID=41600

CONNECTION TO FOUNDATIONAL COMMUNITY ISSUES

The Digital Divide impacts the region's ability to meet its Housing, Economic Development, Health, Education, and Civic Participation goals as detailed below.

Digital Equity + Housing

- High speed internet access is an increasingly vital aspect of adequate housing. 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 necessities, 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 + Transportation

- Our increasingly remote and hybrid economy and society is changing travel and commuting patterns, impacting traffic and congestion, ridership, trip times and emissions. Logging on to access online learning, remote work, or telehealth, or online government services means not having to commute via personal automobile or public transit to school, the office, the doctor or town hall. Similarly, the growth of online shopping and delivery means fewer trips to retail centers and more delivery vehicles on the roads.
- The rise of digital applications for ride hailing, route planning, and accessing transit schedules and fares has impacted access to mobility in a variety of ways, with some young people delaying getting their drivers licenses, and with older adults or those with limited mobility needing to learn to navigate digital tools in order to access needed information and services.
- Digital equity resources and programs such as computer labs or digital skills classes that are not transit accessible may be difficult to access for those without a personal automobile, a group that includes low income and older individuals, two populations more likely to be experiencing the digital divide.

Digital Equity + Economic Development

- Research increasingly shows that digital inclusion is a prerequisite for economic inclusion and for closing generational wealth gaps.
- 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 digital skills.
- A community's broadband coverage and adoption is associated with the number of jobs and economic output, and individuals with broadband subscriptions report higher income than those without.
- Small businesses owners need digital skills to market and promote their business on social media, and to engage in online marketplaces, set up online bill payments, delivery, and e-commerce features to compete in a modern retail environment.
- Tech companies and other employers require top-tier broadband speeds to locate in a community.

Digital Equity + Health
- Digital equity is a "super" social determinant of health, meaning it influences others, such as healthcare, education, and employment.
- 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, online mental health services, and secure messaging services for communicating with medical staff, access to healthcare is increasingly predicated on digital access.
- Staying connected online via social media, email, messaging apps and other online communication with friends and family can prevent social isolation and reduce depressive symptoms in older adults.

Digital Equity + Arts + Culture
- From memes to blogs and social media, to audio visual tools and digital art, the internet has long been a medium for personal and collective cultural and artistic expression.
- We all experience a richer culture and more vibrant art scene when diverse voices are empowered to participate, especially voices from our own community. When not everyone can participate in cultural conversations online and express themselves in unique ways, we all miss out.
- The internet provides free access to culture and content from across the world but also provides a forum for content from a particular place to be shared with the world.
- In the context of place and community, ensuring that residents and organizations are empowered to share themselves online can help create a sense of identity, promote local businesses, artists, events and attractions, and build online communities and connections that spill over into the "real world".

Digital Equity + Education
- Remote learning allows students to attend school, complete assignments, and experience educational programs from home.
- As early on as 2008, the Federal Reserve found that teenagers with computers at home are 6-8% more likely to graduate high school than those without, when controlling for individual, parental, and family differences (Federal Reserve)[3]
- 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[4]
- Education exposes students to digital skills that can expand learning and introduce future career pathways.

Digital Equity + Government Services & Civic Participation
- Digital access and inclusion also enables civic participation, especially as online government services expand.
- Government permits and services are increasingly accessed online via program websites and online application forms.
- Many public meetings can now be accessed via online video conferencing, 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 online.

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[3] https://www.federalreserve.gov/pubs/ifdp/2008/958/ifdp958.pdf

[4] https://quello.msu.edu/wp-content/uploads/2020/03/Broadband_Gap_Quello_Report_MSU.pdf

HOW WAS THIS PLAN CREATED?

The plan incorporates quantitative data from various sources including the US Census Bureau's American Community Survey (ACS), the FCC's Form 477, from internet speed test data providers like M-Lab and Ookla, and program data from the American Connectivity Program (ACP). Alongside these standard data sources, the plan also incorporates a region-wide digital equity survey. Finally, the team gathered qualitative data via interviews, workshops, and focus groups with stakeholders, service providers, municipal officials, and people impacted by the digital divide. These sources were synthesized into recommendations. The methodology was informed by a planning approach that reflects best practices and the values of the Greater Lowell region.

