ctc technology & energy

engineering & business consulting

MBI
MASSACHUSETTS
BROADBAND INSTITUTE

at the MassTech
Collaborative

Municipal Digital Equity Plan

Prepared for the City of New Bedford, Massachusetts

May 2024

Columbia Telecommunications Corporation

10613 Concord Street • Kensington, MD 20895 • Tel: 301-933-1488 • Fax: 301-933-3340 • www.ctcnet.us

Contents

Figures

Tables

1 Executive summary

In 2023 the City of New Bedford commissioned CTC Technology & Energy (CTC) to engage in two separate broadband-related studies. The first is a study to document gaps in digital equity—a condition in which all residents can afford adequate broadband service, obtain and manage devices, and possess the skills to use these resources—and develop strategies to bridge these gaps.

That study is the subject of this report, which presents findings and recommendations to the City. This project was funded 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). This report will be considered by MBI as it develops strategies for addressing digital equity gaps under the Massachusetts State Digital Equity Plan.[1]

The second study is a broadband feasibility study, focused on exploring ways to bring about a new fiber-to-the-premises (FTTP) service in the City. That study, still underway, will provide an FTTP design and cost estimate, results of market research including speed and cable testing and a phone survey, financial analysis and recommendations for partnership and business models. A new fiber service would be expected to offer competition and improved service and potentially improved pricing to residents and businesses in New Bedford, providing benefits to all.

1.1 Project overview

This report presents findings (see Section 2) and recommendations (see Section 3) that have been informed by the following tasks CTC performed over a six-month period, including:

- Analysis of data (as reported by local internet providers to the FCC) on the availability of broadband service, level of competition, and broadband pricing in New Bedford (Section 4). For most residents of New Bedford, the only choice for high-speed wired service is Comcast; they generally do not have the ability to subscribe to wired service from other providers, but can get fixed wireless broadband from other providers, according to the FCC data.
- Documentation of enrollment rate in the Affordable Connectivity Program (ACP), which offered a $30 monthly subsidy toward broadband service costs, and estimation of the gap

[1] The Digital Equity Act is a $2.75 billion federal program that, in part, funds state planning processes to establish a vision for digital equity that will guide overarching strategies and goals. The first draft of MBI's "Massachusetts State Digital Equity Plan" was released for public comment on November 13, 2023, and can be viewed here: https://broadband.masstech.org/news/mass-broadband-institute-announces-municipal-digital-equity-planning-program-participants. The State Digital Equity Plan report was in the process of being finalized for submission to the NTIA at the time this report was provided to the City.

in utilization by eligible households (see Section 4.3). Although this program ended new enrollments on February 7, 2024, the gap in ACP enrollment illustrates the need for enrollment support in any other current or future subsidy or low-cost program—or for the ACP program itself should Congress provide additional funding.

- Feedback from interviews with 42 stakeholders from 22 entities over the course of several meetings and follow-up interviews to further illuminate gaps in affordability, skills, and devices; existence of local programs; and the ability of stakeholders to start or expand those programs to fill the identified gaps. This information was entered into MBI's Asset Inventory portal. See Section 5 for a report on the stakeholder meetings and Appendix B for the stakeholder survey.
- Promotion of MBI's statewide residential digital equity survey and reporting on New Bedford-specific findings on topics including broadband utilization, affordability, skills, device access, and related topics (see Section 6 and Appendix A: MBI survey).
- Development of recommendations with respect to strategies and activities designed to address gaps using potentially available funding, which may be augmented by local funds (see Section 3).
- Facilitation of a "Digital Equity 101" public session to inform New Bedford residents about the Municipal Digital Equity Plan and provide a brief background on broadband access and digital equity in the City. See Section 5.9.

1.2 Digital equity funding landscape

To implement strategies recommended in this report, the City and its stakeholders can potentially leverage a variety of federal and state funding sources.

Section 7 discusses the grant and funding landscape, including programs stemming from multiple COVID-19 relief efforts, as well as the federal Infrastructure Investment and Jobs Act (IIJA) and the Digital Equity Act. Additional support through the Federal Communications Commission's (FCC's) E-Rate program may also be available for discounts on eligible internet access, telecommunications services and related equipment to eligible schools and libraries, including programs to close the homework gap.

These programs will create opportunities for state and local entities to strengthen digital equity and inclusion within their communities. While the exact level of funding that will be available for programs in Massachusetts is yet to be determined, it is likely that millions of additional funding dollars will be available in the state over the next five years to help the City close digital equity gaps.

In Massachusetts, existing digital equity programs include MBI's Broadband Innovation Fund, a $50 million fund that will support grants under the Digital Equity Partnerships Program and the Municipal Digital Equity Planning Program. This ARPA funding supports qualified organizations to work as partners to implement a suite of digital equity projects in six key issues areas to bridge the digital divide and will support municipalities to develop local digital equity plans (such as this plan).

The City can also leverage upcoming opportunities for federal funding under the $2.75 billion Digital Equity Act. This funding will support two large grant programs administered by National Telecommunications and Information Administration (NTIA).[2] This funding will support programs that will require states to distribute federal digital equity funding over a five-year period and will enable state and local organizations to create projects intended to advance digital equity goals. However, this level of funding is unlikely to meet all needs.

NTIA will review digital equity planning documents from each of the states as it launches its own grant programs in 2024. After the NTIA finalizes its $1.44 billion Digital Equity Capacity Building Grant Program, it will invite states to apply for grants based on a set amount of funding allocated to each. NTIA is expected to launch this program in the second half of 2024 and allocate funding over the course of five years. At least some of Massachusetts' allocation is expected to flow to local entities in the form of subgrants through MBI.[3]

On a municipal level, MBI launched the Municipal Digital Equity Implementation Program in February 2024. This is a direct grant program for municipalities that have participated in the Municipal Digital Equity Planning Program or have a pre-existing local digital equity plan or related document. One-time grants of up to $100,000 are intended to help municipalities make local digital equity investments and execute projects that will increase access, adoption, and usage of the internet for populations most impacted by the COVID-19 pandemic.[4]

It is anticipated that in 2025, NTIA will launch its nationwide direct competitive grant program—the Digital Equity Competitive Grant Program—where individual entities will apply for a portion of an additional $1.25 billion. If state and federal funds are not adequate to meet local needs, the City could consider developing a modest funding source for targeted digital equity programs.

[2] Digital Equity Act Programs: NTIA, https://broadbandusa.ntia.doc.gov/funding-programs/digital-equity-act-programs.
[3] NTIA has posted the NOFO for the Digital Equity Capacity grant. https://www.ntia.gov/federal-register-notice/2024/notice-funding-opportunity-state-digital-equity-capacity-grant-program.
[4] "Municipal Digital Equity Implementation Program," MBI, https://broadband.masstech.org/digital-equity-implementation.

If these state and federal funds are not adequate to meet local needs, the City could consider developing its own grant program for targeted digital equity efforts.

2 Key findings

2.1 New Bedford has nearly ubiquitous cable service from Comcast, but has no fiber option for residents

According to data provided by Comcast and other providers to the FCC, wired broadband service is nearly ubiquitous in New Bedford. As reported to the FCC, nearly all locations in New Bedford (23,638 out of a total of 23,660 locations or 99.9 percent) are served by Comcast, with speeds reported by Comcast of at least 100 Mbps download, 20 Mbps upload (100/20 Mbps) the federal definition of broadband.

2.1.1 A City speed test analysis questions the quality of Comcast's service

Last year a consultant to the City engaged in an analysis of internet speeds as experienced by users. Using software on school-issued Chromebooks (operating typically over Wi-Fi in student homes, most of which had Comcast subscriptions) the consultant measured speeds at these endpoints in spring of 2023 and found levels often sharply lower than the speeds reported as being offered to the premises. The City's analysis--performed by Digital Millennial Consulting and finalized in May of 2024—is presented as Appendix D. Separately, CTC issued a standard request to Comcast asking the company to describe its network capabilities in New Bedford. Comcast's letter is provided in Appendix E.

Low speeds can be caused by inadequate network capabilities, degradation of in-building wiring, and issues in the premises including router configuration, shared uses in the home, or Wi-Fi attenuation. Regardless of the root causes of the City's analysis, the City's and CTC's research highlight the need for broadband competition in New Bedford to ensure choice and quality service. Right now, residential locations in the City do not have fiber services available. As a result, consumers do not have a wired service option capable of symmetrical speeds (with the same upload and download speeds, e.g. 100/100 Mbps or 1/1 Gbps speeds). More generally, the lack of competition leaves consumers without choices or the ability to take advantage of a competitive market dynamic, which can tend to lead to better service and pricing over time, including from improved promotional offerings.

2.2 Many residents have access to fixed wireless services, but service is not ubiquitous, and reported speeds vary

According to ISP-reported data, licensed fixed wireless services from Verizon and T-Mobile ("5G Home Internet") are available in certain areas at various speeds in the City and serve approximately 14,313 out of 23,660 New Bedford (60.5 percent of) locations, but are limited in speed and reliability. T-Mobile and, to a lesser extent, Verizon, offer fixed wireless home services (leveraging the networks previously used only for mobile service) in many areas of New Bedford. These services provide a relatively affordable option, but with the significant caveat that

performance is dependent on individual subscribers' distance from wireless facilities and that the data speeds may be cut (or "throttled") by these providers during times of congestion.

FCC data show that 3,822 (or 16.2 percent of) locations are reporting speeds of 100/20 Mbps or greater from T-Mobile, which is the minimum speed for broadband as defined by the FCC. In total, 14,313 locations (or 60.1 percent) can receive speeds faster than 10/1 Mbps from either provider. As fixed wireless providers upgrade their equipment to improve speed, coverage, and reliability, this technology may provide a meaningful competitive option for more New Bedford residents and competitive pressure on Comcast, but it is not a complete substitute for wired service.

2.3 DSL service is not offered at the same speeds across New Bedford

Many New Bedford residents have access to Digital Subscriber Line (DSL) internet access service offered by Verizon. This service relies on Verizon's aging copper network infrastructure and provides limited data transmission speeds that technically fall in the category of "unserved." Still, it is noteworthy to characterize this service for this report, as some residents may be using it.

As reported by the ISPs to the FCC, approximately 10,387 locations in New Bedford (or 43.9 percent) have access to these services—but this service is uneven, with most locations getting very slow speeds between 0.2/0.2 Mbps (or 200 Kbps) and 10/1 Mbps and only a small number of additional locations getting between 10/1 Mbps and 25/3 Mbps, which all fall well below the FCC's definition of broadband at 100/20 Mbps.

CTC could only find current Verizon offers for DSL that promise a range of slow download speeds, including 1.1-3 Mbps and 3.1-7 Mbps. Regardless of the actual speeds offered or delivered, Verizon charges the same price, meaning that some consumers pay the same amount but get lower quality service.

2.4 Adoption rates in New Bedford lag the state and nation, and affordability is a major challenge for lower-income residents

Affordability of wireline internet subscriptions is an issue for many residents of New Bedford. As documented by the U.S. Census Bureau's American Community Survey (ACS), the City's 81 percent adoption rate for any type of internet subscription lags behind the state (90 percent) and federal rate (87 percent). This implies that approximately 7,904 households (or 19 percent of the population) reported that they do not currently subscribe to the internet in any capacity.

This subscription gap is markedly larger for subscription to wireline services (66 percent adoption rate for the City), compared to the state (80 percent) and nation (72 percent). After accounting for the number of households at different income brackets, an estimated 86 percent of the New

Bedford households that lack internet subscriptions earn below $75,000 per year, meaning that these lower-income families are clearly the ones facing gaps.

Additionally, 57 percent of MBI survey respondents from households with income below $30,000 per year, and 74 percent of respondents with income between $30,000 and $60,000 per year said it was somewhat hard or very hard to pay their internet bill each month, compared to 35 percent of respondents with annual household incomes of more than $60,000. The average monthly cost of home internet service for all New Bedford residents who participated in the MBI survey was reported as $107 for bundled service.

These gaps suggest that even though New Bedford appears to be fully "served" by broadband, other factors (affordability, skills, and device access) can create a digital divide within the community.

2.5 Device ownership gaps also represent a challenge for New Bedford residents

According to ACS data, 5,640 (or 13.6 percent of) households do not own a computing device of any kind, and 15,202 (or 36.7 percent of) households in New Bedford do not own a desktop or laptop computer device—which presents an obvious barrier to internet adoption. The City significantly lags behind both the state and nation in this category, with 17.5 percent of Massachusetts households and 21.1 percent of households nationwide lacking a desktop or laptop, respectively.

In MBI's residential survey, 77 percent of respondents said that everyone in their household has access to computing devices needed to meet their everyday needs for internet use. However, those with an annual income of $30,000 to $60,000 are less likely to use a laptop (only 14 percent of households), desktop computer (only 8 percent), or tablet (only 14 percent) compared to those earning over $60,000 per year.

These numbers are even lower for households earning less than $30,000 per year – only 10 percent of earners in this category are most likely to use a laptop, 4 percent are most likely to use a desktop, and 12 percent use a tablet most frequently. This suggests that device distribution programs and digital literacy and skills classes could be helpful for residents in New Bedford.

2.6 Adoption of the FCC's Affordable Connectivity Program (ACP) in New Bedford is similar to the federal rate

As of February 2024, when ACP subsidy enrollments were discontinued, the ISPs serving New Bedford all participated in the ACP, which pays a $30 monthly subsidy for broadband service for eligible low-income residents. As of December 1, 2023, estimates based on FCC-reported

enrollment by ZIP code suggest that 10,398 households in New Bedford were receiving the ACP subsidy—about 40 percent of the estimated 27,100 eligible households.[5]

This enrollment rate matches the federal rate and exceeds the state rate of 31 percent. This high enrollment rate may reflect the positive results of City interventions designed to increase enrollment. Lack of enrollment among eligible households was likely due to a lack of awareness of the program, a challenging sign-up process, and perhaps reluctance among some New Bedford residents.

This City-wide enrollment rate reflects a strong presence of community support in the City to aid in the information sharing and sign-up process, and that success can be built on and replicated in any current or future low-cost ISP program or available subsidy even if the ACP is never reinstituted. Enrolling more households also tends to alleviate issues that hotspot lending programs pose, including incontiguous access to devices and unreliable connection due to existing infrastructure such as brick structures and line-of-sight complications.

2.7 New Bedford respondents to the MBI survey who had household income of less than $60,000 reported significantly lower confidence in performing common online tasks

Comfort in navigating the internet or carrying out relatively common online tasks is a direct indicator for digital literacy. For New Bedford residents who responded to the MBI survey, 43 percent of all respondents said that using the internet for general searching is hard or not easy. However, general comfort with internet usage is noticeably less when looking at those who earn less than $60,000 per year.

More specifically, 62 percent of those who earn less than $30,000 annually, and 54 percent of those that earn between $30,000 and $60,000 per year find general internet searching hard or not easy compared to their counterparts earning more than $60,000 per year.

Additionally, while 67 percent of respondents earning over $60,000 find it “easy” to search and apply for benefits or resources online, only 33 percent of those earning less than $30,000, and 36 percent of those earning between $30,000 and $60,000 said the same.

However, approximately 60 percent of all New Bedford respondents indicated that they would be interested in any of the four digital skills supports detailed in the survey (do-it-yourself training, online classes, in-person support from friend or instructor, or in person classes), which shows that although there is a significant information gap between lower and higher income

[5] Estimates are based on 2021 American Community Survey reported data on household income, food stamp recipiency, Medicaid recipiency, supplemental security income, and public assistance income.

respondents, there is a notable interest among New Bedford residents for receiving digital literacy education and support.

2.8 Across the income spectrum, New Bedford residents are very concerned about privacy and security online

New Bedford residents who participated in the MBI residential survey expressed deep concerns about online safety and privacy—with 81 percent of all respondents stating they are somewhat or very concerned about their online safety—and these sentiments held across the income spectrum. Respondents are most concerned about their data being stolen or used without their consent, which is a concern cited by 90 percent of respondents.

Additionally, 71 percent are most concerned that they or a loved one could get scammed or tricked, and 70 percent are most concerned they could be tracked or surveilled. This suggests a need for skills training and education generally in the community.

2.9 Numerous organizations in New Bedford have expressed interest in offering digital skills programs to address identified needs in the community

Multiple entities in New Bedford have expressed an interest in offering digital literacy and skills classes, but do not have the staffing or device resources to carry this out. For example, the Free Public Library has the space and devices, however it lacks the funding to support an additional staff member to operate these classes. Also, the Council on Aging has the physical space for a computer lab to operate classes but does not have the funding to purchase computers and hire instructors.

There are organizations that work with various entities in Massachusetts to provide digital equity curricula that includes instructors and device distribution to participants. For example, the New Bedford Community Health Center and the New Bedford Boys and Girls Club are currently partnering with Tech Goes Home—an organization that partners with schools, healthcare providers, and community organizations to provide curated technology-based support through device distribution, internet access, digital literacy, and education.

There is a clear need to expand the availability of digital skills training, especially to low-income and senior citizens. Representatives from Free Public Library, Immigrants' Assistance Center, United Way Greater New Bedford, and Council on Aging have all expressed interest in offering or facilitating digital education instruction.

More detail on these findings and supporting data can be found in Sections 4, 5, and 6.

3 Recommendations

CTC recommends the City and its stakeholders explore the following strategies and pursue available funding sources to help close digital equity gaps—meaning gaps in affordability, skills, and access to devices--in New Bedford. Most recommendations involve work that established, proven, and trusted community partners could perform.

The City of New Bedford, potentially in concert with stakeholders, can play an important convening role to bring together key community partners in a collaborative process to ensure that funding opportunities are pursued in most efficient way.

Table 1 and the following subsections summarize the major recommendations of this report. The first recommendation—for setting up a digital equity coalition—would create an entity within New Bedford comprised of the City and its departments, local stakeholders, and any local charities or other entities. Taken together they would be tasked with facilitating coordination, setting priorities, and making funding recommendations.

Table 1: Summary of recommendations

Recommendation	Access and affordability	Devices	Skills	Privacy/ security	Potential annual cost
Convene a digital equity coalition and facilitate annual or biannual meetings	X	X	X	X	N/A
Set up a modest City grant fund in case state and federal funds fall short	X	X	X	X	$50,000
Hire two digital navigators for New Bedford Public School's Family Engagement Centers to enable computer instruction to more students and their families, and expand hotspot budget until more families can obtain affordable home subscriptions	X		X	X	$160,000 for two digital navigators, $300/year per hotspot
Seek funding for a computer lab to host digital literacy classes at Council on Aging	X	X	X		$100,000

Recommendation	Access and affordability	Devices	Skills	Privacy/ security	Potential annual cost
Expand partnerships with device-provision entities to ensure all New Bedford residents who want a computer can obtain one		X	X	X	$150,000/year for 100 households/year (Tech Goes Home)
Seek funding for two digital navigators at libraries and the Department of Community Services to provide skills training, tech support, and assist in signing up residents for low-cost programs	X	X	X	X	$80,000 per navigator
Pursue MAPC's Apartment Wi-Fi program and MBI's Residential Retrofit program for public and affordable housing properties	X				No cost first year; TBD for subsequent years
Explore cybersecurity programming/partnership opportunities				X	Track and pursue state cybersecurity programs; some are free[6]
Seek funding for community classes in technology and engineering at Global Learning Charter Public School's Thinkabit Lab			X		$43,000 ($22,000 in startup costs, $21,000 in annual costs)

3.1 Form a Citywide Digital Equity Coalition to harmonize efforts and support outreach to funders

New Bedford's government is well suited to implement some solutions, especially with respect to infrastructure, staffing, and certain kinds of programs, but it cannot address all challenges related to digital equity alone: connecting residents with subsidy programs, providing devices,

[6] "About the Municipal Cybersecurity Awareness Grant Program," https://www.mass.gov/info-details/about-the-municipal-cybersecurity-awareness-grant-program#how-to-apply.

assisting with device maintenance and updates, and helping people develop better computer skills.

Given these considerations, an important role the City of New Bedford could play is in forming a Digital Equity Coalition to convene the organizations already providing, planning to provide, or willing to contribute services in New Bedford.

Entities including New Bedford Public Schools, Council on Aging, Immigrants' Assistance Center, United Way of Greater New Bedford, Free Public Library, and others (some of which cover overlapping populations) can convene with the City to ensure that digital equity efforts are coordinated. New Bedford Community Access could also be included. Community TV stations are experiencing budgetary challenges as the cable providers' commitments to fund local community TV stations are declining, yet often provide digital skills training around creating, promoting, and hosting content online.

A coalition meeting annually or biannually—with the structure to encourage members of the Coalition to distribute timely and relevant information and opportunities throughout the rest of the year—would help inform a holistic programmatic strategy and make recommendations to funders and philanthropies. Once the coalition is formed, an initial task would be to determine what existing City staff position can take on the role of evaluating and operationalizing recommendations that the City is in a position to fund or implement.

Such coalitions are critical to engage stakeholders and drive change. The Essex County Community Foundation (ECCF) has served in this convening role on the North Shore and is expected to continue serving this function. Another model in Massachusetts is the Alliance for Digital Equity, established in 2021 by Baystate Health and the Community Foundation of Western Massachusetts to address broadband affordability, access, and digital literacy for all residents of Berkshire, Hampden, Hampshire, and Franklin counties in western Massachusetts.

Working with MBI and other larger regional entities, the City could also expand partnerships across communities with libraries, senior groups, and other social service and public health entities to further improve coordination.

3.2 Set up a modest City grant fund to fill small gaps and reduce reliance on uncertain or finite state or federal funding streams

The Digital Equity Coalition mentioned in Section 3.1 could position itself to understand the relationships between local organizations, track progress of local initiatives, and serve as a liaison and communications channel with MBI and other state and federal agencies working on digital equity issues.

The structure and landscape of federal and state digital equity funding is evolving. MBI has recently released the State Digital Equity Plan, and federal agencies are crafting rules for federal grant programs that will distribute $2.75 billion nationwide. The City of New Bedford is well positioned to serve as a conduit for distributing federal and state digital equity funds to local organizations; however, the exact role of local nonprofits and local government agencies in the administration of this funding is currently unclear. This is another reason why creating a coalition to track funding sources and coordinate efforts in the next few years is important.

Given the uncertainty at the state level, the City of New Bedford would benefit from using local resources to create a grant fund to address specific gaps in digital equity and inclusion. The City could consider creating a modest grant fund of $50,000 annually, with awards of approximately $5,000 to $10,000 to local nonprofits and community organizations to support existing programs and provide seed funding for new ones. The City should reevaluate the total grant fund amount each year and consider incremental increases as additional funds become available.

A simple grant application, organized and managed by the City could allow local organizations serving New Bedford to provide specific proposals for training, enrollment support for affordability programs, or device subsidy and assistance programs. The City could develop metrics and reporting on timelines, financial accountability, and program results that will demonstrate the effectiveness of the use of these awarded funds and how they help meet digital equity goals and objectives created by MBI.

3.3 Expand staffing for New Bedford Public School's Family Engagement Centers to enable computer instruction to more students and their families, and expand hotspot budget

The New Bedford Public School District (NBPS) has six Family Engagement Centers that provide wraparound services including computer instruction at no cost. While creating additional Centers may not be feasible, adding digital navigators and expanded programs to the existing ones could be invaluable.

These full-time staff members could offer skills training, tech support, and assistance in enrollment in any low-cost broadband programs—or in any future subsidies (such as the now-expired ACP). A survey conducted for this report (see Section 6) shows that 43 percent of respondents expressed difficulty performing general internet searching, and almost half expressed difficulty participating in local civic activities online.

A minimum of two full-time navigators are needed immediately, but four would come closer to meeting the potential needs of such a large and diverse student population—as well as parents and guardians who need to use the school's online portal.

Additionally, with the demise of the ACP—and the difficulty families have in enrolling in and paying for Comcast's Internet Essentials program—the district could use funding to expand its hotspot lending program unless and until an affordable and easy-to-obtain home broadband service emerges in New Bedford. The U.S. Census Bureau's American Community Survey data show that 33.6 percent of New Bedford households do not subscribe to wireline internet services, and the rates are far higher for low-income families.

To be clear, a home subscription is technically far superior to any hotspot and the City might consider negotiating for bulk subscription for any current or future broadband provider. Unless that occurs or a new ACP-like program emerges, the practical realities suggest that the district could easily use double its current stock of 400 hotspots to meet immediate needs of students.

Finally, as noted in the first recommendation in this report, coordination across entities though regular meetings of a Digital Equity Coalition—with NBPS a key member of this coalition—is critically important to ensure efficient use of resources. For example, the NBPS mentioned that a well-meaning community partner had heard that high school students needed computers, so they obtained funds to purchase and distribute 50 devices. Had this offer been vetted though a coalition of which the school were a member, the partner would have learned that students are already issued laptops, and that the devices need to be specially configured for student use.

3.4 Seek funding for a computer lab to host digital literacy classes by the Council on Aging

The New Bedford Council on Aging (COA) aims to enhance and enrich the quality of life for residents over the age of 60. A representative at COA highlighted that the primary digital equity obstacles faced by seniors in New Bedford are internet accessibility, affordability, and access to devices.

Last year, the COA applied for a $100,000 digital literacy grant offered by the Massachusetts Council on Aging (MCOA) that would have facilitated the purchase of a smartboard and 10 to 12 laptops and allowed the COA to hire a new instructor to teach digital literacy classes. The COA has the space to host classes and house this equipment at its administrative office—recent renovations at this office included the creation of a computer lab room for the purpose of hosting these classes once completed.

Unfortunately, the COA was not awarded this grant, which has forced the organization to put its plans for this computer lab on hold until adequate funding can be secured. The COA has a detailed project plan that, if funding were secured, could start right away. It is recommended that MBI and the City collaborate to secure this funding for the Council on Aging so this computer lab can be equipped and staffed quickly, and digital literacy classes can begin this year.

The Council on Aging is next door to the Veteran's Service Office (VSO), and the two often share resources. A representative at VSO highlighted that senior Veterans most frequently struggle with digital skills and accessing the internet, which is becoming more challenging as most Veterans services and applications outside of New Bedford are becoming paperless. By funding this computer lab at COA, Veterans will also be able to benefit from the device access and digital literacy curricula.

3.5 Expand partnerships with device-provision and digital literacy training entities to ensure all New Bedford residents have access to classes and devices

Device access is limited in New Bedford, with the main distributors being schools across the City—particularly New Bedford Public Schools, Global Learning Charter Public School, and Alma Del Mar School through their 1:1 Chromebook distribution programs. Other entities engaged for this report highlighted two issues: a lack of devices at their organizations and a lack of awareness on how to engage and partner with third-party organizations focused on device distribution.

New Bedford residents lag both the state and the nation in computer device ownership. ACS data show that 36.7 percent, or approximately 15,202 households, lack a desktop or laptop. Additionally, 15.3 percent of households use a smartphone without any other type of computing device. There are a number of device donation, distribution, and education organizations that are present in Massachusetts, that could be strong community partners with local entities.

Tech Goes Home (TGH) is an organization that partners with schools, healthcare providers, and community organizations to provide curated technology-based support through device distribution, internet access, digital literacy, and education. Upon successful completion of a TGH course through a community partner, students are provided with a device for personal use. Generally, the cost is $1,500 per person.

TGH is a longstanding partner with MBI, which has partnered to fund and connect TGH with community-based organizations across the state. TGH recently announced its first partnership in the City with New Bedford Community Health,[7] and a representative of the organization also shared that it has run two courses at the Boys and Girls Club of New Bedford, but there are a many local organizations that are seeking digital literacy and device distribution support and could benefit from this potential partnership.

Another device donation and distribution program comes from Computers4People, which is a non-profit organization that aims to "bridge the digital divide by repurposing e-waste into

[7] "Tech Goes Home adds 25 new community partners," *Jamaica Plain Gazette*, https://jamaicaplaingazette.com/2024/02/05/tech-goes-home-adds-25-new-community-partners/.

educational tools, ensuring equal access to technology for all."[8] Individuals and non-profits can apply for computers through the organizations website. TEK Collaborative,[9] an Amesbury-based nonprofit that refurbishes and supplies computers to those in need. However, at the time this report was delivered to the City, TEK Collaborative indicated on its website that requests exceeded supply and that it could only place people on a waiting list for new devices.[10] Developments at TEK Collaborative bear watching.

The following are examples:

- **New Bedford Free Public Library** previously offered digital literacy classes, but they stopped in 2018 due to low participation. Low attendance rates were caused by classes being scheduled during typical work hours (between 2pm and 4pm). The library has been interested in re-offering these digital literacy training classes but has lacked the funding and staff to do so. One approach to reintroducing digital skills and literacy classes could be through a partnership with Tech Goes Home, which would allow the library more flexibility on scheduling and curriculum offered.

- **Masshire Greater New Bedford Career Center (GNBCC)** operates a program called YouthWorks, which provides employment opportunities for individuals aged 14 to 21. Chromebooks are made temporarily available to all YouthWorks participants during its Summer and Year-Round Programs, and last summer the Career Center loaned out 34 Chromebooks to participants for the duration of the program.

  Moving forward, GNBCC would like to provide these Chromebooks to participants permanently but needs the funding to do so. Additionally, the GNBCC has 13 workstations with high-speed internet access in its 'Resource Room', which is open to all customers, and could be used for digital literacy and skills training classes.

- **United Way of Greater New Bedford (UWGNB)** provides free access to computers on site, but these computers are outdated and do not meet the demand for daily use. Additionally, UWGNB leads the New Bedford Community Connections Coalition, which hosts a digital literacy event every month for residents. These events provide instruction on how to operate computer software, such as Microsoft Office, and distributes laptop devices to participants at the end of the session.

[8] "Our Mission," Computers4People, https://www.computers4people.org/about.html.
[9] In response to the digital equity needs illuminated by the Covid 19 pandemic, TEK Collaborative was established to help close the digital divide by providing adequate internet enabled devices at no cost to those in need. TEK Collaborative forms strategic partnerships with businesses, organizations, schools, and government to create an ecosystem of device access, internet access, and education.
[10] "About TEK Collaborative," TEK Collaborative, https://tekcollaborative.org/2023/08/11/about/.

A representative at UWGNB stated the organization's interest in adding more formal digital skills training classes into its list of courses offered on-site, so this could be more widely and frequently available for those interested. Tech Goes Home could be a strong partner to implement these class curriculums on location and contribute to device purchasing and distribution.

- **Immigrants' Assistance Center (IAC)** would like to offer digital skills and literacy classes to its population of immigrants, many of whom are ESL learners and low-income earners. Current planning for this is starting, but IAC's budget is limited. A partnership with Tech Goes Home could help IAC access a solid digital literacy and skills curriculum and instructors for these classes right away.

- **New Bedford Housing and Community Development (HCD)** funds after school programs at community centers in the City by equipping locations with computers and/or internet access for students using Community Development Block Grant (CDBG) moneys. HCD would like to continue to support programming at these locations, and expand to additional locations in New Bedford, but acknowledges the increased complications of buying technology with CDBG funds for agencies, as federal requirements come with inventory and ownership requirements.

Because MBI has worked with TGH on many occasions, and is familiar with TEK Collaborative and Computers4People, it could help to facilitate partnerships with a number of these entities.

3.6 Explore funding two digital navigators at libraries and Department of Community Services to assist in signing up residents for low-cost programs

There is a broad need for technical and skills assistance for New Bedford residents. Two digital navigators, with a presence at entities across New Bedford, would provide support for digital skills training and enrollment for government broadband subsidy programs and ISPs' low-cost programs as a core function. Entities that could benefit from having a digital navigator include the Free Public Library, Department of Community Services and Schools.

Digital navigators could potentially help residents learn how to access lower-cost internet services from Comcast through its Internet Essentials program and help them enroll in government programs online, in addition to helping residents better navigate the internet and gain digital skills more generally. The digital navigator could also be part of the suggested Digital Equity Coalition (see recommendation 3.2) to better understand the needs of residents and entities in Town. Two locations that could support these staff in the City are:

- **Free Public Library** offers technical assistance at all sites through its Drop-In Tech Help program, which provides device and technical support, digital literacy help, and online accessibility support to New Bedford residents at no cost. This program has been in operation for four years at all locations. The presence of a digital navigator at the library's Drop-In Tech Help program, who could share time across all sites, would complement the existing efforts of the program.
- **New Bedford Department of Community Services (DCS)** currently provides staff support to the New Bedford Commission for Citizens with Disabilities, Council on Aging Board, and Human Relations Commission, and works closely with neighborhood- and community-based organizations.[11] Based on consistent interaction with residents, a representative at DCS acknowledges that the high cost of devices and internet subscriptions is a major barrier to leveling the digital equity field across New Bedford.

  By leveraging its existing relationships with various entities across New Bedford, DCS could be a good central location for a dedicated digital navigator to be based, that could work with existing partner entities across the City when requested.

3.7 Explore options from MBI for improving connectivity at public and affordable housing properties

MBI has partnered with the Metropolitan Area Planning Council (MAPC) to provide procurement support, capital expense funding, and funding for the first year of operating expenses to provide free Wi-Fi access to residents of public and affordable housing in Massachusetts. Because the program requires the housing owner or other local entity to pay operating expenses after the first year, this option should be considered alongside other options for providing ubiquitous service—such as simply subsidizing residential subscriptions for wired broadband in each unit, for potentially faster and more reliable service inside apartments. If the ACP ever got re-funded or a similar program emerged, it would support such subscriptions inside the home, not OpEx for apartment-wide Wi-Fi deployments.

The anticipated size of the grant program is $5.6 million, with plans to address roughly 2,400 housing units.[12] The MAPC will initially lead project management and procurement for apartment Wi-Fi projects. Operational expenses for year two and beyond are expected to be assumed by local partners, including the municipality, public housing authority, and community development corporations. Whatever the method, efforts to provide reliable connectivity at

[11] "Community Services," New Bedford, https://www.newbedford-ma.gov/community-services/.
[12] "Smart Growth and Regional Collaboration: Apartment Wi-Fi," MAPC, https://www.mapc.org/our-work/expertise/digital-equity/apartment-wi-fi/ (accessed November 17, 2023).

home would ensure academic continuity for students and help bridge the digital divide for all residents.

The Housing Authority can also work with ISPs to pursue grants for wiring retrofits if required. In March, MBI announced a residential retrofit program to deploy fiber at approximately 22,000 public and affordable housing properties to replace deficient wiring and infrastructure through grants to qualified ISPs who will install, own, and maintain equipment.[13]

Finally, the New Bedford Housing and Community Development department (HCD) has helped to complete a Wi-Fi in the Parks project. This public Wi-Fi project has been installed in five City parks and will be fully accessible to the public in the Spring/Summer 2024. Currently, this project has been funded using CDBG and ARPA funds. HCD would like to expand the Wi-Fi in the Parks project more widely across the City; however, with ARPA funds expiring and the competitive nature of seeking CDBG grants, future funding will be a significant barrier. The City and MBI could consider working with HCD to fund the continued expansion of this project.

3.8 Explore cybersecurity programming/partnership opportunities

Concerns about online safety and privacy in New Bedford are significant, with 89 percent of New Bedford respondents to the MBI survey stating they are either somewhat concerned or very concerned about their online safety, and 91 percent of New Bedford respondents saying their main concern online is having personal data stolen or used without their consent.

MBI's State Digital Equity Plan states that a future action to address online safety will include the development of a statewide cybersecurity curriculum. Additional actions will include training existing digital navigators, so they support, protect, and inform clients about their online safety, and embedding cybersecurity awareness into youth digital literacy programming.

The Executive Office of Technology Services and Security's (EOTSS) Office of Municipal and School Technology operates a Municipal Cybersecurity Awareness Grant Program (MCAGP) that educates participants about cyber-criminal activity and how to detect potential cyber-attacks to keep residents, families and organizations safe.[14] This resource is free to those participating. Information on the MCAGP should be shared with schools, City departments, libraries, housing authority, and other entities eligible to receive this training at no cost.

Additionally, New Bedford stakeholders could scale Bristol Community College's cybersecurity programming efforts by informing local stakeholders of the various "KnowBe4" curricula (Bristol

[13] "Residential Retrofit Program," MBI, https://broadband.masstech.org/retrofit.
[14] "About the Municipal Cybersecurity Awareness Grant Program," Mass.gov, https://www.mass.gov/info-details/about-the-municipal-cybersecurity-awareness-grant-program#how-to-apply-.

pays approximately $14,000 per year for their course tier) and leveraging the resources of MassTech Collaborative's MassCyberSecurity online safety initiatives. As part of this, there is also a timely opportunity to apply for a state grant to enhance cybersecurity awareness grant for anyone using City or other government networks.

3.9 Consider funding community classes in technology and engineering at Global Learning Charter Public School's Thinkabit Lab

Global Learning Charter Public School (GLC) is a Title I school in New Bedford that serves 500 students from grades 5- 12.[15] GLC provides Chromebooks to all students, and hotspots to families who do not have (or who may have unreliable) internet subscriptions at home.

In February 2023, GLC opened a STEAM (science, technology, engineering, art, and math) Education building for its high school students, with a Thinkabit Lab on its first floor. [16] This Lab was built to offer technology and engineering education to students, with the intention of expanding to offer classes to the greater New Bedford community on Tuesday and Thursday evenings and on Saturdays. Unfortunately, its current operating budget does not support this program expansion.

GLC is seeking approximately $22,000 in seed funding to purchase equipment (circuit maker, 3D printers, recording devices) and to train its staff on how to operate these tools, and approximately $21,000 for ongoing staff and subscription costs (see Appendix C for more detailed budgetary information).

[15] "About Us," Global Learning Charter Public School, https://www.glcps.org/.
[16] "Inside the Global Learning school's new 'STEAM' center," The New Bedford Light, https://newbedfordlight.org/inside-the-global-learning-schools-new-steam-center/.

4 Broadband availability conditions and participation in the ACP in New Bedford

This section provides an analysis of current broadband conditions in the City of New Bedford related to infrastructure availability, level of competition, uptake of services (and of available subsidies) by residents, and device ownership. Data is based on publicly available information from the U.S. Census Bureau, the ACS, and the FCC which uses information reported by ISPs.

As noted in Section 2, refer to Appendix D to review a City speed test analysis performed by Digital Millennial Consulting, and Appendix E for Comcast's statement about its network capabilities in New Bedford.

4.1 New Bedford has ubiquitous cable coverage from Comcast, but competition is mostly absent

CTC reviewed FCC data (which consists of reported data by the ISPs), researched websites of broadband providers operating in New Bedford to collect market data on residential broadband pricing, availability, and level of competition.

Comcast provides cable service throughout the City. Verizon's DSL service, offered over its legacy copper network, is the only other wireline option for internet access service. Fixed wireless services (distinct from mobile services) are available from Verizon Wireless and T-Mobile to many households. New Bedford households do not have the benefit of a residential fiber provider as an alternative to cable. Unlike cable, fiber-to-the-premises service provides symmetrical service (upload speeds are the same as download speeds).

Table 2 provides an analysis of FCC data for New Bedford. FCC data are based on reports of service availability from service providers and show a total of 23,660 "broadband serviceable locations" (this generally means structures, which may contain one or more units or apartments) in New Bedford.[17] Table 3 provides an analysis of the competitive landscape in the community.

Table 2: ISP-reported service offering in New Bedford from FCC data

Technology	ISP	Number of locations (total=23,660)
Cable	Comcast (Xfinity)	**23,638** All at or above 100/20 Mbps

[17] The FCC Broadband Data Collection reporting uses the term "broadband serviceable location (BSL)" to represent address level information. A BSL is shown as a single served address for locations that may have more than one household or unit, as is the case with duplexes and multi-tenant or apartment buildings. In cases where an address or location is serviced by a single provider or technology, an assumption can be made that the same is true for all households or units at that location.

Technology	ISP	Number of locations (total=23,660)
Licensed Fixed Wireless	T-Mobile or Verizon "5G Home Internet"	**14,313** 3,822 at or above 100/20 Mbps (T-Mobile) 2,394 between 25/3 and 50/4 (either provider) 8,097 between 0.2/0.2 and 10/1 (either provider)
DSL/Copper	Verizon	**10,387** All locations offering speeds less than 100/20 Mbps

Table 3: State of high-speed broadband competition in New Bedford from FCC data

Availability of wireline broadband service		Locations (Total = 23,660)
Served addresses where 100 Mbps download, 20 Mbps upload (100/20) or greater is available	Competition from two or more wired providers	0
	Fiber option available	0
	Only one wireline provider (Comcast)	23,638
Locations served by licensed fixed wireless (LFW)		14,313
Locations served only by LFW		0
Underserved locations—meaning they cannot receive 100/20 service but can get at least 25/3 (wireline or LFW)		7
Unserved locations – cannot get 25/3 (wireline or LFW)		15

Figure 1 shows Comcast's service availability in New Bedford as essentially ubiquitous, with just 22 locations without Comcast service. Figure 2 shows DSL coverage in New Bedford at two speed categories, according to FCC data. These speed categories seem to be spread relatively evenly between high and lower income areas in the City. As noted later, CTC checked service offers at

20 addresses and was only able to find DSL offers that promise a range of slow download speeds, including 1.1-3 Mbps and 3.1-7 Mbps.

Figure 1: Comcast service availability in New Bedford

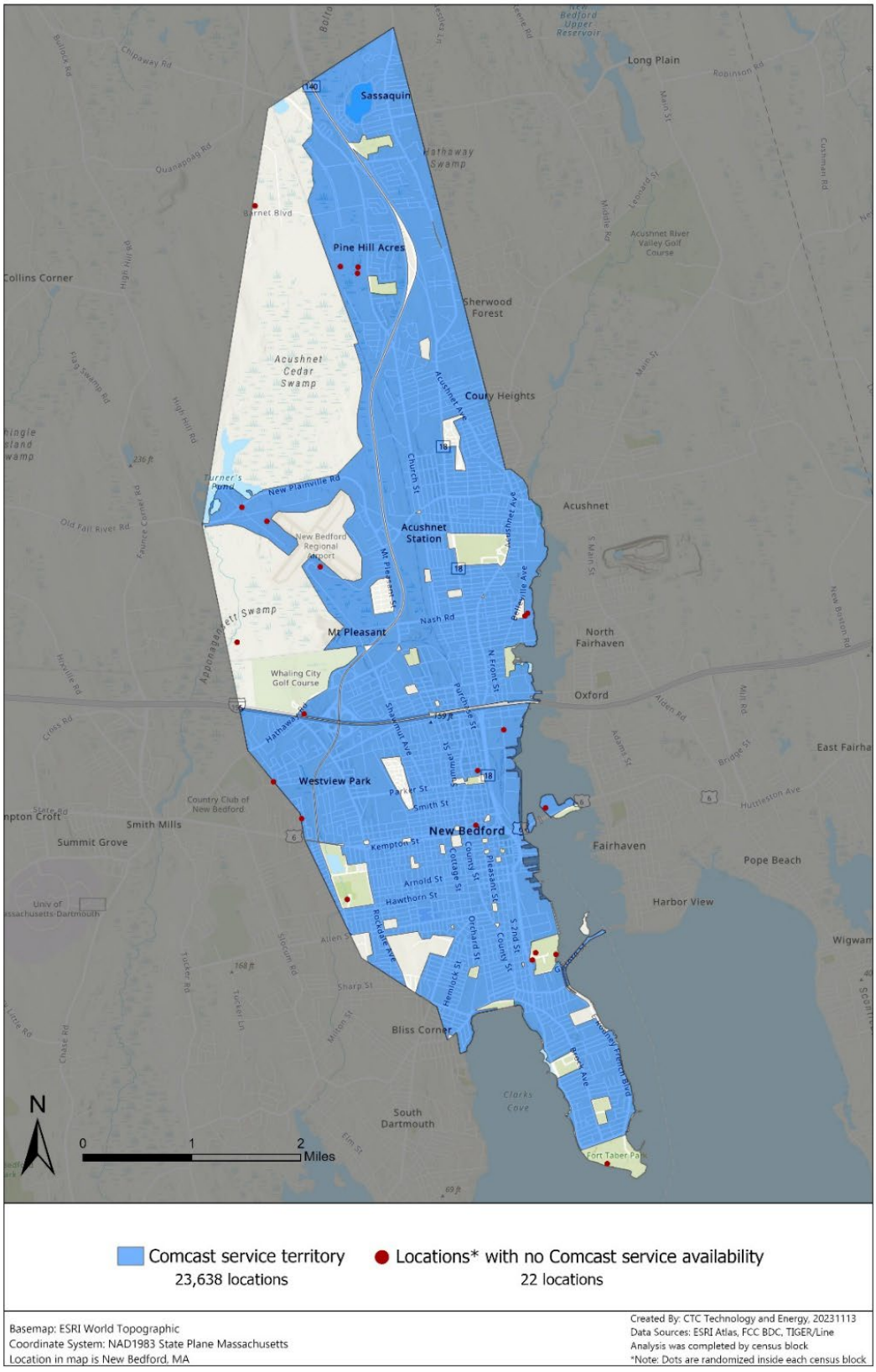
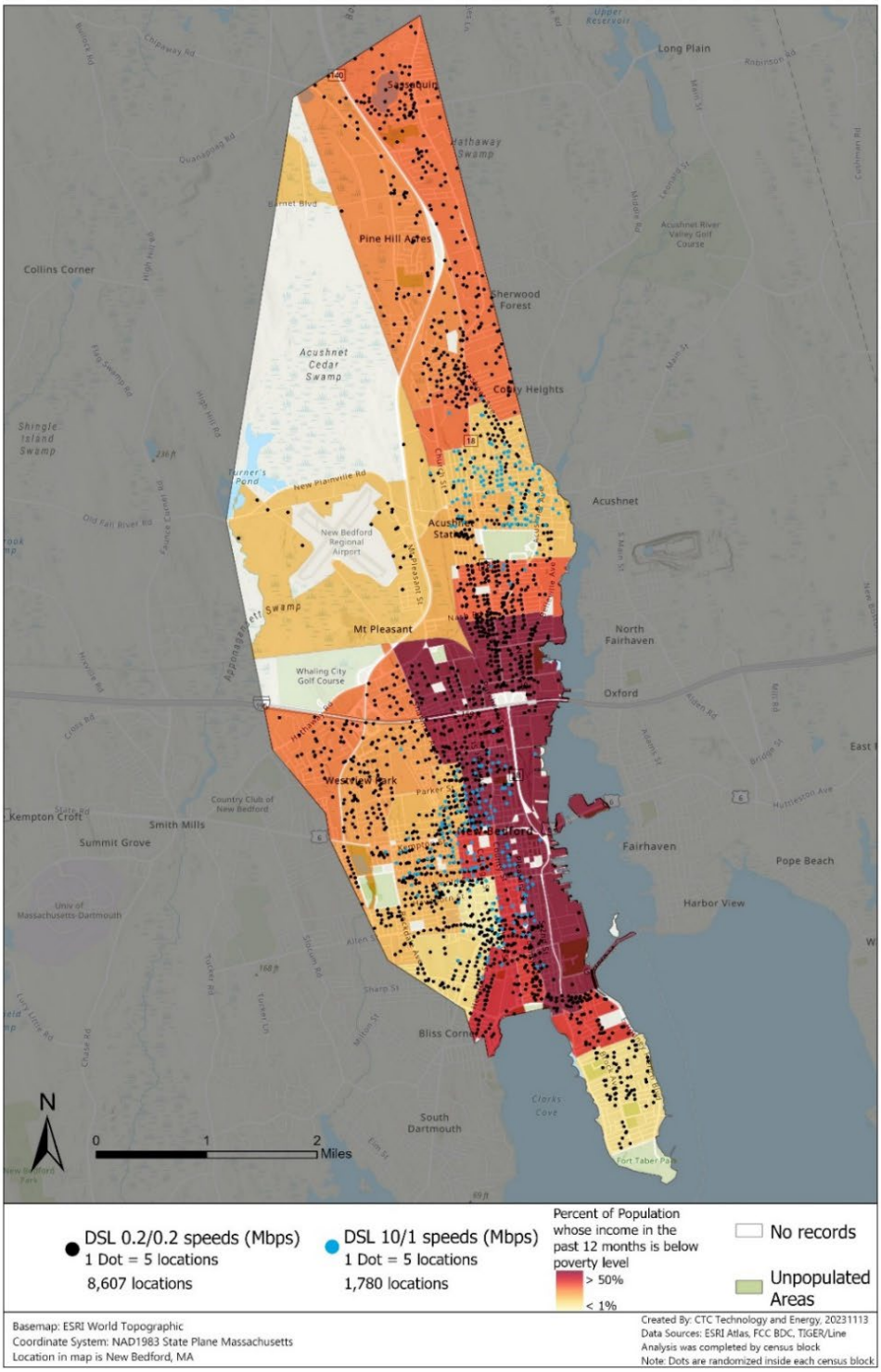


Figure 2: DSL coverage in New Bedford with federal poverty levels[18]



[18] The maps in this report depict FCC broadband reported data by census block and place dots in random locations representing locations served by DSL within the census block. Each dot represents five locations within the census block. Only those census blocks with 3 or more locations served by DSL will show any dots.