PLANNING APPROACH AND VALUES

MAPC's and NMCOG's planning approach for Greater Lowell region's Digital Equity Plan is grounded in the following core principles:

- **Data Informed and Community Led**: To understand residents' access to opportunities and services, the planning team takes insights from quantitative data, as well as the community voice through resident surveys and focus group discussions.
- **Targeted toward Action**: The focus of digital equity planning services is to set the foundation for future project implementation and program planning. The plan connects Greater Lowell's digital needs to ongoing programs and future funding resources. It is tailored to fit the capacity of municipal staff and other local implementers. The action plan develops an implementation strategy to address the digital divide with concrete projects, resources, and other interventions.
- **Public, Multidisciplinary, Collaborative, and Regional**: The planning process and recommendations are designed for Greater Lowell municipalities to collaborate with one another and with regional organizations through region-wide strategies.
- **Opportunity and Asset-Oriented:** Digital equity is a pre-requisite to further accessing essential services like healthcare, education, job opportunities, transportation, and social services. The assessment includes conversations with stakeholders in those areas around assets, needs, and opportunities.
- **Centering Socially Disadvantaged Populations:** The digital divide does not impact everyone in Greater Lowell equally. Therefore, our planning process seeks to center the voices and needs of those most impacted.

PLANNING PROCESS AND TIMELINE

Existing Conditions Analysis (Fall 2023 – Winter 2023)

NMCOG and MAPC identified and analyzed the existing data sources for internet service availability, connection speed, device accessibility, and socio-economic census data. This included sources from **American Community Survey (ACS) 2019–2023**, **Federal Communications Commission (FCC)**

Form 477 Data, **M-Lab Speed Test Data**, and **Affordable Connectivity Program (ACP) Enrollment Data** via the Benton Institute's ACP Mapping tool.

Community Needs Assessment (Spring 2024 – Summer 2024)

NMCOG and MAPC analyzed community-level needs and aspirations through direct community engagement via key informant interviews with municipal staff, stakeholder interviews with organizations and agencies currently

Digital Equity Plan overview: phases of work

01 Existing conditions and data analysis

02 Community outreach and qualitative data analysis

03 Synthesis and action development

04 Plan document preparation and publication

engaged in digital equity work, a tour of "strategy charrette" public meetings, focus groups with priority populations, and via a region-wide paper and digital survey. Staff also identified the most vulnerable population groups in the Lowell regions and highlighted their digital equity needs.

Action Plan Development (Fall 2024 – Spring 2025)

NMCOG and MAPC reviewed findings from existing conditions and community needs assessment to identify areas of intervention and improvement to match the plan goals. Staff also developed proposed strategies and actions to address identified needs at the regional and municipal scale and further refine actions with implementation guidance through best practice research and via discussions with proposed implementors.

Plan documentation, production and publication (continuous, Spring - Summer 2025)

NMCOG and MAPC documented the aforementioned work and synthesized the research, findings, and recommendations into a comprehensive document that outlines the barriers and needs of the Greater Lowell community along with recommended strategies, actions and implementation guidance. Lastly, municipality-specific memos were developed to guide decision making and collaboration.
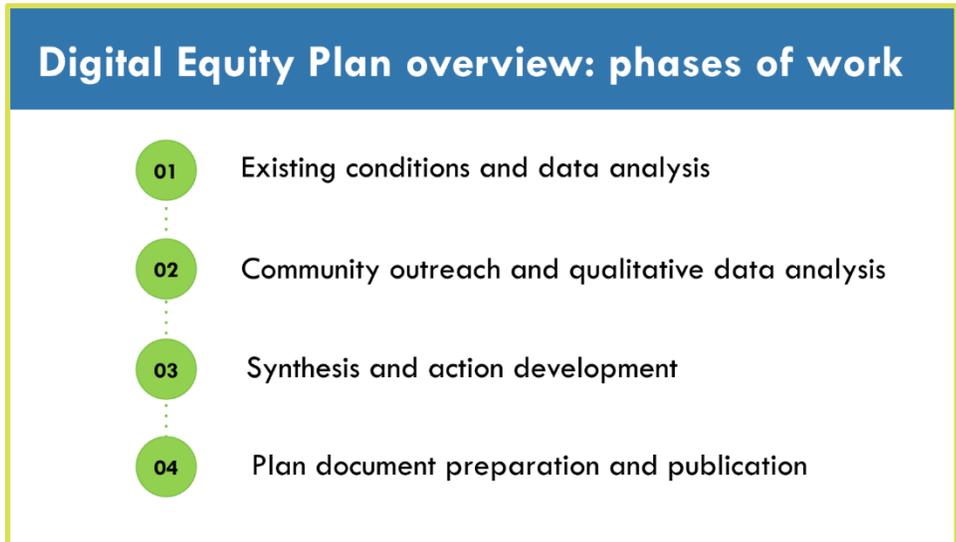
Key Findings