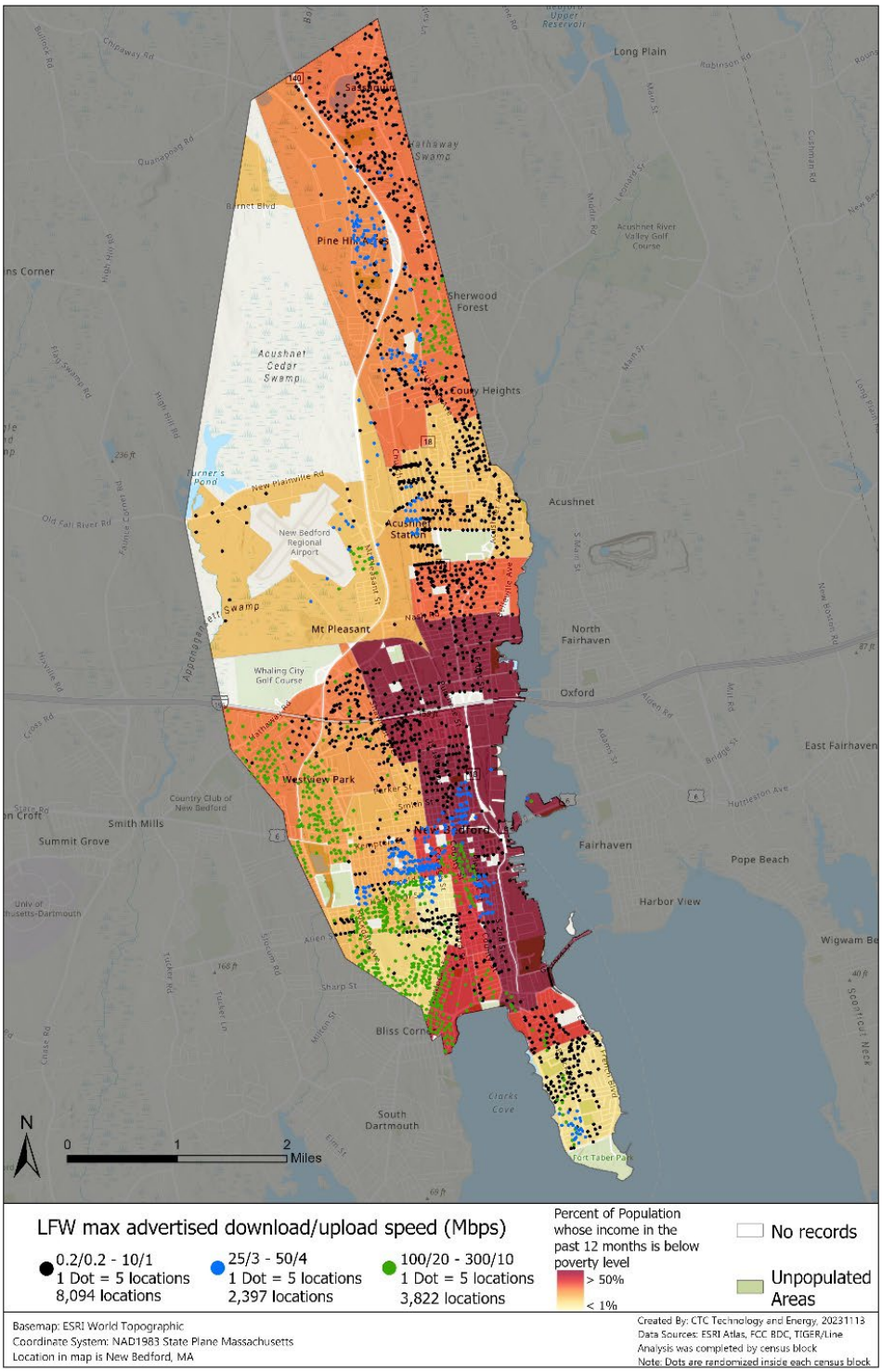
Residents have the option to subscribe to "5G Home Internet" services from Verizon or T-Mobile. These are called "licensed fixed wireless" or LFW because they use licensed spectrum under the exclusive control of the respective companies. The FCC notes that mobile wireless providers have been making these offerings an increasingly attractive alternative to services such as Comcast's, given the more competitive pricing.[19] Yet, these remain a complement of, and not a full replacement to, wired services such as those offered by Comcast. Providers can throttle or reduce capacity in favor of mobile voice and data traffic during times of congestion. And the delivered speeds can vary greatly depending on distance from the wireless equipment or blockages in the environment.

Figure 3 shows reported fixed wireless coverage levels by available speed. Although the FCC data shows that more than 14,313 locations in New Bedford are served by fixed wireless, most are served by speeds in the slowest range – between 0.2/0.2 Mbps and 10/1 Mbps. The data also shows that fixed wireless providers are providing the fastest speeds – including 3,822 locations with 100/20 Mbps or faster service – mainly in higher income areas of the City. Figure 4 shows the respective coverage areas of Verizon and T-Mobile's "5G Home Internet" services. (In both figures, each dot represents five addresses and is placed randomly within a census block.)

This reported coverage may overstate actual fixed wireless service availability and speeds in New Bedford. The quality of the coverage will vary significantly depending on how far away the location is from the equipment or whether there are barriers that could block or weaken a signal such as trees and buildings. Many premises may not receive the reported level of service on a consistent basis.

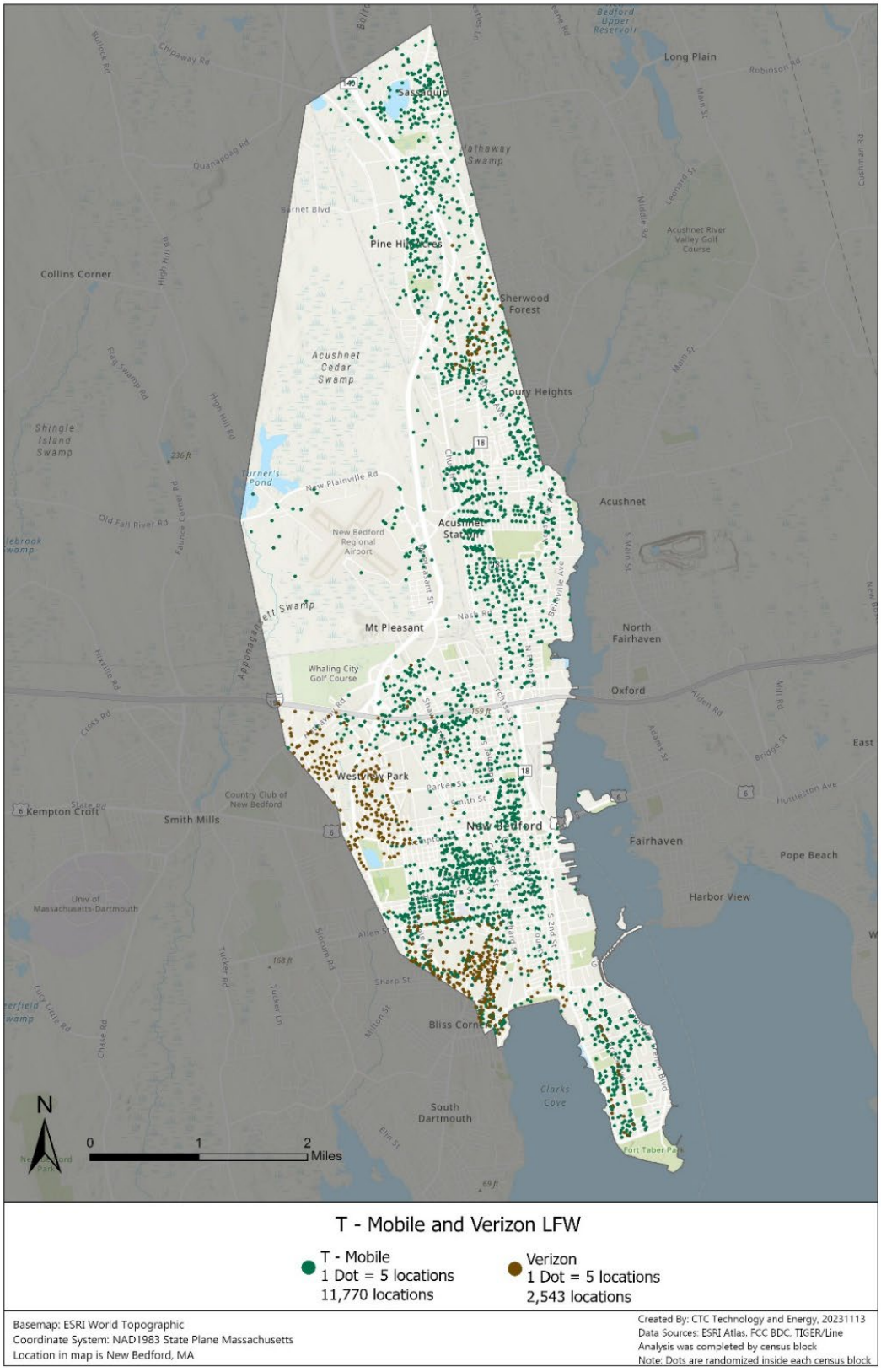
[19] 2020 Broadband Deployment Report, para 11.

Figure 3: Reported fixed wireless coverage in New Bedford by speed and federal poverty levels[20]



[20] As reported to the FCC using the federal Broadband Data Collection rules, gaps in speed ranges reflect no reported locations at speeds between the ranges. The slowest fixed wireless speed reported is .2/.2Mbps and the fastest is 300/10 Mbps.

Figure 4: Reported fixed wireless coverage in New Bedford by provider



4.2 Approximately 4,837 New Bedford households rely solely on mobile services

As noted in Section 4.5.1, ACS survey data shows that roughly 4,837 New Bedford households reported solely using a cellular internet service for broadband connectivity at home. Some consumers who rely on cellphone data plans use their smartphones to connect to wireless hotspots and connect other computing devices to the internet.

The FCC has repeatedly noted that mobile service is an inadequate substitute for fixed broadband services;[21] however, an estimated 15 percent of U.S. adults continue to rely on their smartphones and mobile data plans as the only source of home broadband connectivity[22] – a trend that is more common among young adults and low-income households[23] and that is reflected here in New Bedford.

4.3 The ACP participation rate in New Bedford matches the federal average of 40 percent, and leads the state enrollment rate for eligible households

The Affordable Connectivity Program (ACP), which provides a monthly subsidy toward some home internet subscriptions, presents an opportunity for many low-income residents to purchase a quality broadband subscription more affordably.

As of December 1, 2023, estimates based on FCC data reported by zip code show that roughly 10,398 City households were receiving the ACP subsidy—which is about 40 percent of the estimated 27,100 eligible households in the City.[24] This enrollment rate is higher than the state average and matches the federal average, and may reflect the positive results of recent City interventions designed to increase enrollment. This data is shown in Table 4.

Lack of enrollment among eligible households might be due to a lack of awareness of the program and a challenging sign-up process; many eligible residents may need to go to a library or other location with internet access just to begin the registration process. As a result, many local governments and other digital divide stakeholders conduct active outreach to households that may be eligible to make them aware of the program and assist in the sign-up process. Additionally, with the program no longer accepting new enrollments as of February 7, 2024 and funding projected to expire in April 2024 (barring new funding from Congress), residents may still need help enrolling in low-cost programs offered by the City's broadband providers, as described

[21] E.g., 2020 Broadband Deployment Report, para 11.
[22] Andrew Perrin, "Mobile Technology and Home Broadband 2021," Pew Research Center, June 3, 2021, https://www.pewresearch.org/internet/2021/06/03/mobile-technology-and-home-broadband-2021/.
[23] Andrew Perrin, "Mobile Technology and Home Broadband 2021."
[24] Estimates of total number of eligible households are based on 2021 American Community Survey reported data on household income, food stamp recipiency, Medicaid recipiency, supplemental security income, and public assistance income.

in the next subsection. While outreach may increase enrollment in some areas, some eligible residents will be uninterested or unwilling to participate. This may be the case if a household cannot afford internet even if it receives the ACP, feels no need to use the internet, receives satisfactory service from a cellular provider, receives free internet access through a communal source, or does not want to apply for a federal subsidy program—which can be a particular concern for recent immigrants.

Table 4: ACP enrollment in New Bedford[25]

	Eligible households enrolled	Enrolled households	Eligible households	Unenrolled eligible households
New Bedford	40%	10,398	27,100	16,162
Massachusetts	31%	358,383	1,156,300	797,917
United States	40%	22,190,763	55,179,000	32,988,237

4.4 New Bedford residents have obtained free high-speed internet service with the ACP benefit

All broadband providers in New Bedford participated in the now-expired ACP, either directly or through affiliates, and some still offer their own low-cost programs. When the discounts are combined, these programs enabled qualifying low-income residents to receive service at no cost. (Mobile plans have also been ACP-eligible, but each household can only use ACP once—so if a household was using the benefit for a mobile plan, they could not get the benefit again for a home plan.)

Those who do not qualify for a discounted plan must pay a minimum of $77 a month after the promotional price expires for reliable wired broadband speeds. For example, residents can obtain initial pricing from Comcast of $25 per month but these prices rise sharply following the promotional period.

The ACP program has stopped accepting new enrollments as of February 7, 2024, and will stop providing this broadband discount to existing ACP participants by late April 2024. Residents currently enrolled in this program will need assistance navigating and pursuing alternative low-cost internet service options.

[25] "ACP Enrollment and Claims Tracker," USAC, data as of September 30, 2023, https://www.usac.org/about/affordable-connectivity-program/acp-enrollment-and-claims-tracker/.

4.4.1 Comcast service offerings and prices

Table 5 shows Comcast's service offerings in New Bedford. Options that had been free to those enrolled with ACP and/or are designed for eligible low-income residents are shaded green.

Table 5: Comcast (Xfinity) advertised service plans in New Bedford

Package	Internet speed	Monthly Cost	Notes
Internet Essentials	50/10 Mbps	$9.95	Available to eligible low-income customers following an application process and subject to certain conditions. Internet Essentials also includes added benefits; customers can purchase a refurbished computer for $149.99.[26]
Internet Essentials Plus	100/20 Mbps	$29.95	Available to eligible low-income customers following an application process and subject to certain conditions. Internet Essentials also includes added benefits; customers can purchase a refurbished computer for $149.99.
Connect More	200/10 Mbps	$25 for the first 24 months, then $77 plus $15/mo. router rental fee	Pricing guaranteed for 24 months. No term contract. Includes $10/mo. automatic payments and paperless billing discount with a stored bank account. Discount is $5/mo. when using a stored credit card.
Fast	400/10 Mbps	$35 for the first 24 months, then $92 plus $15/mo. router rental fee	Pricing guaranteed for 24 months. No term contract. Includes $10/mo. automatic payments and paperless billing discount with a stored bank account. Discount is $5/mo. when using a stored credit card.
Superfast	800/10 Mbps	$60 for the first 24 months, then $97 plus $15/mo. router rental fee	Pricing guaranteed for 24 months. No term contract. Includes $10/mo. automatic payments and paperless billing discount with a stored bank account. Discount is $5/mo. when using a stored credit card.
Gigabit	1000/20 Mbps	$70 for the first 24 months, then $102 plus $15/mo. router rental fee	Pricing guaranteed for 24 months. No term contract. Includes $10/mo. automatic payments and paperless billing discount with a stored bank account. Discount is $5/mo. when using a stored credit card.

[26] Comcast, "Comcast Broadband Opportunity Program" (accessed July 2023).
Apply for Internet Essentials or Internet Essentials Plus From Comcast - Xfinity Support

Package	Internet speed	Monthly Cost	Notes
Gigabit Extra	1200/35 Mbps	$80 for the first 12 months, then $107 plus $15/mo. router rental fee	Pricing guaranteed for 24 months. No term contract. Includes $10/mo. automatic payments and paperless billing discount with a stored bank account. Discount is $5/mo. when using a stored credit card.

4.4.2 Verizon DSL service offerings and prices

Verizon's DSL service is a flat charge of $40/month regardless of the network performance and speeds delivered to the household. Verizon further requires a bundled home phone voice service subscription at $34.99, effectively making its DSL service $74.99 to Verizon customers regardless of the speeds being provided. Verizon's DSL service and bundled home phone plan is almost the same price as Comcast's non-promotional prices for a plan with far faster speeds.

CTC checked 20 addresses in New Bedford and found offers for DSL that promise a range of slow download speeds (1.1-3 Mbps or 3.1-7 Mbps) and no promise of a specific upload speed. This will not meet the needs of a typical household but can facilitate basic internet access functions such as email. ISP-reported service availability data to the FCC, shown in Figure 2, demonstrate that some New Bedford households may be receiving service significantly below even these speeds, but others may be receiving faster speeds if the residence is located closer to Verizon's central network equipment. (Verizon's own marketing materials state that the service could provide download speeds between 1.1 Mbps and 15 Mbps but also states that the majority of customers will only receive 1.1-3 Mbps and that rates are only good for one year.)[27] Table 6 shows the service plans CTC was able to find in New Bedford.

Table 6:Verizon DSL advertised service plans in New Bedford

Package	Internet download speed	Monthly Cost	
DSL High-Speed Internet	1.1 to 3 Mbps or 3.1 to 7 Mbps	$40	Either speed requires an underlying land line service at $34.99/month. Customers may use their own router or purchase one for $99.

[27] Verizon DSL Internet: Talk and surf at the same time, https://go.verizon.com/residential/high-speed-internet (accessed November 20, 2023).

4.4.3 Fixed wireless service offerings and plans

Table 7 shows pricing for T-Mobile's 5G Home Internet service plan at $50/month for 5G Home Internet-only service. T-Mobile will provide 5G Home Internet at $30/month if it is bundled with a cellular plan that costs between $60-100/month for a single line.[28] T-Mobile prices its 5G Home Internet plans regardless of provided speeds; as noted above, Figure 3 shows how these speeds vary widely.

T-Mobile did not participate in ACP directly for either its 5G Home Internet or mobile data plans.[29] Only T-Mobile affiliates – Metro by T-Mobile and Assurance Wireless – participated in ACP and offered discounts on mobile data plans. New Bedford residents that qualified for ACP were required to sign up with prepaid provider Metro by T-Mobile for 5G Home Internet and could apply the ACP discount to the bundled 5G prepaid mobile plan. Metro by T-Mobile offers a 5G Home Internet plan and a mobile prepaid voice and data plan for $50 a month.[30] Assurance Wireless does not offer fixed wireless home internet.

Table 7: T-Mobile's advertised home internet service plan in New Bedford

Package	Internet speed	Monthly Cost	
5G Home Internet	75/20 Mbps*	$30 mo. for T-Mobile 5G Wireless customers; $50 mo. for 5G Home Internet service only	Pricing includes a $5/mo. autopay discount. $30 service is only available to customers with a T-Mobile 5G phone and plan offered between $60-100/mo., plus the cost of a handset. Gateway router provided at no charge but one-time $35 device connection charge at sign up.

* Speeds are estimated and rounded. Quoted download speeds were 76-245 Mbps with claims that 50% of customers experience speeds in this range and the remaining customers could receive service faster or slower than this range. Upload speeds were quoted as 21-40 Mbps.

Table 8 shows Verizon Wireless' 5G Home Internet service plans. Verizon does not require users to subscribe to Verizon Wireless mobile plans to get these 5G Home Internet options but significant discounts are only available if the fixed wireless service is bundled with a wireless plan

[28] See T-Mobile Home Internet webpage, https://www.t-mobile.com/home-internet/plans?INTNAV=tNav%3APlans%3AHomeInternetPlan (accessed November 19, 2023).
[29] See T-Mobile Newsroom, February 8, 2023 Press Release, "Taking part in ACP- through both Assurance Wireless and Metro by T-Mobile – is just one way that T-Mobile demonstrates its commitment to bringing wireless access to everyone." https://www.t-mobile.com/news/community/t-mobile-expands-acp; See also, T-Mobile website, "T-Mobile is proud to participate in the new federal Affordable Connectivity Program, which offers internet service payment assistance to eligible households. We're making the program available through Metro by T-Mobile and Assurance Wireless." https://www.t-mobile.com/brand/affordable-connectivity-program?INTNAV=fNav%3AAdditionalSupport%3AAffordableConnectivityProgram.
[30] Metro by T-Mobile 5G Home Internet, https://www.metrobyt-mobile.com/plans/home-internet (accessed November 19, 2023). Customers that are not participating in autopay will pay $25/month. Customers must also purchase a modem for a one-time fee of $49.99.

and handset. These plans include a Verizon Forward program which can provide a $30 per month discount to any eligible low-income households.

Table 8: Verizon Wireless fixed broadband service plans

Package	Internet speed	Monthly Cost	
5G Home Internet	50/5 Mbps	Discounted price $35/mo.; regular price $60/mo.	$10 discount available with Autopay and paperless billing. $15 discount when bundled with postpaid Verizon cellular plan and 5G phone. Pricing guaranteed for 24 months. Wireless Router and $50 Amazon gift card included. Pricing for wireless plan and phone not included here.
5G Home Internet Plus	80/10 Mbps	Discounted price $45/mo.; regular price $80/mo.	$10 discount available with Autopay and paperless billing. $25 discount when bundled with postpaid Verizon cellular plan and 5G phone. Pricing guaranteed for 36 mos. Wireless Router, whole-home internet, and choice of Echo Show or $200 Amazon gift card included. Pricing for wireless plan and phone not included here.
5G Home Internet (Verizon Forward Program)[31]	85/10 to 300/20 Mbps	$30 discount to regular price of subscriptions	Eligibility includes: Federal Pell Grant recipient within the last year, qualify for Lifeline (through participation in SNAP, Medicaid, or have income be 125% below FPL) , and WIC. If enrolled in ACP, a transfer of an active ACP to Verizon Forward is allowed; wireless router included; available to existing customers. Can use Lifeline discount if applicable.

4.5 American Community Survey data reveal that low-income New Bedford residents face gaps in subscriptions and device ownership

Data on internet adoption and device ownership is important to fully understanding the nature of the digital divide in New Bedford. ACS survey data show that New Bedford lags the state and national averages in internet adoption and device ownership. While high-speed broadband services are available throughout New Bedford, many households do not subscribe or own devices necessary to fully use these services—and those lacking subscriptions or devices are largely lower-income households.

The ACS is conducted yearly and nationwide by the U.S. Census Bureau. However, it is important to note a five-year sampling period (2016 – 2021)[32] that may not accurately illustrate most recent trends.

[31] "Verizon Forward," Verizon, https://www.verizon.com/discounts/verizon-forward/.
[32] The U.S. Census Bureau does not release data for communities the size of New Bedford for sampling periods less than five years to keep margins of error to a minimum.

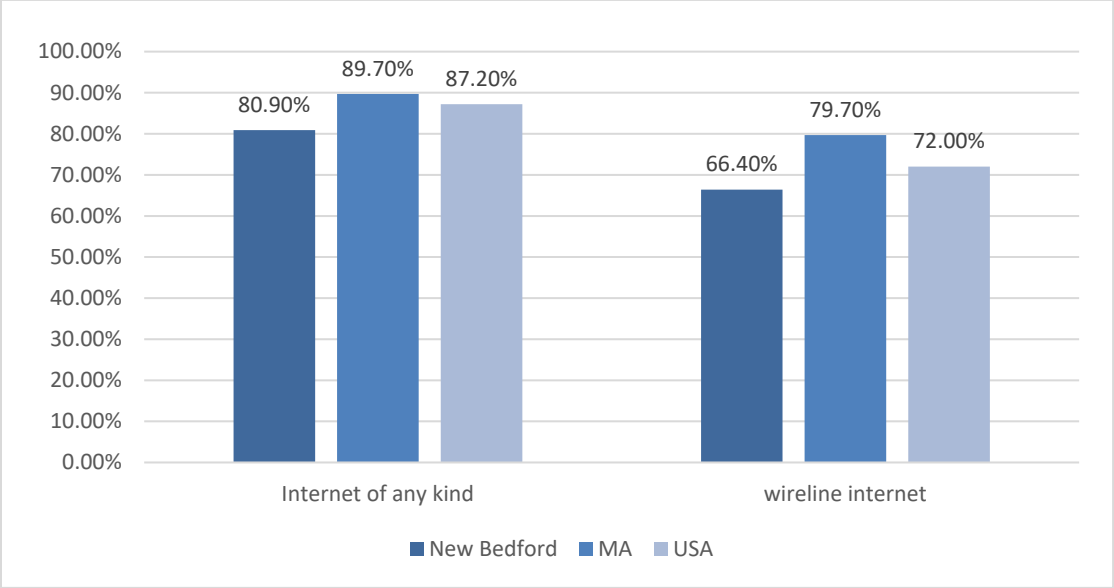
A preliminary analysis of the ACS data found that in New Bedford:

- 33.6 percent of households lack a wireline internet subscription.
- 86.6 percent of households that lack a wireline internet subscription earn less than $75,000 annually.
- 36.7 percent of households do not own a desktop or laptop computer device.

4.5.1 New Bedford lags state and national adoption rates for residential internet subscriptions and low-income residents face the most significant gaps

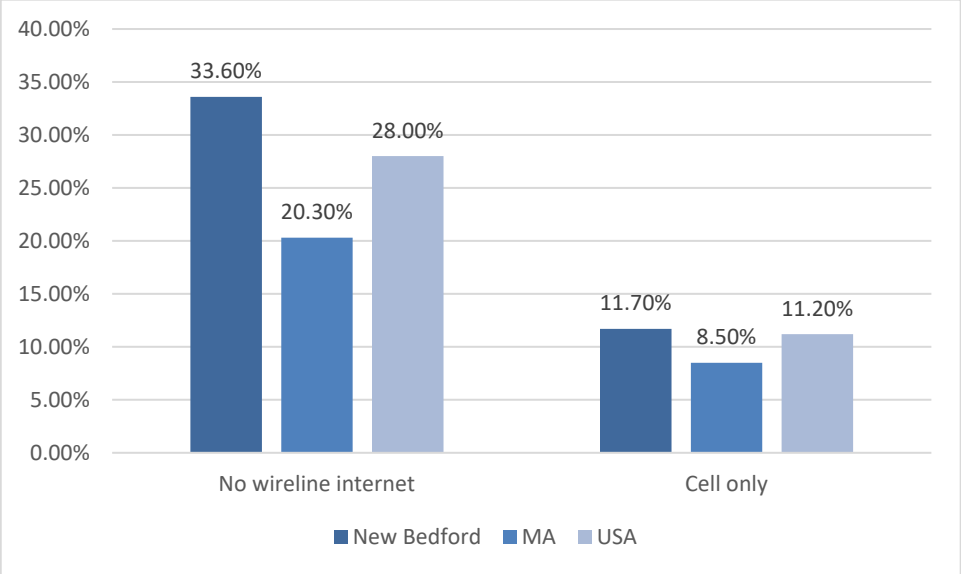
According to ACS data, 80.9 percent of New Bedford households subscribe to residential internet services. Most of these subscriptions, 66.4 percent, are via wireline technology (cable or DSL). The City lags both the state and nation in internet subscriptions of any kind and has a more significant gap for wireline subscriptions, as shown in Figure 5.

Figure 5: Internet subscription rates in New Bedford compared to the state and nation



Internet adoption rates are relatively low in New Bedford, with an estimated 13,914 (or 33.6 percent of) households lacking residential wireline internet service (Figure 6). Of those households without wireline service, roughly 4,837 are using only a cellular internet service from their homes. Lower income households may use their cellular connection and smartphone in lieu of a more robust connection. However, reliance on cellular service will not enable all members of a household to participate in the digital economy because of data caps and the potential for the service to be throttled in times of mobile network congestion.

Figure 6: No access to wireline internet and mobile-only subscriptions compared to the state and nation

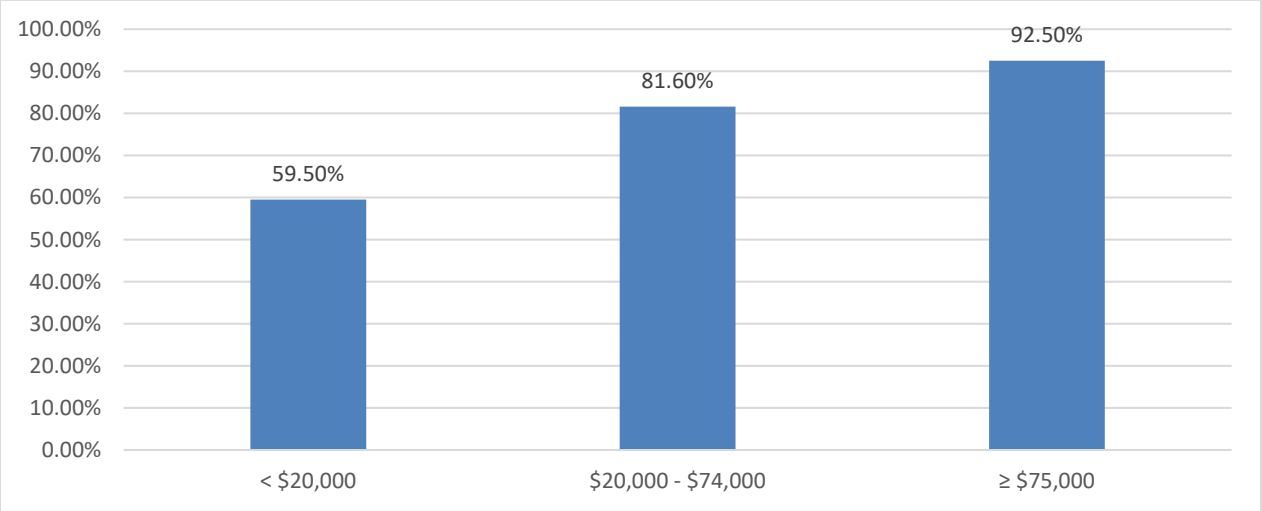


4.5.2 Most New Bedford households that lack wireline internet access earn less than $75,000 per year

In New Bedford, most of the households lacking an internet subscription are lower-income households. Whereas 92.5 percent of households making more than $75,000 subscribe to wireline internet services, only 81.6 percent of households making between $20,000 and $75,000, and 59.5 percent of those earning $20,000 or less do so.[33] After accounting for the total number of households without an internet subscription across all three income brackets, an estimated 86.6 percent of (or 6,841 out of 7,904) households without an internet subscription earn less than $75,000 per year. Figure 7 shows subscription rates by income bracket.

[33] For both of these income brackets, some households are likely able to afford service yet choose not to purchase it because they simply are not interested. For this reason, a 100 percent subscription rate does not represent the ideal or goal rates for any given population.

Figure 7: Wireline internet subscription rates by income level



4.5.3 New Bedford lags both state and national device ownership rates, and 13.6 percent of households lack device access

ACS data show that 86.4 percent of households in New Bedford own one or more computing devices, a figure that lags both the state and national figures. Access to affordable devices that meet a household's needs is a critical element of the effort to expand broadband access to any community. Looking across different types of devices, including desktop, laptop, smartphone, and tablet ownership, New Bedford's ownership rates show that the City struggles with access to devices (Figure 8).

Figure 9 shows that 13.6 percent of New Bedford households lack a device, indicating a barrier to full digital inclusion. Indeed, 36.7 percent of households in New Bedford do not have a desktop or laptop, leaving these residents to rely on smartphones or tablets and making it difficult to fully engage in the digital economy or successfully learn and work from home.

Figure 8: Device ownership rates in New Bedford compared to the state and nation

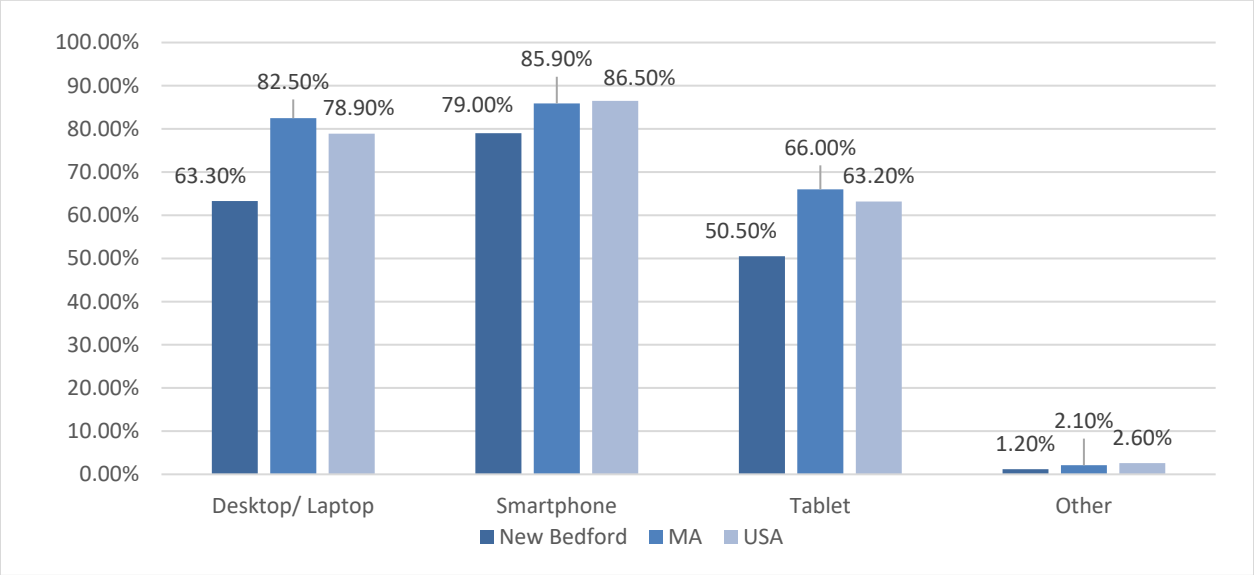
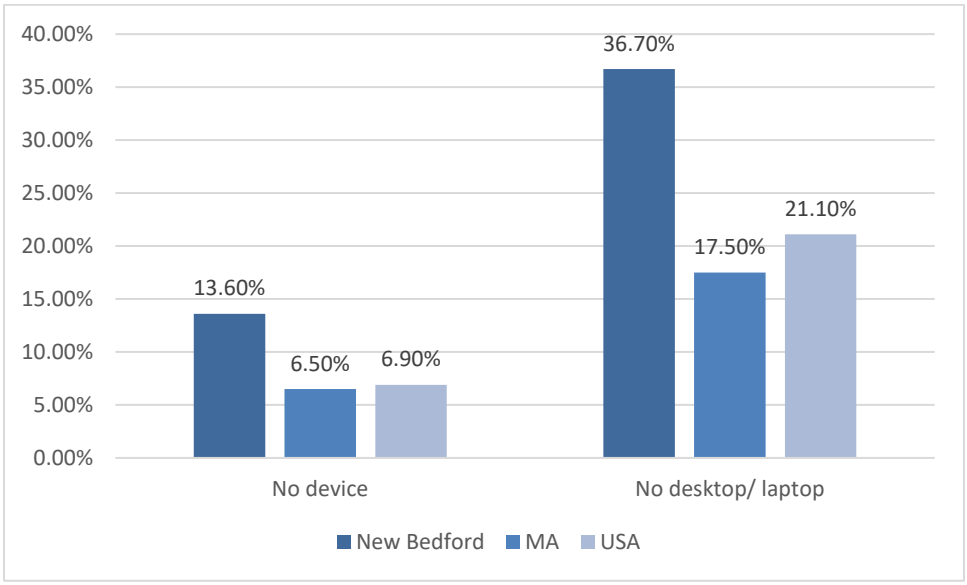


Figure 9: Lack of devices in New Bedford compared to state and national averages



Additional device barriers may exist even after device ownership numbers are improved. For households with many individuals, a single desktop or laptop will likely not deliver sufficient capacity for all members of the household to meaningfully use the internet. Further, ownership of a device is not sufficient to ensure full access to the benefits of broadband. Many households will require digital literacy training and access to technical support to maximize the benefits of these services.

5 New Bedford stakeholders report significant gaps but also point to successful programs that are having an impact and could be expanded if funding were available

The City of New Bedford and CTC convened and facilitated several stakeholder meetings to gather feedback about the digital needs and challenges in New Bedford. CTC also prepared and disseminated an online questionnaire to participants in these meetings. The questionnaire was designed, in part, to facilitate orderly data collection about existing programs underway, the services offered, populations served, existing capacity, remaining gaps, and the potential for expanding these programs.

The following subsections—organized by theme and entity—identify the participants and organizations in these meetings and summarize the insights provided by each stakeholder during the meetings and in questionnaire responses (if provided).

The questionnaire is provided in below in Appendix B. The complete package of online responses to the questionnaire was provided to the City and MBI under separate cover. Recommendations developed from a synthesis of stakeholder data, survey data, and other research performed for this study are provided in Section 3.

5.1 Public, charter, and private schools

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of New Bedford Public Schools, Global Learning Charter Public School, Alma del Mar, and Nativity Prep School. The following is a list of participants or recipients:

- Robert Tetreault, Chief Technology Officer, New Bedford Public Schools
- Andrew O'Leary, Interim Superintendent, New Bedford Public Schools
- Jennifer Ferland, Executive Director of Strategic Initiatives and Partnerships, New Bedford Public Schools
- Arthur Motta, Manager, Communications and Public Affairs at New Bedford Public Schools
- Stephen Furtado, Executive Director, Global Learning Charter Public School
- Lynn Poyant, Community Outreach, Global Learning Charter Public School
- Darlease Monteiro, Global Learning Charter Public School
- Taylor Deloach, Executive Director, Alma del Mar
- Matt Marko, Director of Network Operations, Alma del Mar
- Jay Goldrick, Head of School, Nativity Preparatory School New Bedford
- Calen Sandler, IT Manager, Nativity Preparatory School New Bedford

5.1.1 New Bedford Public Schools

The New Bedford Public School District (NBPS) is a de-facto leader in advancing digital equity in the City thanks to its Chromebook distribution program to all students—which for older students also puts computers in the homes of their families—and other efforts including a limited amount of computer training at six Family Engagement Centers.

The district operates one comprehensive high school, two alternative secondary schools (6-12), three middle schools, and 18 elementary schools, with a total population of approximately 12,500 students. [34] In addition to English, 41 languages are spoken in students' homes. Among all students, 29% are English language learners (ELL), nearly double the state average. [35] To acclimate new English learners to the community, NBPS has established six Family Engagement Centers that provide wraparound services to assist families with basic needs such as food and clothing, locating housing, as well as computer instruction.

Device support: Students in pre-K through middle school are issued Chromebooks, in a 1:1 device program. Beginning in fifth grade, students are permitted to take their laptops home. Additionally, NBPS has operated a free hotspot distribution program that is entirely funded by T-Mobile's Project 10Million and the FCC's Emergency Connectivity Fund. Since 2020, the school district has distributed 400 hotspots to students with limited access to internet at home.

Accessibility: NBPS staff report that a parent or guardian's access to online registration and other resources are impeded by language barriers, limiting digital equity efforts. The Education Translation Interpretation Services Department provides online translation services and resources in five of the most common languages: Spanish, Krioulo (Cape Verde), Portuguese, K'iché, and Haitian Creole. [36]

In addition, schools provide information to families on Comcast's Internet Essentials and Internet Essentials Plus, which provides a speed tier of 50/10 Mbps at a cost of $9.95 per month, and 100/20 Mbps at $29.95 respectively. Representatives at the district highlighted that this discounted service can still pose a hardship for some families.

Digital literacy: NBPS's Family Engagement Centers offer computer instruction at no cost to students and their families. The classes introduce attendees to email, basic computing skills, cybersecurity and online safety, and assistance with navigating the district's student information

[34] Facts & Figures 2020-2021 School Year, New Bedford Public Schools, https://www.newbedfordschools.org/our_district___community/facts___figures. Last visited 2/20/2024.
[35] New Bedford Public Schools, U.S. News & World Report, https://www.usnews.com/education/k12/massachusetts/districts/new-bedford-107929
[36] Education Translation Interpretation Services, New Bedford Public Schools, https://www.newbedfordschools.org/depts_programs/educational_translation_interpretation_services. Last visited 2/21/2024.

services parent portal. This program has been in operation for approximately three years and served more than 100 families over that time at no cost to each participant. The school system is interested in expanding this instruction to more students and families.

5.1.2 Global Learning Charter Public School

Global Learning Charter Public School (GLC) is a Title I school in New Bedford that serves students from grade 5 to through grade 12. There are 500 students enrolled at the school.[37] A representative at GLC stated that the most pressing challenge to digital equity among the student body is access to high-speed internet at home.

Device support: GLC provides a Chromebook device to every student. Additionally, GLC operates a hotspot (Kajeet Smartspot) program for families that do not have internet subscriptions at home, or who rely on their smartphones as their primary device. Since 2020, ten devices have been distributed to students and their families, and that need persists.

Digital literacy and STEAM Education: In February 2023, GLCPS opened the Joan and Irwin Jacobs Center for STEAM Education for its high school students.[38] This center houses the Thinkabit Lab on its first floor. The Thinkabit Lab was developed by the University of San Diego, and its expansion into New Bedford was funded by the wireless tech company Qualcomm and its founder, New Bedford native Irwin Jacobs, and his wife Joan. At the lab, high school students are able to engage in technology and engineering classes and explore career pathways in these fields.[39]

With the newly built center operation, GLCPS would like to expand its computer training and engineering classes to the wider New Bedford community, but its current operating budget can only support the classes currently offered during regular school hours. GLCPS is seeking additional funding to hire trained personnel, purchase equipment, and obtain software licenses to offer expanded training and establish community classes on weekday evenings and Saturdays. Further detail on needs to expand this effort to the community can be found in Appendix C.

5.1.3 Nativity Preparatory School

Nativity Preparatory School (Nativity) is an all-boys middle school that has been open since 2000. This school is a private and tuition-free institution, serving students from low-income families in

[37] "About Us," Global Learning Charter Public School, https://www.glcps.org/.
[38] "Inside the Global Learning school's new 'STEAM' center," The New Bedford Light, https://newbedfordlight.org/inside-the-global-learning-schools-new-steam-center/.
[39] "Global Learning Charter Public School is First on East Coast to Receive a Thinkabit Lab," CityBiz, https://www.citybiz.co/article/337725/global-learning-charter-public-school-is-first-on-east-coast-to-receive-a-thinkabit-lab/.

grades 5 through 8.[40] The lack of affordable devices and internet subscriptions and the training and education to utilize them effectively are concerns for preparatory educators.

Devices: Nativity provides every student aged 10 through 14 with Chromebooks for school and home use, which are then gifted to each student when they graduate. Through this program, students are taught basic computer navigation skills on their devices. This program began in 2020 and has an annual budget of $10,000 per year.

Digital literacy and training: Nativity would like to develop a program to help students and their families gain access to high-speed internet at home; however, the school is unsure of where to start.

5.2 Vocational schools and career centers

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of Greater New Bedford Regional Vocational Technical School (Voc-Tech) and MassHire Greater New Bedford Career Center. The following is a list of participants or recipients:

- Maciel Pais, Technology and Digital Learning Director & Superintendent, Voc-Tech
- Michael Watson, Academic Principal, Voc-Tech
- Yolanda Dennis, Director of Equity, Diversity, Inclusion & Family Engagement, Voc-Tech
- Maria Fredette, Executive Assistant, Voc-Tech
- Rodney Solomon, Director, MassHire Greater New Bedford Career Center

5.2.1 Greater New Bedford Regional Vocational Technical High School (Voc-Tech)

The Greater New Bedford Regional Vocational Technical High School is a four-year technical school, with 2,150 students that live across New Bedford, Fairhaven, and Dartmouth. Across the graduating class or 2023, just over half (58 percent of) graduates entered into two- or four-year college programs, and 40 percent of students sought employment after graduation.[41]

Digital literacy: Voc-Tech is in the process of developing a curriculum to address concerns with data privacy and cybersecurity. In addition, Voc-Tech is interested in developing additional modules in the future to address digital skills and literacy, technical support, and broadband access.

5.2.2 MassHire Greater New Bedford Career Center

MassHire is the Massachusetts state agency providing workforce development and employment resources, including training programs, networking events, apprenticeship programs and youth

[40] "About," "Nativity Preparatory School New Bedford, https://www.nativitynb.org/about/.
[41] "School Profile 2023 – 2024," GNBVT, https://www.gnbvt.edu/wp-content/uploads/2023/09/New-School-Profile-2023-2024.pdf.

development. MassHire has a Greater New Bedford Career Center (GNBCC), which offers employment and training services to veterans, youth, young adults, adults, individuals with disabilities and businesses.[42]

Device access: Between December 2020 and March 2023, MassHire operated a program called Mass Internet Connect (MIC), which was intended to assist unemployed Massachusetts residents with technology barriers. This program was funded in partnership between the Massachusetts Broadband Institute, MassHire Department of Career Services, and the MassHire Workforce Development System. Throughout the entirety of the program, nearly 500 laptops were distributed to customers engaged in job search activities. Unfortunately, this program has since ended, but a continued need is present among job seekers.