CONTEXT, DATA, AND NEEDS ASSESSMENT

Through both the existing conditions analysis and the community needs assessment, this plan identifies thirteen key findings summarized below. However, there is incredibly rich data and qualitative input from stakeholders and the public fully described in Appendix 1 and Appendix 2. Users of this plan should reference those appendices when prioritizing and implementing actions. The summaries of key findings are below:

Digital Divide: A significant digital divide exists across the Greater Lowell region, affecting people based on income, age, disability, language proficiency, and newcomer status. This divide is particularly pronounced for non-white residents, non-English speakers, and immigrants. The disparity also varies by geography with over 12% of Lowell households having no broadband subscription at home compared to fewer than half a percent of households in Dunstable.

Essential Services: Internet access is crucial for education, employment, healthcare, banking, civic engagement, and more. Those without access at home may rely on public or guest Wi-Fi.

Affordability: The high cost of internet service, devices, and maintenance is the major barrier to access, particularly for low-income residents. The loss of the Affordable Connectivity Program (ACP) has worsened this issue, with over 13.7k households in the region having lost access to a $30/month

subsidy for internet, amounting to nearly $5M/year no longer going toward broadband for families earning less than 200% of the poverty level.

Income Disparities: There are significant income disparities across the region, with per-capita income ranging from $33,574 in Lowell to $67,346 in Dunstable. 31% of the population lives at or below 300% of the poverty line. More than 33% of households are cost-burdened, spending over 30% of their income on housing, further impacting their ability to afford internet service and devices.

Vulnerable Populations: The region includes vulnerable populations more susceptible to experiencing the digital divide, including low-income individuals, racial and ethnic minorities, immigrants and individuals with language barriers, aging individuals, incarcerated and formerly incarcerated individuals, veterans, and individuals with disabilities. While all municipalities have higher-need residents, particularly older adults, these populations are not evenly distributed across the region with the largest percentages and numbers of vulnerable populations concentrated in Lowell.

Internet Access and Income: Home internet access is highly correlated with income. A high percentage (34.1%) of households earning under $20,000 have no internet connection, compared to only 3.2% of households earning over $75,000.

Digital Literacy: While comprehensive data on digital literacy is lacking, stakeholder outreach suggests that certain population groups—including immigrants and older adults—disproportionately lack essential digital skills, such as basic computer skills, internet safety knowledge, and the ability to navigate online resources, including local government services that have moved online. There is a need to keep training updated with evolving technology.

Device Access: Many lower income, immigrant, and older residents lack a computer or rely on smartphones only, which are not always suitable for modern online needs. Stakeholders report a high demand for affordable devices, and while shared devices in public spaces can help, these lack privacy. 6% of households have no computer device, and 5.62% of households use only cellular devices to connect to the internet, representing nearly 12% of households in the region. Device access gaps are worse in urban areas of the NMCOG region, with nearly 20% of Lowell households and nearly 15% of Dracut households lacking a computer or having only a smartphone at home.

Language and Cultural Barriers: Language and cultural barriers amplify digital equity issues, as ISP customer support, digital skills classes, and device programs most often default to English, and digital equity programming and resources are most often offered in spaces that do not provide multilingual support and cultural competency for technical assistance and digital literacy classes.

Internet Safety: There are widespread concerns regarding internet safety, security, and online scams, undermining trust in and access to certain digital resources and services, like online bill payment. This is especially true among older adults and immigrants.

Lack of ISP competition: Across the Greater Lowell region, local government officials and residents alike are frustrated with the lack of competition among Internet Service providers. While nearly all addresses are served by at least one cable provider, only 30% of addresses in the region are served by fiber. Much of the region experiences duopoly conditions, with much of Lowell, Dracut, and

Pepperell experiencing near monopoly conditions and having only limed fiber coverage. This lack of consumer choice can have impacts on quality and affordability of service.