Additionally, the GNBCC has 13 workstations with high-speed internet access in its Resource Room, which is open to all customers. The Career Center has dedicated workstations for veterans and an ADA compliant workstation with accessible technology.

YouthWorks Program: The GNBCC operates a program called YouthWorks, which provides employment opportunities for individuals aged 14 to 21. This program aims to equip participants with valuable skills and work experience, while also meeting the seasonal staffing needs of various organizations, including nonprofits, government agencies, and private businesses. Participants gain hands-on experience, earn a paycheck, and develop essential workplace skills, setting them on a path towards future success in their careers.

Chromebooks are made temporarily available to all YouthWorks participants during its Summer and Year-Round Programs. Last summer, GNBCC loaned out 34 Chromebooks to participants for the duration of the program. Moving forward, GNBCC would like to provide these Chromebooks to participants permanently but needs the funding to do so.

Digital literacy classes: GNBCC offers Intro to Computers workshops through the center's Computer Essentials course. Computer Essentials is an online, self-paced digital literacy course that teaches students the computer and internet skills they need. Through these workshops, students learn important skills for testing on a computer, taking college-level courses, performing in today's workplace, and staying safe online. Using built-in assessments, the adaptive learning system creates a personalized learning plan for each student, bypassing skills they have already mastered. This course fully aligns with IC3 GS6 level 1 targets and contains over 110 lessons, activities, and assessments in three units: Computing Fundamentals, Key Applications & Information, and Living Online.

[42] "Welcome To Masshire Greater New Bedford Career Center," MassHire, https://masshiregreaternewbedford.com/masshire-gnb-career-center-home/.

5.3 Higher education

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of the University of Massachusetts (UMass) Dartmouth and Bristol Community College. The following is a list of participants or recipients:

- Andrew Darling, Director of CITS/IT Infrastructure, UMass Dartmouth
- Diane Gomes, IT/Telecommunications Coordinator, UMass Dartmouth
- Ryan Merrill, Director of Strategic Communications & Media Relations, UMass Dartmouth
- Carol Kozma, Media Relations, UMass Dartmouth
- Jo-Ann Pelletier, Chief Information & Data Officer, Bristol Community College
- Andrea Fortier, Director of Marketing, Bristol Community College
- Kevin Spirlet, Media Relations, Bristol Community College
- Jade Vieira, Assistant Director, Strategic Analytics, Bristol Community College

5.3.1 Greater University of Massachusetts (UMass) Dartmouth

The University of Massachusetts Dartmouth campus is a 4-year college located four miles west of New Bedford. In the 2023-24 academic year a total of 7,457 students were enrolled, 79.6 percent of whom received financial aid.[43] The college offers degree programs in computer science as well as engineering and science cybersecurity. During the early weeks of the Covid-19 pandemic, UMass Dartmouth refurbished approximately 100 laptops, which were sent to students without a device.

While the school does not offer digital equity programs outside of their course curriculum, representatives have offered public support to New Bedford by way of faculty and/or student expertise as well as implementation and engagement.

5.3.2 Bristol Community College

Bristol Community College (Bristol) is a public community college that offers over 130 degree and certificate programs across its five campuses in New Bedford, Fall River, Taunton, Attleboro and online (Bristol Online).[44] As of 2023, Bristol's total student population is 6,096.[45] Every physical campus offers free and public Wi-Fi. The following are key insights offered by Bristol staff.

Devices: A representative at Bristol highlighted that access to well-functioning devices can be a challenge for students—some of which use a cellular device as their primary means of accessing

[43] "Fast Facts," UMass Dartmouth, https://www.umassd.edu/about/facts/. Last visited 2/28/2024.
[44] "About," Bristol Community College, https://bristolcc.edu/about/.
[45] 2023 Fact Sheet, Bristol Community College, https://bristolcc.edu/about/factsheets.html.

the internet at home. To address this, the school library operates a Chromebook loan program at all campus libraries for registered students.

Cybersecurity: All Bristol staff and students are offered an optional and free cybersecurity training course, which is called the College Security Awareness Program, and operated by the third-party entity KnowBe4. Approximately 1,000 staff and 4,500 students completed this training course in the 2022/2023 academic year, and staff are required to complete this training annually. The annual cost of this training is approximately $14,000 per year.

5.4 Seniors and veterans

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of the Council on Aging and Veterans Services. The following is a list of participants or recipients:

- Pamela Amaral-Lema, Directory of Council on Aging, New Bedford – Council of Aging
- Christopher Gomes, Director, New Bedford – Veteran's Service

5.4.1 Council on Aging

New Bedford Council on Aging (COA) was established in 1969, with the goal of enhancing and enriching the quality of life for seniors. Currently, the COA has an administrative office and four senior center locations across the City: Brooklawn Park, Buttonwood Senior Center, Hillman Street Senior Center, and Hazelwood Park. With the exception of Hazelwood Park, all sites offer free public Wi-Fi. The COA receives support and funding from the City, Development Block Grants, Title III Grants and volunteers.[46] The COA works closely with Veterans Services and shares resources when available.

Digital training and accessibility: From 2016 to 2018, the COA offered digital literacy classes to seniors at two-month intervals. These classes provided basic computer training, and approximately 8 to 10 seniors were in each course cohort. The COA stopped these classes due to aging equipment and limited funding; however, after recent renovations to its administrative building, the COA has a new room intended to become a computer lab so it can resume these classes more formally.

In 2023, the COA applied for a $100,000 digital literacy grant offered by the Massachusetts Council on Aging (MCOA) that would have facilitated the purchase of a smartboard and 10 to 12 laptops for the computer lab and allow for the COA to hire a new instructor to teach these classes. Unfortunately, the COA was not awarded this grant. The COA has since put its plans for this computer lab on hold until adequate funding can be secured.

[46] "Council on Aging," New Bedford, https://www.newbedford-ma.gov/community-services/divisions/council-aging/.

5.4.2 New Bedford Veterans Services

New Bedford's Veterans Services Office (VSO) offers a wide array of resources and assistance to anyone in need of guidance or assistance in matters relating to military service. Services, resources, and assistance include employment help, financial assistance, housing, food and clothing, among many other things.[47]

A representative at VSO recognizes that most people in their community that struggle with digital skills and the internet are elderly veterans. This poses as a major challenge, as a variety of veteran services outside New Bedford's Veterans Office are going paperless. VSO does not have computers for public use on-site, and so Veterans often go to their local career centers to build and submit job applications. VSO is interested in purchasing devices so Veterans to search for employment in office.

5.5 Library and government agencies

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of the New Bedford Free Public Library, Health Department, Housing Authority, Community Services Department, and Community Development office. The following is a list of participants or recipients:

- Olivia Melo, Library Director, New Bedford Free Public Library
- Joseph Fernandes, Head of Circulation, New Bedford Free Public Library
- Joana Goncalves, Community Health Worker and Assistant Project Manager, New Bedford Health Department
- Esperanza Alejandro-Berube, Resident Services Manager, New Bedford Housing Authority
- Cynthia Wallquist, MPA, Director, New Bedford Community Services Department
- Joshua Amaral, Director, Office of Housing & Community Development

5.5.1 New Bedford Free Public Library

The New Bedford Free Public Library operates a bookmobile and five branches in the city—the Main Library, Casa Da Saudade Branch, Wilks Branch, Lawler Branch, and Howland-Green Branch. The main library alone has approximately 373,000 items for all ages of the public in print, audio, and video format. Additionally, the Casa da Saudade and Howland-Green libraries have an extensive collection of language materials in Portuguese and Spanish respectively.[48] All branches offer free Wi-Fi, and the library is working with the City's IT department to bolster the signal strength at every location.

[47] "Veterans' Service Officers," New Bedford, https://www.newbedford-ma.gov/veterans/services/.
[48] "New Bedford Free Public Library," New Bedford, https://www.newbedford-ma.gov/library/locations/main-library/.

Devices: Previously, the library operated a hotspot rental program through the MBLC's ARPA grant; however, this program has since stopped due to low rates of device returns. Additionally, the library has computers at all branches, which are available for public use.

Technical assistance: The library offers technical assistance at all sites through its Drop-In Tech Help program, which provides device and technical support, digital literacy help, and online accessibility support to New Bedford residents at no cost. This program has been in operation for four years at all locations.

Digital literacy: Formal digital literacy classes have been offered by the library in the past, but these classes have since stopped due to low participation. The library assumes that low attendance rates were caused by classes being scheduled during typical work hours (between 2pm and 4pm). The library would like to begin offering these digital literacy training classes again and is seeking one instructor to teach evening classes.

5.5.2 New Bedford Health Department

The New Bedford Health Department is responsible for advising City leadership and residents on matters involving environmental health, substance abuse and violence prevention, public health nursing, and general health and wellness. The Health Department has identified language barriers and lack of access to affordable internet and devices as a digital equity concern preventing vulnerable residents from accessing adequate healthcare and associated resources.

In 2023, the New Bedford Health Department collaborated with the Mujeres Victoriosas, a local Central American woman's group of social workers, to identify the primary health concerns among New Bedford's most vulnerable communities through a survey.[49] The Health and Social Services Provider (HSSP) survey was administered in English, Portuguese, and Spanish. Of the 1,018 responses, 79.5% of respondents reported primarily speaking a language other than English and 66% reported having a median household income below $25,000. Nearly one quarter – 24.4% - of respondents cited the lack of a smartphone, tablet, or computer as an impediment to accessing the healthcare that they need.[50]

Digital Navigation: Staff at the NBHD offer support to residents seeking enrollment assistance for such things as government programs, telehealth, paying bills among many other things. Staff currently use their own devices to assist residents or direct individuals to library computers to complete these applications; however, the Health Department would like to establish a new on-

[49] New Bedford Community Health Assessment, page 4, https://newbedford-ma.s3.amazonaws.com/wp-content/uploads/sites/42/20240124141749/New-Bedford-Community-Health-Assessment-NBCHA-1.24.2024.pdf.
[50] New Bedford Community Health Assessment, Appendix A.

site computer lab staffed with a multilingual digital navigator to operate a more formalized and on-site digital navigation service.

5.5.3 New Bedford Housing Authority

The New Bedford Housing Authority (NBHA) houses approximately 6,000 people across 24 New Bedford public housing developments, and an additional 3,300 people in affordable housing units through vouchers. It is the administrator for approximately 1,650 public housing units, 850 state aided units, and nearly 1,800 federally funded vouchers through the HUD Voucher Choice Program.

NBHA has resource centers located in seven of its buildings. These resource centers are accessible to all 6,000 NBHA tenants and are equipped with computers and printers. Currently, the housing authority employs four service coordinators who staff the seven sites and assist residents with general computer troubleshooting, computer skills, assisting with online enrollment in programs, and bill payments. NBHA would like to establish additional resource centers at more sites and would like to hire more staff to operate these facilities, but is limited by funding.

An initial grant of $TK would help the housing authority purchase TK devices for TK new resource centers. Additionally, an ongoing grant of $TK would allow for the housing authority to hire TK more service coordinators to provide services to an additional TK NBHA tenants each year.

5.5.4 New Bedford Department of Community Services

New Bedford's Department of Community Services (DCS) advocates for vulnerable populations including seniors, young people, disabled persons, and residents with culturally diverse backgrounds by providing resources and programming geared towards after school programs, aging with dignity, and adult literacy.

Accessibility: DCS acknowledges that the high cost of devices and internet subscriptions is a major barrier to leveling the digital equity field across New Bedford. The department does not currently offer digital equity programming; however, it is interested in offering digital training and a device distribution program for residents.

5.5.5 Office of Housing & Community Development

The New Bedford Office of Housing and Community Development (HCD) manages the City's federal entitlement grant allocations—like the Community Development Block Grant—related to housing and homelessness. HCD does not directly develop or own its own housing, but is involved in guiding the process for new housing construction projects from a municipal perspective.

In the past year, HCD has helped to complete a 'Wi-Fi in the Parks' project using CDBG funds. This public Wi-Fi project has been installed in five City parks, and will be officially and fully accessible to the public in the Spring/Summer 2024. Currently, this project has been funded using CDBG and

ARPA funds. There is plans to expand the Wi-Fi in the Parks project in additional neighborhoods across the city, which will be rolled out in the future. HCD would like to expand the Wi-Fi in the Parks project more widely across the City; however, with ARPA funds expiring and the competitive nature of seeking CDBG grants, future funding will be a significant barrier.

Additionally, HCD funds after school programs at community centers in the City by equipping locations with computers and/or internet access for students. Again, HCD would like to continue to fund and expand funding for these programs at additional community centers, nonprofits and youth centers, but HCD has noticed that buying technology with CDBG funds is a little more complicated for the agencies as the federal requirements come with inventory and ownership requirements.

5.6 Community organizations supporting vulnerable residents

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of United Way of Greater New Bedford, People Acting in Community Endeavors, Merch Meals & More, Catholic Charities (formerly Catholic Social Services, Immigrants Assistance Center, and the Community Economic Development Center (CEDC). The following is a list of participants or recipients:

- Victoria Grasela, VP of Marketing & Community Engagement, United Way of Greater New Bedford
- Sarah Rose, Chief Impact Officer, United Way of Greater New Bedford
- Happiness Unaka, Chief Operations Officer, Catholic Charities of the Diocese of Fall River
- Anne Ohlrich, Director of Development, Immigrants Assistance Center
- Elizabeth K. Murphy, Development Specialist, Community Economic Development Center (CEDC)
- Corinn Williams, CEDC-Community Economic Development Center

5.6.1 United Way of Greater New Bedford

Based in New Bedford, United Way of Greater New Bedford (UWGNB) serves communities across South Coast, including residents of Acushnet, Dartmouth, Fairhaven, Freetown, Marion, Mattapoisett, Rochester, and Wareham. UWGNB offers parenting classes, case management, access to prescription medications, grant funding for programming, and resources to families experiencing food insecurity, among many other things.[51] There is publicly accessible Wi-Fi on site.

Digital literacy: UWGNB leads the New Bedford Community Connections Coalition, which is an initiative focused on strategies that work to prevent child abuse and neglect, strengthen families,

[51] "What We Do," United Way of Greater New Bedford, https://unitedwayofgnb.org/what-we-do.

and build healthier communities across Greater New Bedford.[52] This coalition hosts a digital literacy event every month, which provides instruction on how to operate computer software, such as MS Office, and distributes laptop devices to participants at the end of the session.

A representative at UWGNB stated the organization's interest in adding more formal digital skills training classes into its list of courses offered on-site, which would require hiring an instructor.

Digital navigation: UWGNB provides digital navigation and technical support to patrons using the organization's on-site computers or individuals' personal devices. Staff often provide enrollment assistance for various government programs online, telehealth services, and Comcast's Internet Essentials program, among many other things.

Devices: A representative at UWGNB stated that a noticeable number of residents they serve use cell phones as their primary means of connecting to the internet. In an effort to support these individuals, UWGNB has six computers for public use at its Family Resource and Development Center, which are all used daily. UWGNB would like to increase the number of computers they have on site; however, funding is limited.

5.6.2 PACE-People Acting in Community Endeavors

People Acting in Community Endeavors (PACE) provides support in basic life needs for low-income, housing insecure residents in the Greater New Bedford area. Programs assist the region's most vulnerable residents – including English learners and the elderly – by connecting them with food banks, housing, Head Start, childcare, and other services.[53] PACE does not currently offer digital equity services at their New Bedford location but has expressed an interest in establishing device access and digital literacy programs.

5.6.3 Catholic Charities of the Diocese of Fall River

Catholic Charities of the Diocese of Fall River (CCDFR) is a nonprofit organization that provides basic life support services such as food distribution, case management, and housing assistance including shelter and transitional housing services to at-risk residents and new immigrants.[54] CCDFR operates two emergency shelters in New Bedford: one for men with a capacity of 25 and a women's shelter with a capacity of 11. CCDFR reports that the many individuals it serves rely solely on their cellular devices with pre-paid plans to access the internet.

Digital navigation and device access: Both CCDFR shelters have two computers available for residents. These computers are primarily used to apply for benefits, build resumes, and search for employment. Staff commonly provide informal digital navigation assistance by helping

[52] "What We Do," United Way of Greater New Bedford, https://unitedwayofgnb.org/what-we-do.
[53] "About Us," People Acting in Community Endeavors, https://paceinfo.org/about-pace/.
[54] Catholic Services of Fall River

residents with government services portals, online applications, and basic computing. CCDFR staff would like to receive more information on resources available across the City to direct their community to when necessary.

5.6.4 Immigrants' Assistance Center

Immigrants Assistance Center (IAC) is a nonprofit organization that offers case management, citizenship guidance, workforce readiness, and business and community assistance to new immigrants in the Greater New Bedford Area. In the last two years, IAC saw a 336% increase in citizenship applications completed through case manager support.[55] The IAC cites affordability of service, access to devices, a fear of technology as the most pressing digital equity challenges facing immigrant and aging populations in New Bedford.

Affordability and accessibility: IAC operates a program called The Emergency Response Fund, which provides immigrant youth and seniors with payments necessary to access the internet. The program currently serves approximately 25 individuals and has an annual budget of $3,000.

Digital literacy: The IAC has an on-site youth services staff member that provides technical assistance in a group setting. Similarly, IAC offers digital skills services for its aging population. These programs provide periodic technical support, but IAC would like to offer more formalized and regular digital skills and literacy classes. Current planning for this is starting, and IAC estimates a budget of $25,000 would be needed to get this program off the ground.

5.6.5 Community Economic Development Center

The Community Economic Development Center (CEDC) has provided community support for New Bedford's immigrant population for 25 years. Services offered include assistance with applying for unemployment, SNAP, and RAFT benefits, completing job and housing rental applications, immigration applications, and language translation services. Many residents are low income, have technology, language and low literacy barriers that impede their access to health, education, legal services, and more. CEDC provides support in navigating these complex legal, health, education, licensing, and tax systems.[56]

Online accessibility: The CEDC operates an online accessibility and inclusivity program that aims to assist individuals with a language barrier in accessing services online. This work includes providing individual assistance for online government benefits applications, Comcast's Internet Essentials enrollment support, and other online navigation services. This program has served

[55] "Citizen Support Services," Immigrants Assistance Center, https://immigrantsassistancecenter.org/services/citizenship-support-services/.
[56] "Our Services: What We Do," Community Economic Development Center, https://cedcnewbedford.org/.

approximately 1,200 people throughout its eight years of operation. CEDC would like to scale this program but are limited by existing resources and funding.

Digital literacy: In the winter of 2023, the CEDC began offering a program called Pre-GED Spanish, which offers hybrid (in-person and online) GED classes for Spanish speakers. Those registered in the program will receive hotspots and computers to complete the course. The Annual budget for this program is $25,000.

5.7 Economic development organizations and resources

The City of New Bedford and CTC met with and/or sent questionnaires to the representatives of the New Bedford Economic Development Council, Southeastern Regional Planning & Economic Development District, and the DeMello International Center. The following is a list of participants or recipients:

- Derek Santos, Executive Director, New Bedford Economic Development Council
- Jessica Trombly, Director of Business Development, New Bedford Economic Development Council
- Vinny DeMacedo, Special Advisor to the President at Bridgewater State University, representing DeMello International Center and HUB 128
- Leslie Ribeiro Vicente, Ph.D., Executive Director, Discovery Language Academy and HUB 128

5.7.1 New Bedford Economic Development Council

The Economic Development Council (EDC) is the primary economic development organization for the City of New Bedford. The Council does not offer digital equity programming but recognizes the importance of digital literacy in establishing and operating small businesses and in workforce development.

While the EDC does not have plans to offer digital literacy programming itself, the EDC could partner with community organizations such as the Immigrant Assistance Center to provide technical education for overlapping populations, for example beginning entrepreneurs and those seeking skilled employment opportunities. Additional digital training opportunities are available through MassHire and Bristol Community College.

5.7.2 DeMello International Center and HUB 128

In December 2021, MassDevelopment announced a $50,000 grant to build a community tech lab at what is now HUB 128 (formerly the Discovery Economic Development Hub), with a $25,000 grant from the DeMello Charitable Foundation, and $25,000 in in-kind technical equipment

provided by Bridgewater State University.[57] The Tech Lab is currently managed by the Discovery Language Center which operates an afterschool program on-site focused on career education and technical skill development to English learners and first-generation residents, many of whom speak Spanish and Portuguese.

The computer lab is equipped with high-speed internet, 60 Chromebooks, 2 Macs, 2 Dell PCs, and several Dell laptops available for onsite use. The space is available during the building's operating hours, Monday through Friday from 7 a.m. to 7 p.m. and Saturdays from 7 a.m. to 1 p.m.

5.8 Public stakeholders

On September 13, 2023, CTC and the City of New Bedford hosted a "Digital Equity 101" public session. This meeting was held in-person and virtually, and was promoted on the City of New Bedford website and by stakeholders. The public session presentation consisted of a digital equity overview, a project overview which included key findings from data gathered during the initial research process, an overview of the broadband funding landscape, a brief history of broadband, and an opportunity for public comment. In total, eight individuals registered for the event, five attended, and three provided public comment.

[57] https://www.massdevelopment.com/news/discovery-language-academy-to-open-state-of-the-art-collaborative-workspace-hub/.

6 Results from MBI survey completed by New Bedford residents show access, device and skills gaps and major concerns about privacy and security

This report is based on data collected from New Bedford residents who responded to a survey instrument created by the Massachusetts Broadband Institute (MBI) and posted online. Online PDF versions and paper copies were also made available to residents of the City in nine languages. Both the online and PDF versions were shared on the City's website, and paper copies were made available at the New Bedford Public Library, the Council on Aging, and at New Bedford Public Schools.

Additional promotion was done through stakeholders engaged in this report. Staff at NBPS were critical to the success of the residential survey by procuring more than 200 completed paper surveys, mostly from Spanish speaking households. More broadly, the survey was made available to anyone who wished to fill it out across the state.

The results presented in this section are based on analysis of information provided in the survey by 285 residents of New Bedford. Unless otherwise indicated, the percentages reported are based on valid responses from those who provided an answer and do not reflect individuals who said "don't know" or otherwise did not supply an answer because the question did not apply to them. Key results are noted where appropriate.

The survey sample was self-selected and is not necessarily representative of the larger population. The report separately highlights answers from respondents reporting households earning less than $30,000, $30,000 to $59,999 and $60,000 or more. This threshold was used because in the MBI survey, the highest income tranche respondents were able to describe was "$60,000 or above."

This report focuses on data collected that is unambiguous with regard to meaning or accuracy, relevant to the topic of digital equity, and provides insights that are potentially actionable. The full survey instrument is posted in Appendix A.

6.1 Residential internet service

Respondents were asked about internet connection types and providers. This information provides valuable insight into residents' need for various internet and related communications services.

6.1.1 Internet access

Though most New Bedford respondents (83 percent) report having either a home internet or mobile subscription, only 55 percent said they have wireline internet service in the home. Table 9 highlights the saturation of home internet subscriptions by key demographic groups.

Respondents with a lower household income or a lower education, minorities, and younger respondents are less likely than their counterparts to have a home internet subscription.

Table 9: Home internet subscriptions by key demographics

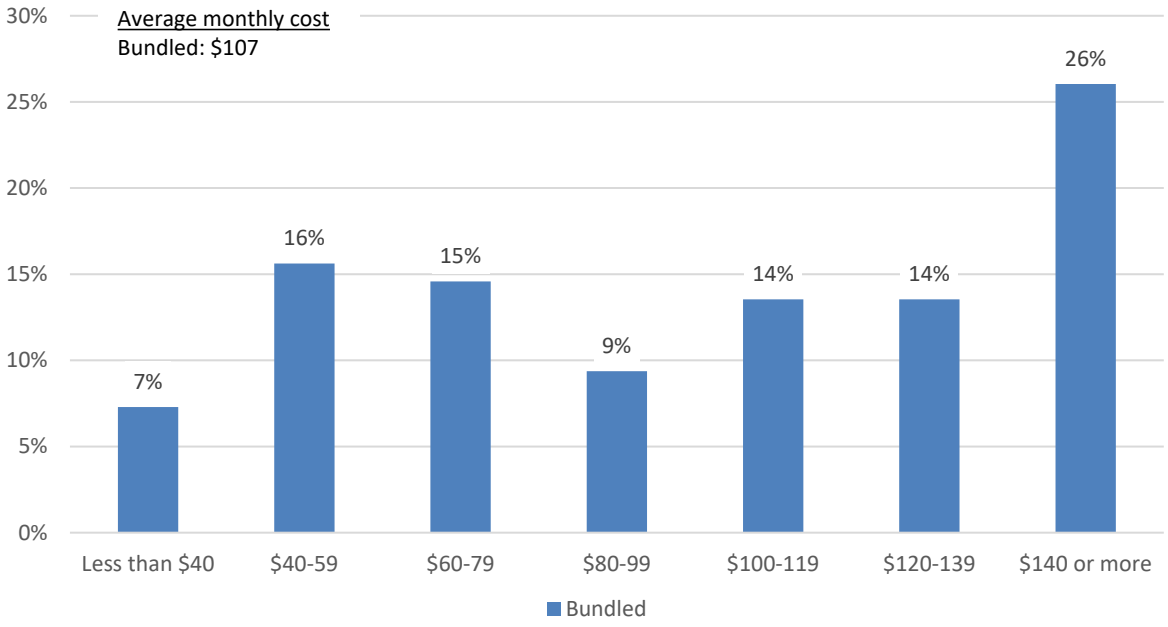
	Percent having a home internet subscription	*Count*
TOTAL	**55%**	***158***
Respondent Age		
Less than 35	48%	*104*
35 to 44	57%	*89*
45 or older	68%	*72*
Income		
Less than $30,000	47%	*105*
$30,000 to $59,999	52%	*63*
$60,000 or more	80%	*56*
Education		
Less than HS education	42%	*89*
HS graduate	67%	*66*
Greater than HS education	82%	*77*
Race/Ethnicity		
White, non-Hispanic	80%	*69*
Racial/ethnic minority	47%	*168*
Household Size		
One HH member	60%	*25*
Two HH members	69%	*36*
3-4 HH members	58%	*66*
5-6 HH members	46%	*68*
Seven + HH members	57%	*65*
Children in Household		
No children in HH	62%	*91*
Children in HH	54%	*166*
Gender Identity		
Man	53%	*102*
Woman	59%	*160*
Other gender identity	50%	*4*
Other demographics		
Identify as person with disability	75%	*20*
Member of LGBTQIA+ community	67%	*18*
Serve on active duty in US Armed Forces	86%	*7*
Live in affordable housing	72%	*67*

6.1.2 Questions for those with home internet service

Respondents subscribing to home internet service were asked a series of questions about their service, including provider used and price paid.

- **Home internet service provider:** Most (87 percent) households with wireline internet service have Comcast/Xfinity. A small percentage of households use another provider, such as T-Mobile (4 percent) and Verizon (4 percent). (CTC combined answers in cases where the survey instrument listed the same provider twice, but under different brand or company names.)
- **How well home internet service works:** Many internet subscribers (62 percent) said their service is good enough to meet their household's needs, but 23 percent said it is not good enough and 14 percent said they do not know.
- **Internet service cost:** Respondents were asked to give the cost of their home internet service, as well as indicate whether or not they bundle internet with TV and/or phone service. Overall, 46 percent of subscribers bundle their internet service. Respondents pay an average of $107 per month for bundled internet service, as shown in Figure 10. Nearly one-fourth of those with bundled service pay less than $60 per month, 24 percent pay $60 to $99 per month, and 53 percent pay at least $100 per month.

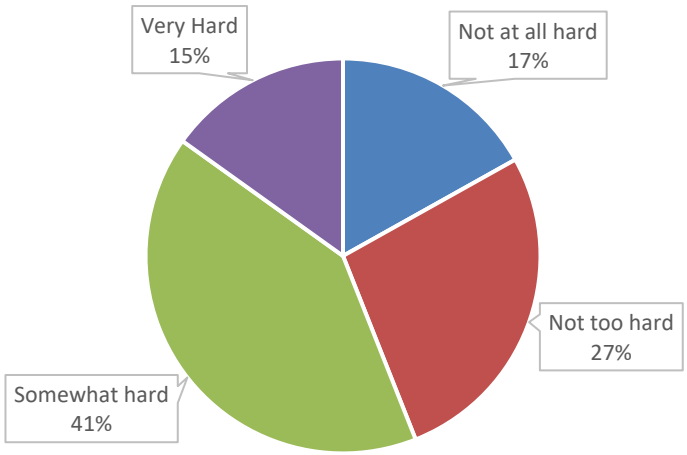
Figure 10: Monthly price for bundled internet service



- **Service affordability:** Respondents were also asked how hard it is to pay their internet bill. Many subscribers said it is somewhat hard (41 percent) or very hard (15 percent) to

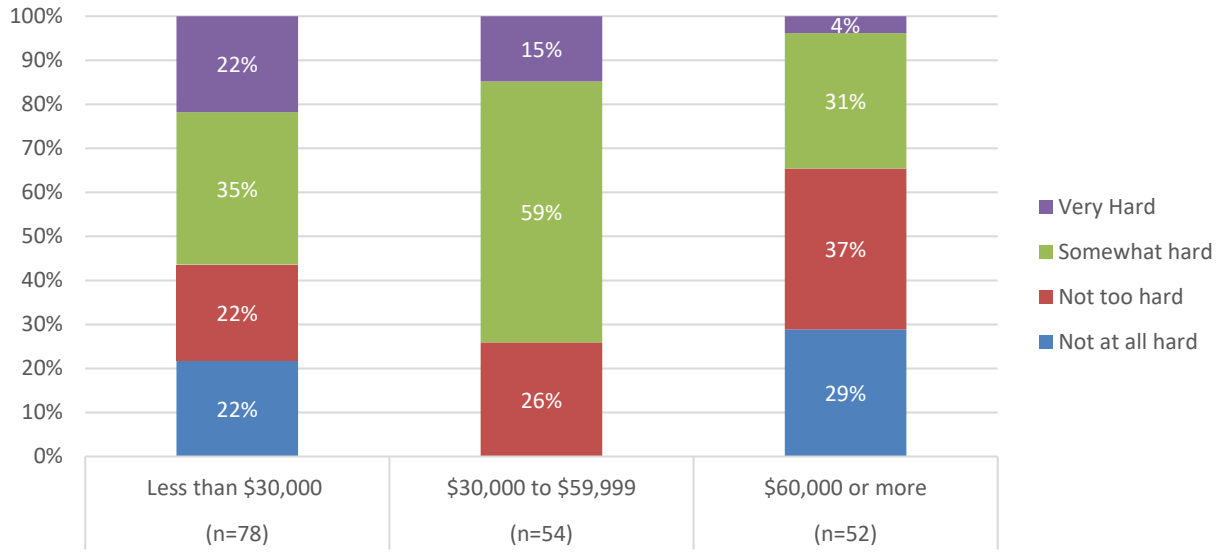
pay, as illustrated in Figure 11. Nearly one-fifth of subscribers said it is not at all hard, and 27 percent said it is not too hard.

Figure 11: How hard is it to pay internet bill



As may be expected, respondents in lower income households were more likely than those in higher income households to say it is somewhat or very hard to pay their internet bill (see Figure 12). Specifically, 22 percent of those earning less than $30,000 per year and 15 percent of those earning $30,000 but less than $60,000 per year said paying their bill is “very hard,” and a sizeable percentage said it is “somewhat hard.” This data contributes to our finding that affordability is a significant concern for lower-income residents of New Bedford.

Figure 12: How hard is it to pay internet bill by household income



6.1.3 Questions for those without any home internet service—subscription or smartphone

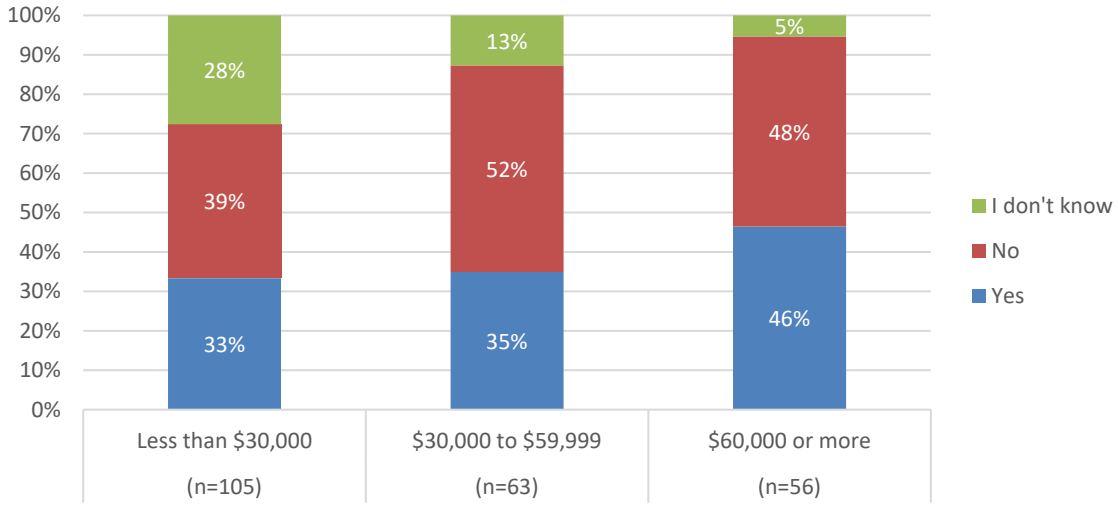
Respondents without internet services were asked to indicate the reasons for not subscribing. The survey asked this question only of the very small people who lack any kind service (neither a home subscription nor a smartphone), not the larger number who, while they might have a smartphone, don't have home internet subscriptions specifically. As such, this report will use American Community Survey data on this point.

Given that only 49 people who responded lack either a home subscription or mobile subscription, the sample is too small to analyze in-depth. Thirty-six of the 49 individuals cited the high expense as a barrier to having internet service. Thirteen out of 49 respondents without mobile or home internet service go to a friend's or family member's home. Twenty-three individuals do not access the internet at any of the locations listed on the questionnaire.

6.1.4 Internet subsidy programs

All respondents were asked if they had heard of the Affordable Connectivity Program (ACP), which has been available to eligible low-income households. As shown in Figure 13, only about one-third of respondents with an annual household income of less than $60,000, and who thus might have been in a position to take advantage of the ACP, were aware of this program. This data point informs our recommendation that enrollment support efforts for broadband subsidy programs, including any possible ACP successor programs, be expanded in New Bedford.

Figure 13: Aware of the Affordable Connectivity Program by household income

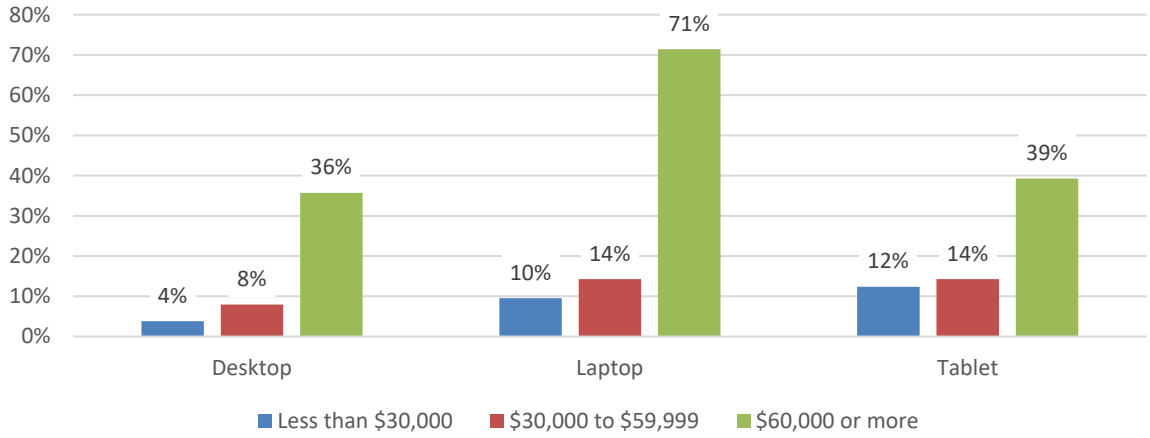


6.1.5 Computing devices used in household

Respondents were asked a series of questions about access to computing devices and types of devices used. Most respondents (77 percent) said everyone in their household has access to the

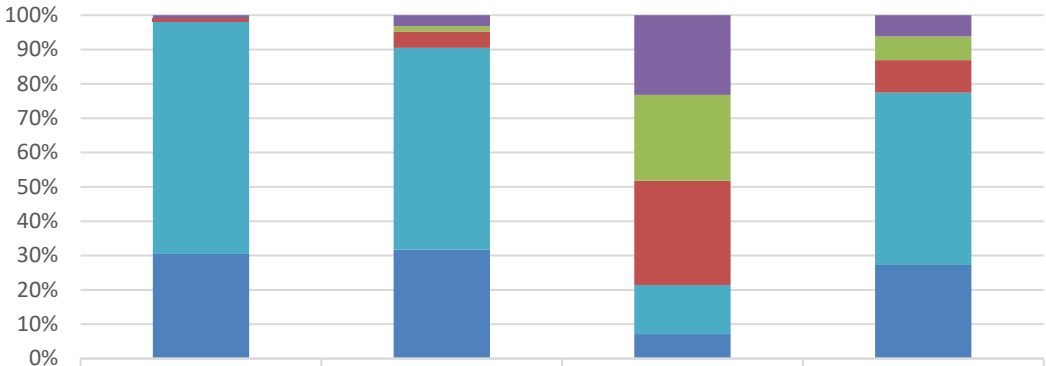
computing devices they need to meet their everyday needs for internet use. At the same time, just 39 percent of respondents indicated using a cellphone, desktop computer, laptop computer, or tablet to connect to the internet. Those with an annual household income under $60,000 are less likely than those in higher income households to use a laptop, desktop, or tablet computer to connect to the internet (see Figure 14). This informs our recommendation that device access programs for low-income residents of New Bedford be expanded.

Figure 14: Devices used most of the time to connect to the internet by household income



As shown in Figure 15, just 23 percent would be able to pay $250 or more per month for a laptop or desktop computer. Ninety-eight percent of respondents earning under $30,000 per year could pay only $250 or less for a computer, compared with 21 percent of those earning $60,000 or more per year. Again, this informs our recommendation that device access programs for low-income residents of New Bedford be expanded.

Figure 15: Amount able to pay for laptop or desktop computer



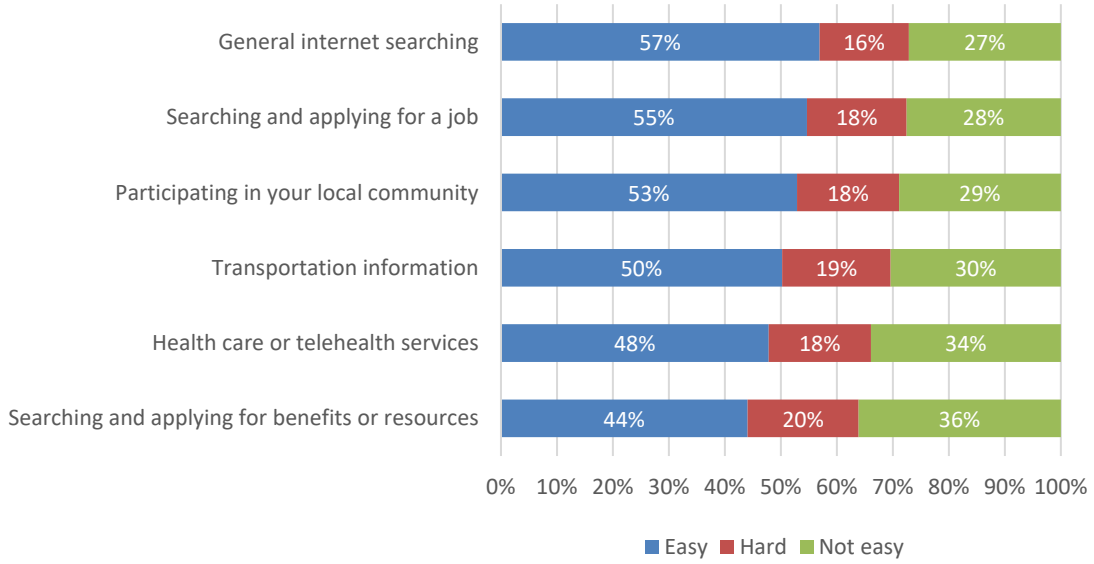
	Less than $30,000	$30,000 to $59,999	$60,000 or more	All Respondents
More than $1,000	1%	3%	23%	6%
$500-1000	0%	2%	25%	7%
$250-500	1%	5%	30%	9%
$100-250	68%	59%	14%	50%
$0-100	30%	32%	7%	27%

6.2 Digital skills

Respondents were asked a series of questions on how skilled they are using the internet in general and for specific activities. This information provides valuable insight into where there may be gaps in abilities and opportunities to educate residents. Almost all (92 percent) respondents said they are able to regularly use the internet for online activities. However, a sizeable percentage of respondents said using the internet is hard/not easy for various tasks, as shown in Figure 16.

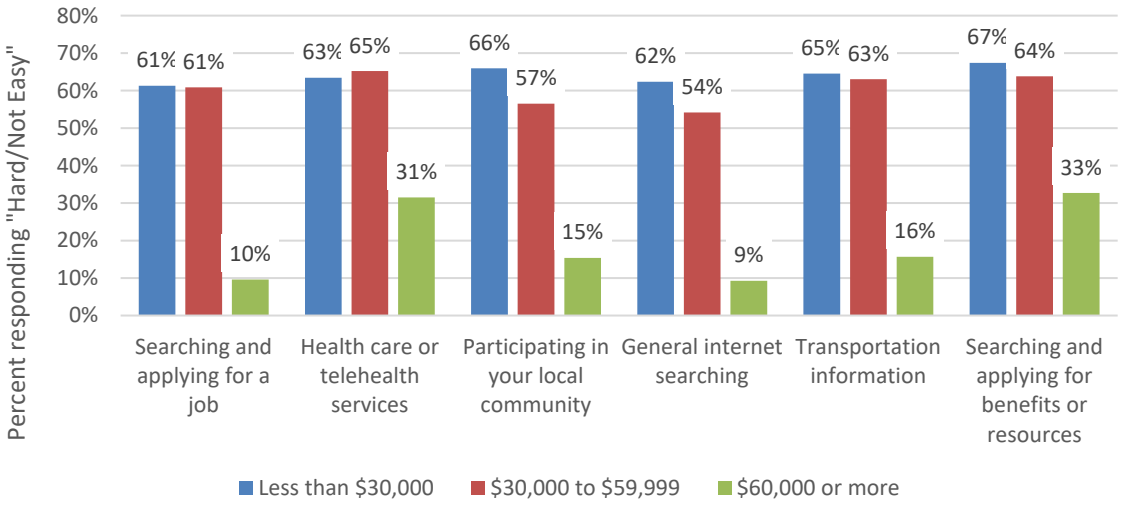
More specifically, 43 percent of respondents said using the internet for general searching is hard or not easy. Nearly one-half of respondents said it is hard or not easy to use the internet for searching and applying for a job (45 percent) and for participating in their local community (47 percent). One-half of respondents said it is hard or not easy to use the internet for transportation information. More than one-half of respondents said it is hard or not easy to use the internet for health care or telehealth services (52 percent) or for searching and applying for benefits or resources (56 percent).

Figure 16: Difficulty in using the internet for various tasks



As shown in Figure 17, respondents with a household income of less than $60,000 were more likely than those in higher-income households to say using the internet for various tasks is hard or not easy, demonstrating that lower-income residents are most in need of skills programs. This informs our recommendation that skills programs for low-income residents of New Bedford be expanded.

Figure 17: Difficulty in using the internet for various tasks by household income



Six in 10 respondents were able to indicate the type of digital skills support they would be most interested in. This segment of respondents was split among in-person classes (29 percent), a do-it-yourself training module (29 percent), and online classes (29 percent), as shown in Figure 18.

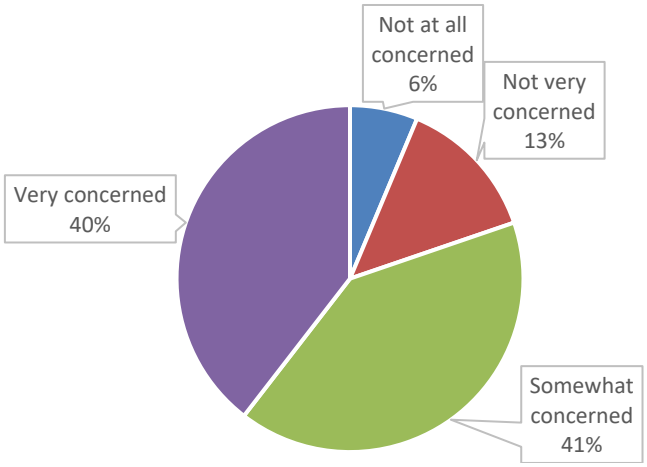
The question did not provide respondents with the opportunity to say they were not interested in taking any kind of class. In other jurisdictions, CTC has found that significant numbers of people, even those lacking skills, are not interested in attending classes. As such, these results should not be taken to mean that New Bedford needs to expand skills-training programs at the levels indicated here.

Figure 18: Digital skills support most interested in

6.3 Internet safety

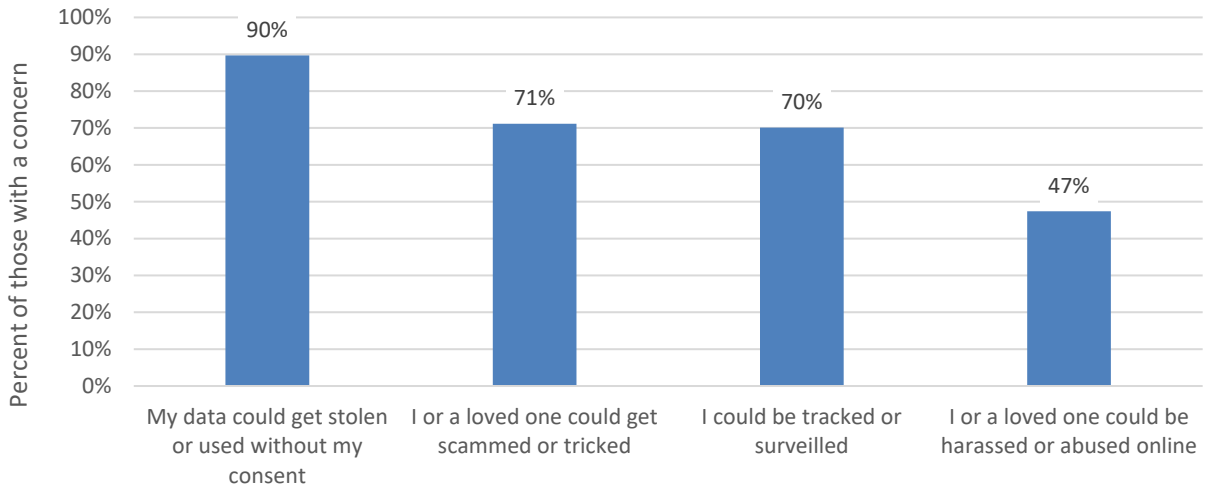
New Bedford residents across the income and other demographic categories have significant concerns about online safety and privacy. Respondents were asked a series of questions pertaining to individual awareness of, and the use of, measures to secure online privacy and internet safety. Most respondents are either somewhat concerned (41 percent) or very concerned (40 percent) about online safety (see Figure 19).