Connection Speed Disparities: There are significant differences in median download and upload speeds across the region, likely reflecting differences in broadband infrastructure technology (i.e. fiber vs. cable vs. fixed wireless) and customer plan selection. For example, speed test data in Dunstable show a median download speed of only 78 Mbps, a speed so slow it doesn't even meet the definition of broadband, while the data show a median download speed of 288 Mbps in Westford. Similarly, Dracut, which is not well served by fiber plans, has a median upload speed of just 12 Mbps, while Westford, which is well-served by fiber—a technology known for faster upload speeds—has an upload speed of 653 Mbps.

Lack of Coordination and Funding: Inconsistent funding for programs that provide digital equity support and a lack of coordination between municipal and community programs can hinder progress. Organizations providing digital literacy support face challenges due to limited staff capacity and training, as well as limited or outdated equipment.

ABOUT THE MUNICIPAL MEMOS

This plan also includes nine municipal memos, which dive into the specific data and qualitative input for each municipality. They are intended to provide additional context specific to each municipality, and they illustrate how each municipality can undertake actions that will advance local and regional digital equity goals. They are provided in Appendix 5 in addition to existing as stand-alone documents.

Recommendations

Six major strategies were identified to address the key findings. Each of these strategies has a number of specific actions that can be undertaken to implement the strategy, but these actions are not meant to be exhaustive. The strategies are designed to build upon one another as we work together as a region, but if the opportunity arises, they may also be undertaken individually.

Specific ways each municipality may advance the strategies follow the six strategies, including implementors, priority, and resources. Notably, agencies listed as "implementors" might not be a lead implementor for a given strategy. Rather, "implementors" should be considered as stakeholders to consult when implementing the strategy who may want to take a lead or support role as appropriate.

More information, including a comprehensive explanation of each action, is listed in Appendix 4, Implementation Guide. That appendix also includes a Funding Memo with a list of grant resources that may help fund the strategies.

Recommendations specific to each municipality are listed in the nine municipal memos provided in Appendix 5. These recommendations tie into the actions listed below: for example, a municipal memo might list a specific agency in that municipality that would benefit from an upgraded computer lab. That recommendation would tie into *Action 3.4: Expand access to and upgrade*

computer labs and shared devices at senior centers, libraries, schools, community centers, nonprofits, and other local and regional entities offering device access.

The "Resources" column in action matrices below provide an estimate for the level of investment for each recommendation as follows:

$: This action can be achieved with little additional investment.

$$: This action requires an attainable level of new investment.

$$$: This action requires a level of investment that may be hard to achieve.

STRATEGIES AND ACTIONS

STRATEGY 1: BUILD CAPACITY TO IMPLEMENT AND EVALUATE DIGITAL EQUITY PROGRESS

Digital equity is a relatively new domain for municipal governments and community-based organizations compared to issues like housing, recreation, or transportation. There is no "department" of digital equity, so to address the digital divide, communities and the region will need to build new capacity. Staff, budget, organizational structure, and other resources and capacities are needed to support broadband access, device access, and digital literacy, and to evaluate progress toward the implementation of the digital equity plan. In some cases, this may mean designating existing staff, departments, or organizations to include digital equity in their work and responsibilities, while in other instances new staff or structures will be needed to advance digital inclusion and measure impact. Crucially, building capacity includes building resources for addressing the digital divide, including pursuing state and federal grants.

#	Action	Implementor(s)	Priority	Resources
1.1	Form a regional digital equity task force	All municipalities	High	$
1.2	Bring on a regional digital navigator to support and coordinate existing programs and to staff the digital equity task force	Digital Equity Task Force	High	$$
1.3	Hire or appoint dedicated digital equity staff, including exploring opportunities for shared/regional staff and hiring staff at the municipal scale, especially in the highest need communities	Municipalities, Digital Equity Task Force	Middle	$$$ Staff time
1.4	Pursue state, federal, and foundation grants or fellowships to support digital equity efforts	All municipalities (specific grant development staff), Digital Equity Task Force	High	$

#	Action	Implementor(s)	Priority	Resources
1.5	Offer municipal and/or regional grants to support community-based organizations providing digital equity services	All municipalities, Digital Equity Task Force	Middle	$$
1.6	Undertake coordinated program evaluation, including conducting survey assessments to measure progress	Digital Equity Task Force	Low	$

STRATEGY 2: IMPROVE QUALITY, RELIABILITY, AND AFFORDABILITY OF BROADBAND SERVICES TO THE HOME, ESPECIALLY FOR PRIORITY POPULATIONS

At-home internet access is perhaps the most direct measure of the digital divide, and in Massachusetts, cost is the number one barrier. Municipalities can improve the quality, reliability, and affordability of at-home internet access through coordination with Internet Service Providers (ISP)s, and through investments and policies to improve access and competition at the regional, municipal and neighborhood scale. Because the digital divide does not impact all populations equally, municipalities should also pursue, facilitate or support interventions that improve broadband access at specific housing sites serving priority populations, such as older adults, people living with disabilities, low-income households, formerly incarcerated individuals, and individuals experiencing housing insecurity.