Figure 19: Concern about online safety



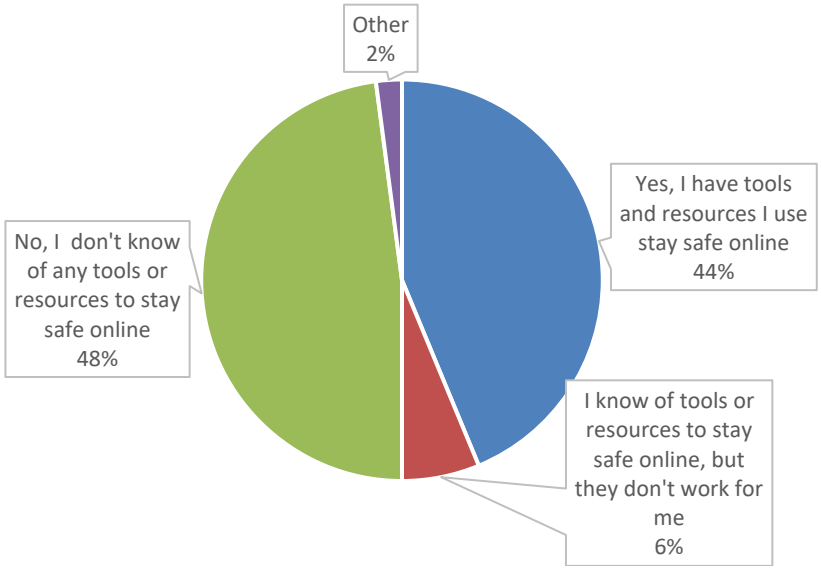
Only about one-third of respondents indicated an internet safety topic for which they are most concerned. Nine in 10 respondents who provided an answer are most concerned about their data being stolen or used without their consent (see Figure 20). Seven in 10 respondents are most concerned they or a loved one could get scammed or tricked or that they could be tracked or surveilled. They are somewhat less likely to be most concerned about being harassed or abused online (47 percent).

Figure 20: Most concerned about in regard to internet safety



Twenty-one of 48 respondents who answered said they have the tools and resources they need to stay safe online (see Figure 21). (17 percent of respondents answered this question.) Another 23 respondents said they do not know of any tools or resources to stay safe online, while three respondents said they know of tools or resources but they do not work.

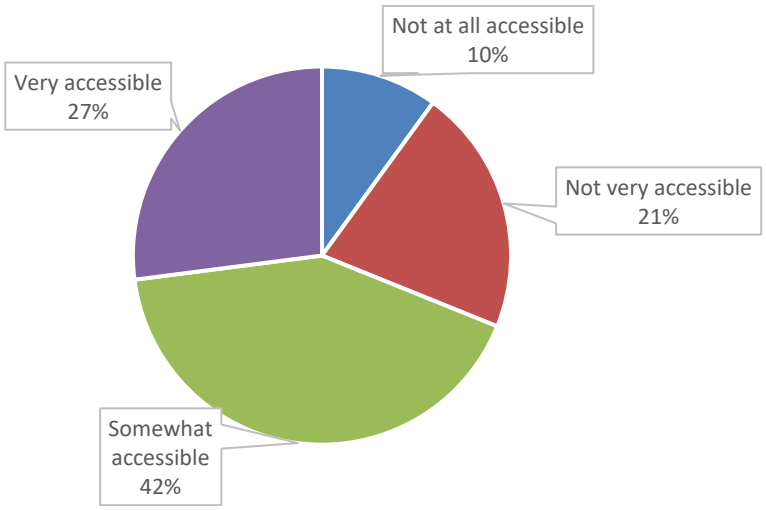
Figure 21: Aware of tools or resources respondents can use to stay safe online



6.4 Online accessibility and inclusivity

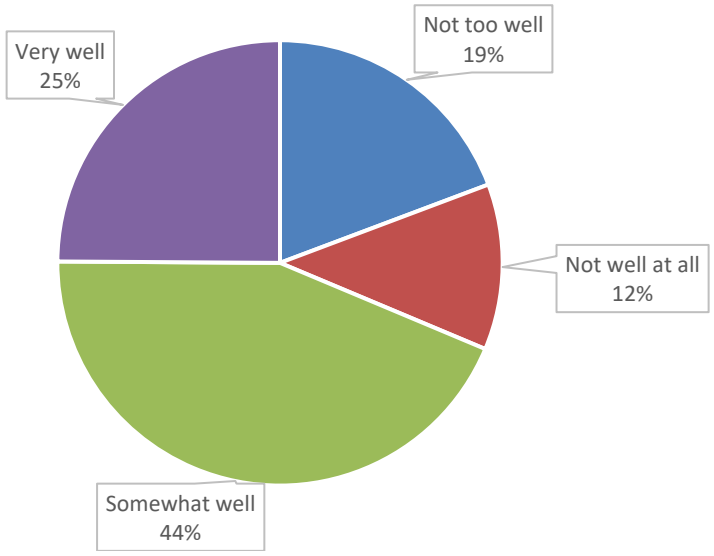
Respondents were asked questions related to online accessibility and inclusivity of public resources and services. Most respondents said online government services are somewhat accessible (42 percent) or very accessible (27 percent), as shown in Figure 22. However, three in 10 respondents said government services are not at all or not very accessible.

Figure 22: Accessibility of online government services



About seven in 10 respondents said online government services have worked somewhat well (44 percent) or very well (25 percent), as shown in Figure 23.

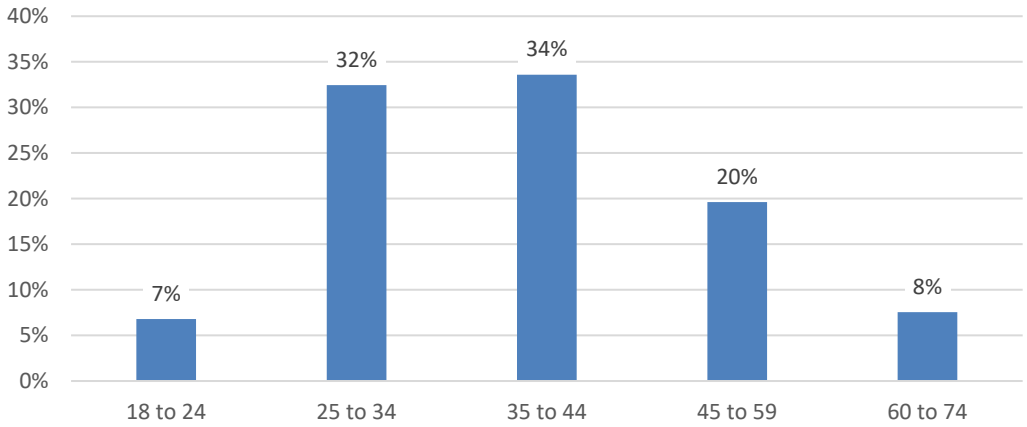
Figure 23: How well online government services have worked



6.5 Respondent information

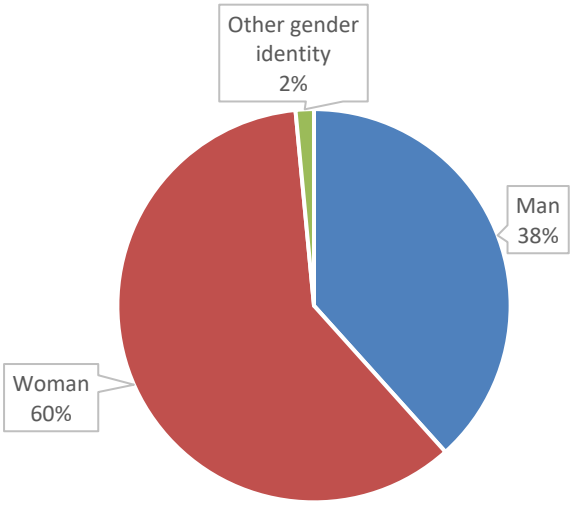
Basic demographic information was gathered from survey respondents and is summarized in this section. Several comparisons of respondent demographic information and other survey questions were provided previously in this report. As shown in Figure 24, 39 percent of respondents are under age 35, 34 percent are ages 35 to 44 years, and 27 percent are ages 45 or older.

Figure 24: Age of respondents



Six in 10 respondents identify as a woman, and nearly four in 10 identify as a man (see Figure 25). Two percent of respondents have another gender identity.

Figure 25: Gender identity



Respondents were asked to indicate the number of adults and children in their household. Fourteen percent of households have two members, and three-fourths of households have three or more members. Just 10 percent of respondents live alone (see Figure 26). Sixty-five percent of respondents have children living in the household (see Figure 27).

Figure 26: Total household size

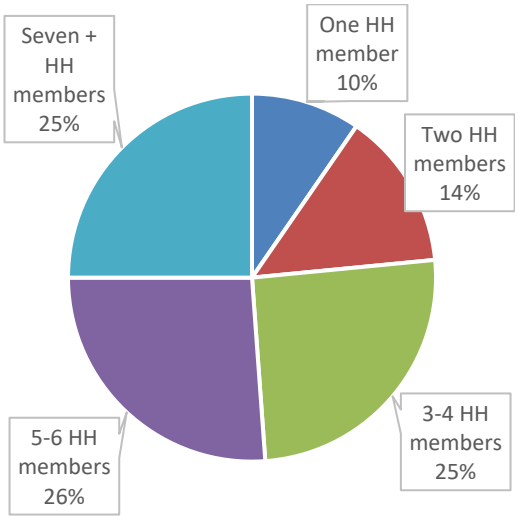
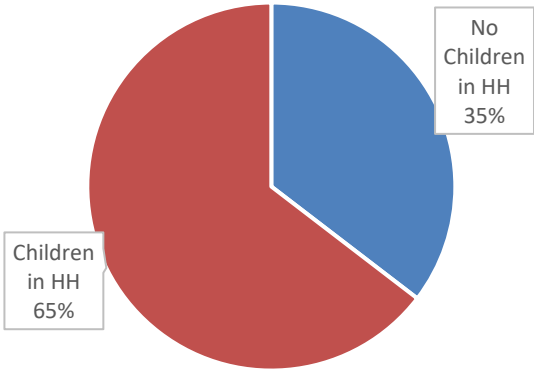


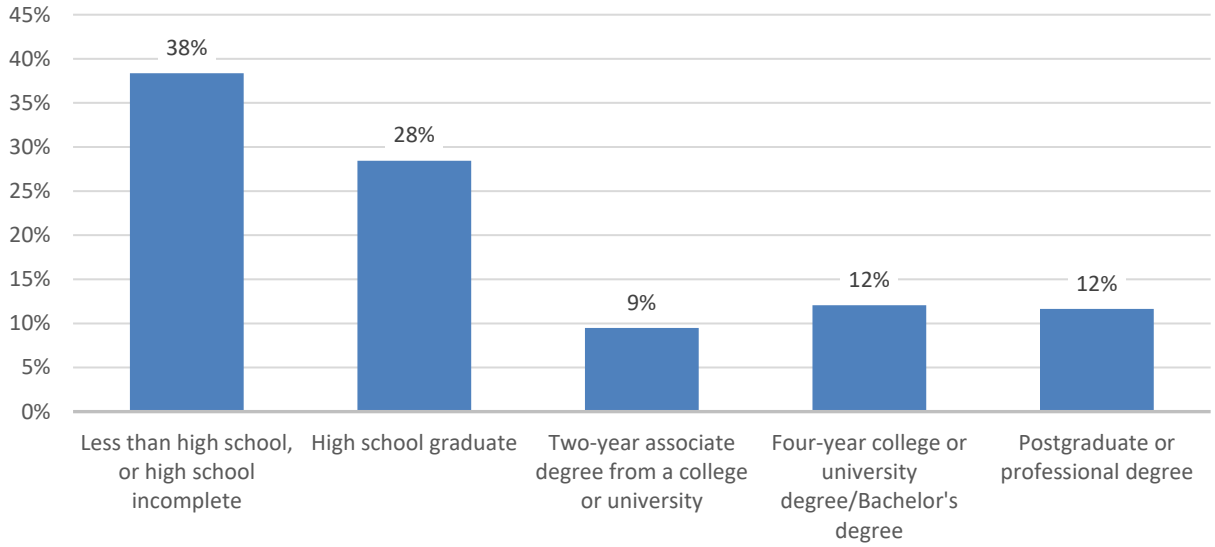
Figure 27: Number of children in household



The respondents' highest level of education attained is summarized in Figure 28. Two-thirds of respondents have a high school education or less, and nine percent have a two-year associate

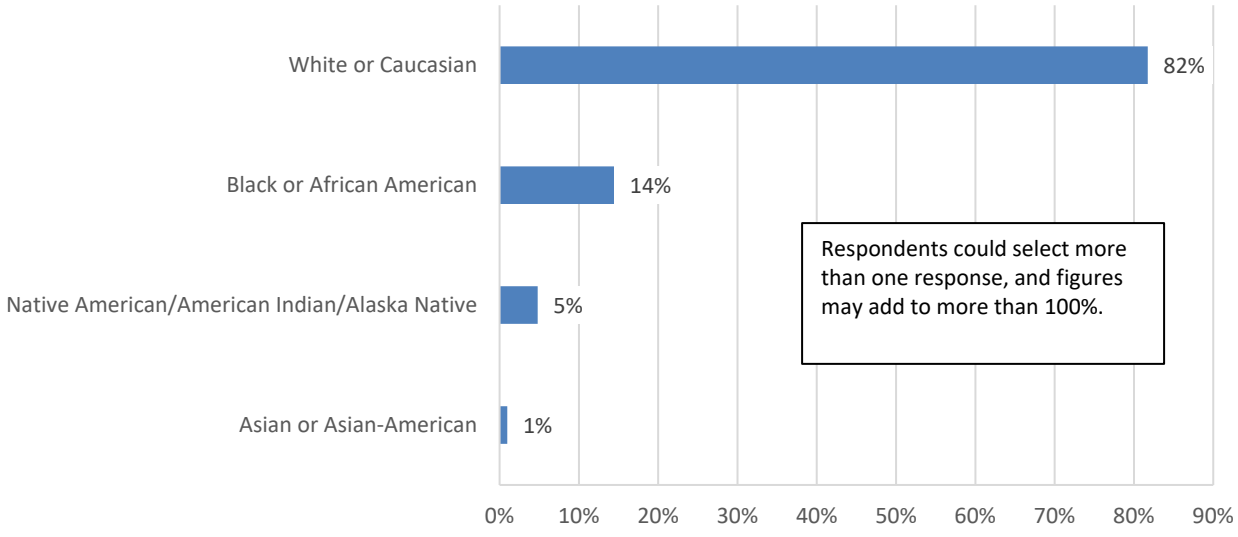
degree. Another 12 percent of respondents have a four-year college degree, and 12 percent have a postgraduate or professional degree.

Figure 28: Education of respondent



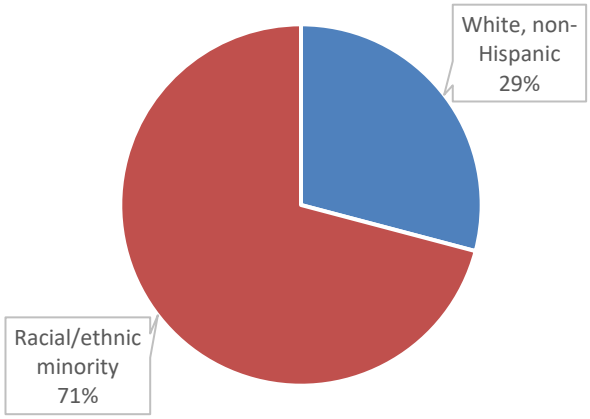
Respondents were asked to indicate what categories best describe their race (see Figure 29). Just 37 percent of all respondents provided this information. (Many of those who did not respond had earlier indicated being of Hispanic, Latino, or Spanish origin.) Among this segment, 82 percent are White or Caucasian, while 14 percent are Black or African American.

Figure 29: Race/ethnicity grouped



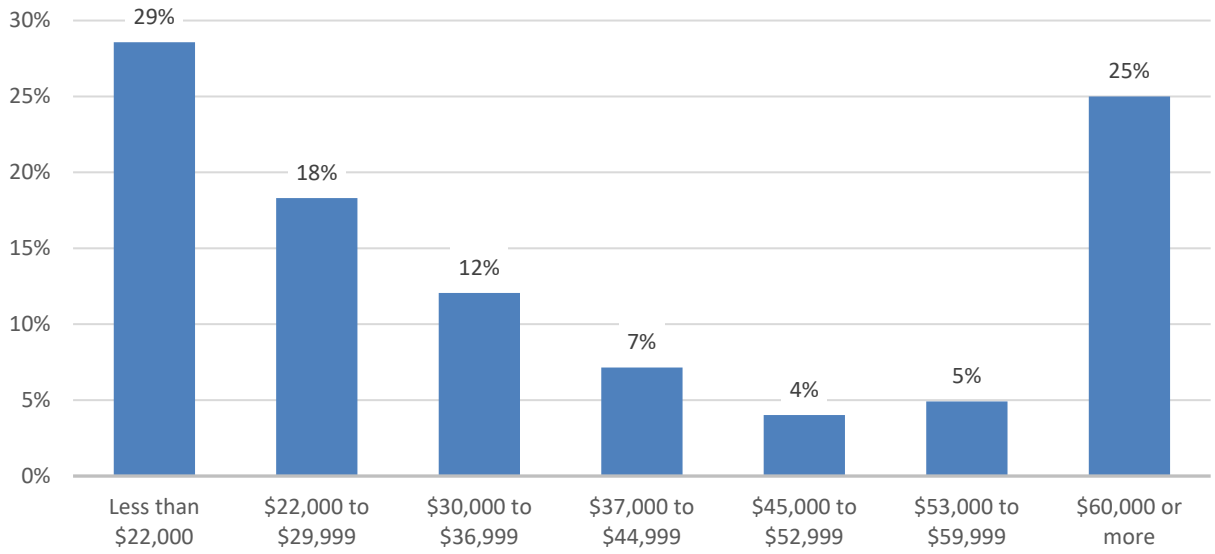
Respondents were also asked to indicate their ethnicity and if they belonged to a North American Indigenous, Native, or Tribal Group. About 57 percent of respondents said they are of Hispanic, Latino, or Spanish origin. Three percent belong to a North American Indigenous, Native, or Tribal Group. Among those who responded to the race and ethnicity questions, 29 percent are White, non-Hispanic, and 71 percent belong to a racial or ethnic minority group (see Figure 30). Keep in mind that 17 percent of respondents cannot be classified (i.e., did not respond to race and ethnicity questions).

Figure 30: Race and ethnicity



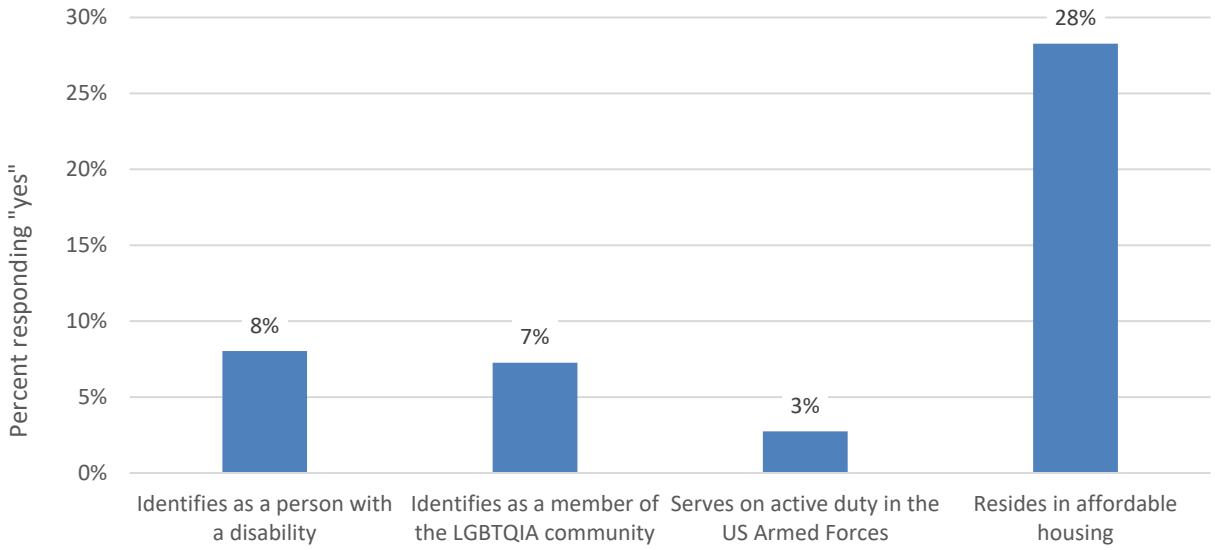
As illustrated in Figure 31, 47 percent of respondents have an annual household income of less than $30,000, 28 percent earn $30,000 but less than $60,000, and 25 percent earn $60,000 or more per year.

Figure 31: Annual household income



Respondents were asked if they belonged to certain other demographic groups. Eight percent of those who responded said they identify as a person with a disability, and 28 percent of respondents reside in affordable housing (see Figure 32). Additionally, three percent serve on active duty in the US Armed Forces, and seven percent identify as a member of the LGBTQIA community.

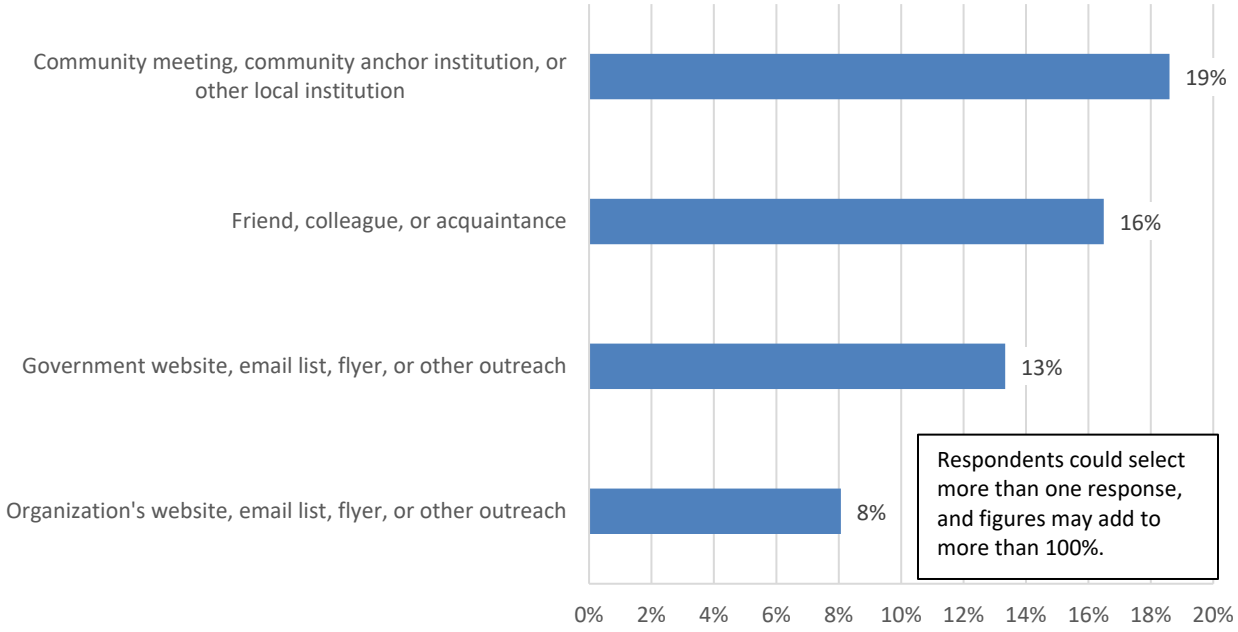
Figure 32: Respondent belongs to particular demographic groups



Additionally, respondents were asked if they faced difficulty in a variety of areas. Just 12 individuals indicated an area of difficulty, including seven with difficulty walking or climbing steps and six with difficulty remembering or concentrating.