Recommendations to improve at-home internet access at the regional or community scale include actions focused on improving ISP low-cost plan sign-ups or expanding ISP coverage and competition; providing public; or open infrastructure to increase consumer choice by building on existing municipal fiber networks or exploring open access networks through large scale infrastructure investment or through policies including dig-once policies and zoning and permitting reform.

#	Action	Implementor(s)	Priority	Resources
2.1	Target broadband improvements at subsidized and affordable housing sites, including working with housing providers to support the provision of building scale "Apartment Wi-fi" and retrofitting housing sites with modern wiring to support fiber.	Housing Authorities, Community Development Corporations, and other housing providers; Municipal IT departments and housing staff	Middle	$$$
2.2	Commission a feasibility study to explore the provision of municipal internet service or public administration of an open access network.	Municipal executives, councils or selectboards	Middle	$$

#	Action	Implementor(s)	Priority	Resources
2.3	Research and adopt policies to support broadband infrastructure, access, and competition, such as "dig once" policies, streamlined permitting, and permitting by-right telecommunications uses in certain districts.	City council and town selectboards	Middle	$
2.4	Promote affordable broadband plans and low-income programs to get qualified households enrolled.	Municipalities, ISPs, Housing providers, CBOs	Middle	$
2.5	Inventory and map existing broadband infrastructure—including existing municipal or public fiber, private fiber, and cell signal coverage—and explore public and private investments to improve and expand service.	Planning departments, IT departments	High	$
2.6	Support or pilot mesh networks in densely populated, high-need neighborhoods.	Neighborhood associations, CDCs, Tech Educators	Low	$$$

STRATEGY 3: ENHANCE DIGITAL ACCESS IN PUBLIC SPACES AND FACILITIES

Local governments are often best equipped to ensure digital access in public spaces, like public parks and buildings. Freely available Wi-fi networks, computers, and other devices or equipment like digital screens/kiosks and charging stations, can provide numerous benefits to all members of the public and can provide a digital access safety net to the most vulnerable.

These recommendations focus on improvements to public facilities, including parks and open spaces as well as buildings, where municipalities can invest in network infrastructure, equipment or devices to provide free wi-fi, shared computer workstations, or otherwise enhance digital access.

#	Action	Implementor(s)	Priority	Resources
3.1	Inventory digital assets and needs in public facilities to identify and implement "quick win" improvements such as adding devices or expanding wi-fi networks	Planning departments	High	$$
3.2	Partner with the business community to explore and promote the provision of free Wi-fi on main streets and commercial corridors, as well as in "third spaces".	Local businesses, merchants' associations, Economic development offices	Low	$

#	Action	Implementor(s)	Priority	Resources
3.3	Deploy free Wi-Fi in parks, plazas and other public spaces such as at or near transit stops, and in the immediate vicinity of municipal buildings.	Parks and Rec departments, IT departments City of Lowell; National Park Service, DCR; LRTA, MBTA	Medium	$$$
3.4	Expand access to and upgrade computer labs and shared devices at senior centers, libraries, schools, community centers, nonprofits, and other local and regional entities offering device access.	COAs, Libraries, School Districts, Community Centers, Non-profit organizations	High	$$
3.5	Work with affordable housing providers and shelters to bring computer labs or shared devices to affordable housing and shelter sites.	Housing Authorities, Community Development Corporations, Shelters	High	$$

STRATEGY 4: SUPPORT PROGRAMS AND SERVICES THAT REACH PRIORITY POPULATIONS AND ADVANCE ALL PILLARS OF DIGITAL EQUITY

Some residents lack access to a high-speed broadband connection or to appropriate devices at home or otherwise lack the digital literacy and tech skills needed to use a computer and take full advantage of the internet in ways that support participation in modern life. These residents need support, and often for multiple "pillars" of digital equity. To successfully meet the need, support services should layer internet access, device access, and digital skills training, and do so in ways that are accessible to diverse populations with different cultures, language needs, and with different schedules, habits, and access to mobility.

This means that support is needed from national, state, and local organizations that focus on the core pillars of digital equity: helping residents sign up for low-cost internet plans, distributing devices, providing skills training and tech support. It also means that support is needed from trusted local organizations and individuals who can meet priority populations where they are, in ways that understand local context, cultures, and language needs. Where organizations are already doing digital equity work in Greater Lowell, these programs often need more support to expand to meet resident needs. Where organizations are already reaching priority populations, these programs often have an opportunity to layer in culturally competent support for digital equity alongside existing services.

#	Action	Implementor(s)	Priority	Resources
4.1	Create or expand programs that include device distribution, digital literacy training, affordable access, and/or tech support, with a focus on programs that holistically combine elements for one or more priority populations.	Municipal IT Departments, Diversity Equity and Inclusion Staff, COAs, Libraries, School Districts, Community Centers, CBOs	High	$$
4.2	Purchase and distribute additional devices, including adaptive devices, for in-demand programs to expand access and increase accessibility for those living with disabilities.	Diversity Equity and Inclusion Staff, COAs, Libraries, CBOs	High	$$
4.3	Provide tailored programs for older adults and veterans to increase comfort with technology, including basic tech skills, cybersecurity, and online safety training.	COAs, Veterans Services Departments, Healthcare Organizations, CBOs	High	$$
4.4	Incorporate tech training, device distribution and other digital equity services into existing programs for immigrants and refugees, including courses for English language learners.	CBOs, School Districts, Cultural Centers, English Language Instructors	High	$$
4.5	Reach households with lower incomes by partnering with housing providers to bring tech support and other digital equity programming to affordable housing sites, shelters and other residential locations.	Housing Providers, CBOs	High	$$
4.6	Partner with hospitals and healthcare organizations to support devices access, digital skills training and access to telehealth for patient populations.	Municipal Health Departments, Healthcare Organizations	Low	$$
4.7	Bring device access and skills training programs to incarcerated and formerly incarcerated individuals by partnering with detention facilities and re-entry programs.	Detention Facilities, Re-entry Programs	Low	$$
4.8	Provide programming and resources to support employers, job seekers, and the small business community with relevant workplace digital skills.	Chambers of Commerce, Small Businesses, Large Employers, MassHire	Medium	$ $
4.9	Explore opportunities for expanding device access through expansion of existing device lending programs at libraries and elsewhere	Libraries, School Districts, Community Centers	Medium	$$

STRATEGY 5: COLLABORATE REGIONALLY TO EXPAND IMPACT AND UPLIFT EXISTING WORK

As research and outreach conducted during the planning process revealed, a number of organizations and initiatives are already doing great digital equity work in Greater Lowell. Coordinating, sharing, and regionalizing existing programs and resources is a key strategy for maximizing the impact of existing work, and expanding its reach to meet the needs of various communities and populations. For example, some residents aren't aware of existing programs that could connect them to cheaper internet or a new device, and better outreach and promotion can help. Some libraries have tech support expertise that others lack and could share staff support, program resources or expand service regionally to help. Similarly, programs and resources designed to support the general public or English speakers could be catered to support a specific group, such as older adults, or translated to become accessible to Spanish speakers.

#	Action	Implementor(s)	Priority	Resources
5.1	Make existing digital equity educational program materials more accessible and adaptable by inventorying, sharing, and translating for language access and cultural relevance.	Digital Equity task force, regional digital navigator, CBOs	High	$
5.2	Connect similar organizations via peer learning cohorts and "train the trainer" sessions to share resources and approaches across municipalities.	Digital equity task force, regional digital navigator	High	$
5.3	Create a regional program to coordinate device donation, refurbishment, and distribution, partnering with non-profit and corporate entities.	IT departments, corporate partners, non-profit device refurbishment or distribution partners	Medium	$$$
5.4	Create a regional digital equity resources directory and shared events calendar, and market and promote to at-risk populations and the organizations that serve them.	Digital Equity task force, regional digital navigator, CBOs	High	$
5.5	Collaborate regionally on digital equity advocacy and ISP engagement to improve policy, expand coverage and increase affordability	Municipal leadership	Medium	$
5.6	Help Public Access Corporations navigate funding challenges by expanding technology access and training.	Public Access Corporations	Medium	$

STRATEGY 6: PROVIDE INCLUSIVE MUNICIPAL DIGITAL SERVICES TO MAKE LOCAL GOVERNMENT MORE ACCESSIBLE AND USER FRIENDLY

In the 21st century, residents expect government services to be as reliable and easy to use as private sector services, and accessible in the same place where they have come to expect everything else in their lives: online. Municipal websites and other online tools provide greater access to local government—including greater access to information and opportunities for engagement and feedback, as well as access to government services themselves via program enrollment intake forms, permit applications, etc. Known collectively as "digital services" these online approaches to local government are crucial for advancing digital equity, as they make civic engagement easier for populations who may speak English as a second language, have disabilities, or face other historic barriers. At the same time, putting services online alone is not enough. Local governments should also continuously evaluate and improve digital services to ensure that they are working through processes known as "user centered design". And, as more and more services move online, municipalities should also ensure support for residents experiencing the digital divide. This means offering customer support for online interfaces and continuing to provide in-person and paper-based options alongside digital options.

#	Action	Implementor(s)	Priority	Resources
6.1	Expand municipal services inclusively to reach constituents both in person and online.	All municipalities, IT Departments, Clerk's Offices	Medium	$$
6.2	Monitor and evaluate online services, including talking to "users" to understand who is visiting municipal websites and how residents are succeeding or not in using digital tools offered.	IT Departments, Constituent services staff	Medium	$
6.3	Create a digital outreach and online engagement guide to assist communities in using social media and digital tools equitably and effectively.	Communications Staff, outreach and engagement staff	Medium	$
6.4	Support and improve hybrid meetings, including providing guidance for staff and meeting facilitators and providing needed equipment at municipal facilities.	IT departments, Department staff, board and commission staff	Medium	$$
6.5	Inventory online services offered by municipal departments, reviewing each digital service or website for compliance with accessibility guidelines, language access, and for support options for individuals who face digital barriers.	Constituent services staff, IT departments	High	$

#	Action	Implementor(s)	Priority	Resources
6.6	Create and provide "how-to" guidance and support for residents attempting to use municipal online services, including tutorial videos, how-to instructions, and/or a "help desk" or "customer support" number where needed.	Constituent services staff, IT departments	High	$
6.7	Ensure language access by Increasing the use of translation technology to support online and in person services.	Municipalities, IT departments	High	$$

A REGIONAL APPROACH

Although each municipality, agency, or community-based organization can advance actions individually, an ideal approach would include a higher level of collaboration across boundaries. This would amplify the ability for the region to address the digital divide in a holistic way. Key actions that a coalition of municipalities and service providers could take together to make a substantive change in the digital equity landscape, making actions that single entities should undertake that much easier, include the following:

#	Action
1.1	Form a regional digital equity task force
1.2	Bring on a regional digital navigator to support and coordinate existing programs and to staff the digital equity task force
1.4	Pursue state, federal, and foundation grants or fellowships to support digital equity efforts
1.5	Offer municipal and/or regional grants to support community-based organizations providing digital equity services
1.6	Undertake coordinated program evaluation, including conducting survey assessments to measure progress
2.3	Commission a feasibility study to explore the provision of municipal internet service or public administration of an open access network.
2.6	Inventory and map existing broadband infrastructure—including existing municipal or public fiber, private fiber, and cell signal coverage—and explore how existing public infrastructure can be leveraged or expanded, while coordinating with private ISPs to advocate for expanded service coverage.
3.1	Conduct an inventory and audit digital assets and needs in public facilities and then invest in "quick win" facilities improvements.
4.3	Ensure older adults have access to digital literacy and tech support, with a focus on basic tech skills and cybersecurity and online safety training. A senior/youth pairing program is a good system for digital literacy training and tech support.
5.1	Create a regional digital equity library through inventorying, sharing, and translating existing digital equity educational program materials for language access and cultural relevance, making them more accessible and adaptable.
5.3	Create a regional program to coordinate device donation, refurbishment, and distribution, partnering with non-profit and corporate entities.
5.4	Create a regional digital equity resources directory and shared events calendar, and market and promote to at-risk populations and the organizations that serve them.
6.3	Create a digital outreach and online engagement guide to assist communities in using social media and digital tools equitably and effectively. This may include adapting existing materials with local and regional information.

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STATEWIDE AND NATIONAL ORGANIZATIONS

Internet Access Task Force

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National Digital Inclusion Alliance (NDIA)