Respondents learned about the survey through a variety of sources, including 19 percent who learned about it from a community meeting, community anchor institution, or other local institution and 16 percent who learned about it from a friend, colleague, or acquaintance (see Figure 33).

Figure 33: Where respondents heard about survey



7 Federal funding will be a long-term resource to advance digital equity goals in New Bedford

The City's digital equity and inclusion priorities will be supported by the federal funding and programs stemming from the Infrastructure Investment and Jobs Act and its Digital Equity Act. The Digital Equity Act allocates $2.75 billion in federal funding to support three national programs intended to create opportunities for state and local entities to strengthen digital equity and inclusion within their communities.

7.1 The Digital Equity Act and the state plan

The Digital Equity Act allocates $60 million for planning grants for states, territories, and Tribal governments to develop State Digital Equity Plans. MBI is the lead agency for Massachusetts and is responsible for conducting the planning process and drafting the state Plan with a $1 million federal grant under this program. The Plan is scheduled to be complete and submitted to NTIA by the end of 2023.

These state plans incorporate extensive outreach, partnerships, data collection and needs assessments to identify solutions to expand digital inclusion and promote the adoption and use of high-speed broadband services. The state plans will also analyze and incorporate any digital equity plans developed by local or regional jurisdictions in the state as a source of local information and input to develop larger state goals.

Each state's planning and recommendations will be directed especially toward ensuring that underrepresented and high needs "covered populations" have the skills, capacity, and tools to connect, including the aging, formerly incarcerated, veterans, racial and ethnic minorities, people with disabilities, low-income households and those living in rural areas. MBI conducted a grant program using a portion of these planning funds to distribute targeted funding to nonprofits across the state to support outreach and planning for the state's digital equity plan.

The state digital equity plans set the stage for the $1.44 billion Digital Equity Capacity Building Grant program. NTIA has not finalized the rules or timeline for the Capacity Grant program; however, it is expected to open in early 2024 and allocate funding over the course of several years. Under this program, states will apply for funding to support the implementation of their digital equity plans. States will receive funding based on a legislatively mandated allocation formula. Once received, states will have five years to use this federal funding to develop their own digital inclusion projects, including competitive grant programs for activities by state agencies, local governments, non-profits, and others.

Following the Capacity Grant program, NTIA will implement the $1.25 billion Digital Equity Competitive Grant program in 2025. This direct funding program will award individual grants to eligible entities, including state and local governments and agencies, Tribal entities, nonprofits,

and community anchor institutions. Rules and funding priorities are still being developed, but these grants will likely focus almost exclusively on the needs of underrepresented "covered populations" to connect through digital equity and inclusion programs. Funding likely will support programs that address affordability of services and devices, provide education and tools to increase privacy and cybersecurity while on-line, develop digital literacy and technical skills for personal and professional growth, and provide technical support and training for repair and updates to devices.

7.2 MBI also administers several programs funded by the American Rescue Plan Act (ARPA)

The ARPA State and Local Fiscal Recovery funds went to both the State of Massachusetts and directly to local jurisdictions. Through MBI, the state has allocated $75 million in state ARPA funding to digital equity and directed $50 million to grants through its Broadband Innovation Fund (Digital Equity Partnership & Municipal Digital Equity Planning). In addition to MBI's implementation program (see Section 7.3), the City should monitor other and local opportunities for future ARPA grant programs.[58]

These opportunities could support the recommendations above, including digital literacy training, device distribution programs, and subsidies for low-income households for services. The City could consider taking advantage of future opportunities through a direct application for funding, or, as part of it convening activities, work with local organizations and EDIC to encourage them to apply for projects that will benefit New Bedford residents.

The state also has $175 million in Capital Projects Fund resources from ARPA. The state will continue to focus this funding on broadband infrastructure construction and deployment, with one newly opened program (Residential Retrofit Program)[59] as of March 2024, and one program pending second round applications (Gap Networks Program).[60]

7.3 MBI's Municipal Digital Equity Implementation Program has launched and is available to municipalities for amounts up to $100,000

MBI launched its direct grant program—the Municipal Digital Equity Implementation Program (MDEIP)—for municipalities to access implementation funds to carry out the efforts proposed through this and similar reports and other local digital equity programming activities. Municipalities interested in applying for this digital equity implementation opportunity must

[58] The Municipal Digital Equity Planning Program is still open and accepting applications for additional cities and towns in Massachusetts.
[59] "Residential Retrofit Program," MBI, https://broadband.masstech.org/retrofit.
[60] "Gap Networks Grant Program," MBI, https://broadband.masstech.org/gap-networks-grant-program.

complete a two-step application process by May 31, 2024.[61] Applications will be reviewed by MBI on a rolling basis. The purpose of this funding is to enable municipalities to access direct grants to implement digital equity strategies identified through ongoing planning activities. This money—a one-time grant of up to $100,000—is intended to help municipalities make local digital equity investments and execute projects that will increase access, adoption, and usage of the internet for populations most impacted by the COVID-19 pandemic.[62]

Any municipality that has participated in the Municipal Digital Equity Planning Program or has a pre-existing local digital equity plan or related document can apply for this implementation funding. The City of New Bedford should start its application for these funds immediately, using this report and ongoing conversations with local organizations as a guide.

7.4 The U.S. Economic Development Agency has opportunities for distressed communities

The Economic Development Administration (EDA) of the U.S. Department of Commerce administers Local Planning and Technical Assistance Programs as well as federal Public Works and Economic Adjustment Assistance Program funding opportunities for a wide variety of projects with a current allocation of $161 million nationwide.[63] These programs are designed to address needs in economically distressed areas, and projects must meet specific criteria to show the project area is economically distressed. While this federal agency does not receive many broadband applications, communities that can show broadband is needed as an element of their economic development plan may have a strategic advantage.

Grants made under these programs will help communities plan, build, innovate, and put people back to work through infrastructure construction or non-construction projects designed to meet local needs. EDA encourages applicants to present "new ideas and creative approaches to advance economic prosperity in distressed communities" [64] and will consider projects that incorporate priorities related to equity, entrepreneurship, and workforce development. Several

[61] Municipal Digital Equity Implementation Program, MBI Massachusetts Broadband Institute, https://broadband.masstech.org/digital-equity-implementation.
[62] "Municipal Digital Equity Implementation Program," MBI, https://broadband.masstech.org/digital-equity-implementation.
[63] U.S. Economic Development Administration, Public Works and Economic Adjustment Assistance Programs, Notice of Funding Opportunity, at p. 10 (EDA was appropriated $121.5 million for the Public Works funding program), https://www.grants.gov/search-results-detail/346815; U.S. Economic Development Association, Planning and Local Technical Assistance Programs, Notice of Funding Opportunity, pg. 7 (U.S. EDA was appropriated $43.5 million for these programs), https://www.eda.gov/sites/default/files/filebase/files/programs/eda-programs/FY21-23-Planning-and-LTA-NOFO_FINAL.pdf.
[64] U.S. EDA Planning and Local Technical Assistance NOFO. at p. 5 and U.S. EDA Public Works and Economic Adjustment Assistance Programs NOFO at p. 4.

of the recommendations and projects discussed above could be eligible for funding under the program.

New Bedford must apply the "distress criteria"—high unemployment rates or low per capita income relative to the national average—to identify areas and neighborhoods that can take advantage of this opportunity. [65] It is also helpful to consider that projects with a significant showing of "distress" through extremely high unemployment or low per-capita income will generally have the lowest match requirements, and thus more flexibility in how it designs its projects. New Bedford should further review the requirements for this program to determine if it will be an applicable source of funding, but it also may encourage other partners to also apply.

7.5 The Federal Communications Commission's E-Rate program can bring discounted services to schools and libraries in the area

The Federal Communications Commission's E-Rate program was created in 1996 to enhance access to advanced telecommunications and information services for all public and nonprofit elementary and secondary school classrooms and libraries. [66] E-Rate is one of four programs comprising the Universal Service Fund (USF) and is funded by fees paid by telecommunications companies to fulfill the Congressional goals of universal service.

Currently, E-Rate is a $4.27 billion federal funding program managed by the Universal Service Administrative Company (USAC) that approves and provides subsidy discounts for telecommunications and information services for schools and libraries. In late 2023, the FCC made the latest addition to the list of eligible services by approving subsidies for Wi-Fi services on school buses as an eligible program expense to help close the "homework gap" for students with limited broadband access at home.

Eligible schools and libraries identify goods or services they need and submit a request for competitive bids to USAC, which then posts these requests on its website for vendors to bid on. After reviewing the vendors' bids, the school or library selects the most cost-effective eligible products and services using price as the primary factor. It then applies to USAC for approval for the desired purchases.

Funds are awarded as discounts ranging from 20 to 90 percent of the eligible costs and discount levels are based on the poverty level of the schools. Rural schools and libraries may also receive a higher discount. Recipients must pay a portion of the service costs. Often, schools and libraries

[65] U.S. EDA Planning and Local Technical Assistance NOFO. at p. 11.
[66] Universal Service Administrative Co., E-Rate, https://www.usac.org/e-rate/.

will form consortia to centralize and manage the E-Rate application, reporting, and budgeting processes within a central point of contact.[67]

Eligible schools and libraries in Massachusetts received $10.1 million in E-rate disbursements in 2023.[68] The Massachusetts Board of Library Commissioners[69] tracks E-Rate participation by libraries and library networks and provides information and resources about the program. The Department of Elementary and Secondary Education's Office of Digital Learning provides similar outreach and education for schools.[70] While Massachusetts does not manage a state-wide consortium, several of the State's library networks and school districts participate in E-Rate, including the New Bedford School District.

[67] Universal Service Administrative Co., E-Rate, Consortia, https://www.usac.org/e-rate/applicant-process/before-you-begin/consortia/.
[68] Universal Service Administrative Co., E-Rate FRN Status Tool FY2016+, https://opendata.usac.org/E-Rate/E-Rate-FRN-Status-Tool-FY2016-/8xzh-ytkh.
[69] E-rate in Massachusetts Libraries, https://mblc.state.ma.us/programs-and-support/e-rate/index.php.
[70] Technology Planning and Sustainability, E-Rate, https://www.doe.mass.edu/odl/planning-funding/E-rate/.

Appendix A: MBI survey

MBI
MASSACHUSETTS BROADBAND INSTITUTE
at the MassTech Collaborative

Massachusetts Statewide Digital Equity Survey

The Massachusetts Broadband Institute (MBI) wants to hear from you about your experiences with getting and using internet service! This survey is completely anonymous and should be completed by one individual per household. **Your feedback is vital to understand barriers to internet access, affordability, and adoption to help close the digital divide.** Thank you for your time and participation.

Section 1: Please answer the following questions.

1. What is your zip code? _____
2. Which Massachusetts municipality do you live in? _____

Do you have internet service in your home?

- ☐ **YES** – Please proceed to Section 2 below
- ☐ **NO** – Please skip to Section 3 (flip this page over)

Section 2: Please answer the following questions only if you CAN connect to the internet from home.

3. Who is your internet service provider? _____
4. What kind of internet service do you have at home? Please check all that apply.
   - ☐ A data plan for a smartphone, hotspot, or tablet
   - ☐ Dial-up internet
   - ☐ Home wireline connection (cable, fiber, DSL, etc.)
   - ☐ Satellite internet
5. How well does your home internet service work?
   - ☐ Good enough to meet my household's needs
   - ☐ I don't know
   - ☐ Not good enough to meet my household's needs
6. Is your home internet service bundled with other services such as telephone or TV?
   - ☐ Yes
   - ☐ No
7. How much do you pay for the internet every month? $_____
8. How hard is it for you to pay your internet bill?
   - ☐ Very hard
   - ☐ Not too hard
   - ☐ Somewhat hard
   - ☐ Not at all hard
9. Have you heard about the Affordable Connectivity Program (ACP) that provides discounted internet service for low-income households?
   - ☐ Yes
   - ☐ I don't know
   - ☐ No

   For more information and to find out if you qualify for ACP, call the Federal Communication Commission's ACP Support Center: 877-384-2575.

When complete, skip to section 4 below.

Section 3: Please answer the following questions only if you CANNOT connect to the internet at home.

10. If you do not have internet service in your home, what is the reason?
    - ☐ Service is not available in my area
    - ☐ Service is too expensive
    - ☐ I am concerned about online privacy or safety
    - ☐ I don't feel confident navigating the internet or using online tools
    - ☐ I can't afford or access a device to use the internet
    - ☐ I don't want / don't use the internet.
    - ☐ Other (please specify): _____

11. If you do not have internet at home, where do you go to use the internet? Please check all that apply.
    - ☐ A workplace
    - ☐ A friend or family member's home
    - ☐ School, college, or university
    - ☐ A library or community center
    - ☐ A business such as a restaurant, cafe, or bookstore (e.g., McDonald's, Taco Bell, Starbucks, etc.)
    - ☐ A public space such as a park or government building
    - ☐ On public transit
    - ☐ I do not regularly access internet in these or any other spaces
    - ☐ Other (please specify): _____

When complete, proceed to section 4 below.

Section 4: All respondents should answer these questions.

12. Does everyone in your household have access to the computer devices they need to meet their everyday needs for internet use? (Computers, smartphones, tablets, or other internet enabled devices)?
    - ☐ Yes
    - ☐ No

13. Which of the following devices do you use most of the time to connect to the internet? (Check all that apply)
    - ☐ Cellphone
    - ☐ Desktop computer
    - ☐ Laptop computer
    - ☐ Tablet (or similar device)
    - ☐ Other (please specify): _____

14. How much would you be able to pay for a laptop or desktop computer?
    - ☐ $0-50
    - ☐ $50-100
    - ☐ $100-150
    - ☐ $150-250
    - ☐ $250-500
    - ☐ More than $1,000

15. Are you able to regularly use the internet for online activities?
    - ☐ Yes
    - ☐ No

16. Please rank the level of difficulty for what you use the internet for. (Easy, Not easy, Hard)

	Easy	*Not easy*	*Hard*
Searching and applying for a job	☐	☐	☐
Health care or telehealth services	☐	☐	☐
Participating in your local community	☐	☐	☐
General internet searching	☐	☐	☐
Transportation information	☐	☐	☐
Searching and/or applying for benefits or resources for you or your family	☐	☐	☐

17. If you do not have regular access to the internet, what would most like to use it for if you could?
    - ☐ Searching and applying for a job
    - ☐ Health care or telehealth services
    - ☐ Participating in your local community
    - ☐ General internet searching
    - ☐ Transportation information
    - ☐ Searching and/or applying for benefits or resources for you and your family
    - ☐ Something else
    - ☐ I don't want to use the internet regularly

18. What kind of digital skills support would you be most interested in?
    - ☐ In person classes
    - ☐ Online classes
    - ☐ In person support from a friend or instructor
    - ☐ A do-it-yourself training module

19. How concerned are you, if at all, about internet safety?
    - ☐ Very concerned
    - ☐ Somewhat concerned
    - ☐ Not very concerned
    - ☐ Not at all concerned

20. What are you most concerned about? (Select all that apply)
    - ☐ That my data could get stolen or used without my consent
    - ☐ That I or a loved one could get scammed or tricked
    - ☐ That I could be tracked or surveilled
    - ☐ That I or a loved one could be harassed or abused online

21. Are you aware of tools or resources you can use to stay safe online?
    - ☐ Yes, I have tools and resources I use stay safe online
    - ☐ No, I don't know of any tools or resources to stay safe online
    - ☐ I know of tools or resources to stay safe online, but they don't work for me
    - ☐ Other (please specify) : _____

22. How accessible are online government services like benefits portals, RMV services, or paying for permits or tickets to you?
    - ☐ Very accessible
    - ☐ Somewhat accessible
    - ☐ Not very accessible
    - ☐ Not at all accessible

23. When you have used online government services like benefits portals, RMV services, or paying for permits or tickets, how well did they work for you?
    - ☐ Very well
    - ☐ Somewhat well
    - ☐ Not too well
    - ☐ Not well at all

When complete, proceed to section 5 below.

3

Section 5: All respondents should answer these questions. *We collect demographic information so that we can make sure we are representing all neighborhoods, towns, cities and groups across the Commonwealth.*

24. What is your age?
- ☐ 18 to 24
- ☐ 25 to 34
- ☐ 35 to 44
- ☐ 45 to 59
- ☐ 60 to 74
- ☐ 75 and older
- ☐ Prefer not to answer

25. What is your gender identity?
- ☐ Woman
- ☐ Man
- ☐ Non-binary
- ☐ Gender fluid
- ☐ Other
- ☐ Prefer not to answer

26. How many people, including yourself, currently live in your household? *(Note: A household is defined as all the people who currently occupy the housing unit where you live).*
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8 or more
- ☐ Prefer not to answer

27. How many children under age 18, currently live in your household? *(Note: A household is defined as all the people who currently occupy the housing unit where you live).*
- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 or more
- ☐ Prefer not to answer

28. What is the highest level of school you have completed or the highest degree you have received?
- ☐ Less than high school, or high school incomplete (Up to grades 9-11 or Grade 12 with NO diploma)
- ☐ High school graduate (Grade 12 with diploma or GED certificate)
- ☐ Two-year associate degree from a college or university
- ☐ Four-year college or university degree/Bachelor's degree (e.g., BS, BA, AB)
- ☐ Postgraduate or professional degree, including master's, doctorate, medical or law degree (e.g., MA, MS, PhD, MD, JD)
- ☐ Prefer not to answer

29. Are you of Hispanic, Latino, or Spanish origin, such as Mexican, Puerto Rican, or Cuban?
- ☐ Yes
- ☐ No
- ☐ Prefer not to answer

30. Which of the following best describes your race? (Select all that apply)
- ☐ White or Caucasian
- ☐ Black or African-American
- ☐ Asian or Asian-American
- ☐ Native American/American Indian/Alaska Native
- ☐ Pacific Islander/Native Hawaiian
- ☐ Some other race (please specify) _____
- ☐ Prefer not to answer

31. Do you belong to a North American Indigenous, Native, or Tribal group?
    - ☐ Yes
    - ☐ No
    - ☐ Prefer not to answer

32. What is your total annual household income from all sources, and before taxes?
    - ☐ Less than $22,000
    - ☐ $22,000 to $29,999
    - ☐ $30,000 to $36,999
    - ☐ $37,000 to $44,999
    - ☐ $45,000 to $52,999
    - ☐ $53,000 to $59,999
    - ☐ $60,000 or more
    - ☐ Prefer not to answer

33. Do you identify as a person with a disability? *(Note: Disability is defined as physical, emotional, or mental health conditions that result in limitations of activities or restrictions to full participation at school, at work, at home, or in the community).*
    - ☐ Yes
    - ☐ No
    - ☐ Prefer not to answer

34. If you identify as a person with a disability, do you have difficulty in any of the following areas? Please check all that apply.
    - ☐ Seeing even if wearing glasses
    - ☐ Hearing even if using a hearing aid
    - ☐ Walking or climbing steps
    - ☐ Remembering or concentrating
    - ☐ Self-care
    - ☐ Communicating, for example understanding or being understood
    - ☐ Prefer not to answer
    - ☐ I do not identify as a person with a disability

35. Do you identify as a member of the LGBTQIA+ community?
    - ☐ Yes
    - ☐ No
    - ☐ Prefer not to answer

36. Did you serve on active duty in the U.S. Armed Forces?
    - ☐ Yes
    - ☐ No
    - ☐ Prefer not to answer

37. Do you live in affordable housing? *(Note: Affordable housing is defined as housing subsidized by a housing authority, paid for through a voucher, or in a building run by a private developer.)*
    - ☐ Yes
    - ☐ No
    - ☐ Prefer not to answer

38. Where did you hear about this survey? Please check all that apply.
    - ☐ From a government website, email list, flyer, or other outreach
    - ☐ From a friend, colleague, or acquaintance
    - ☐ From a community meeting, community anchor such as a library or school, or other local institution
    - ☐ From an organization's website, email list, flyer, or other outreach
    - ☐ Other (Please specify) _____

Thank you for taking the survey!

Your response will help shape Massachusetts's policies and future funding allocations to close the digital divide for all its residents. If you would like to learn more, please visit **https://broadband.masstech.org/.**

5

Appendix B: Stakeholder questionnaire

City of New Bedford Digital Equity Program Questionnaire

The City of New Bedford is undertaking a study of local broadband needs under the Massachusetts Broadband Institute's Municipal Digital Equity Program, in collaboration CTC Technology & Energy, a consulting firm with offices in Massachusetts.

Digital equity programs promote computer skills, internet access, and access to computing devices. Please fill out this questionnaire to the best of your ability. The goal of this questionnaire is to understand the active programs and initiatives currently facilitated by organizations located in or that serve New Bedford, and to understand capacity for expanding existing efforts or starting new ones.

1. Which category best describes your organization? Please select all that apply.

- ☐ Public School
- ☐ Community colleges and other institutions of higher education
- ☐ Library
- ☐ Medical and health care providers
- ☐ Municipal government
- ☐ Public housing authority
- ☐ Community organization
- ☐ Workforce development organization
- ☐ Adult literacy organization
- ☐ Internet Service Provider (ISP)
- ☐ Non-profit organization that represents individuals with disabilities
- ☐ Non-profit organization that represents veterans
- ☐ Non-profit organization that represents aging individuals
- ☐ Non-profit organization that represents incarcerated individuals
- ☐ Non-profit organization that represents English learners
- ☐ Other (please specify)

2. Has your organization created a broadband and/or digital equity plan?

- ◯ Yes
- ◯ No

*** 3. Please provide the information for a point of contact in your organization.**

Name	
Organization name	
Email address	
Phone number	

City of New Bedford Digital Equity Program Questionnaire

Digital Equity Programs Introduction

Digital equity programs aim to ensure that communities, our residents and visitors to New Bedford have the skills, technology, and capacity to use broadband to its fullest extent. Examples of digital equity programs include those that promote computer skills, internet access, and computing device access.

4. What do you believe are the most pressing challenges associated with digital equity and access in New Bedford, and for whom?

* 5. Does your organization offer digital equity programs?

- ◯ Yes
- ◯ No

City of New Bedford Digital Equity Program Questionnaire

Program Details

We want to collect data on all digital equity **programs you currently provide**. Please record as many details as you can about the program you offer. If your organization has more than one active digital equity program, there is an opportunity for you to answer the same questions for a second program.

6. What is the name of the project?

Project name

7. What aspects of digital equity does the program address? Check all that apply.

- ☐ Availability and affordability of internet
- ☐ Digital literacy
- ☐ Cybersecurity
- ☐ Devices and technical support
- ☐ Online accessibility and inclusivity

8. Please describe the program in a few sentences:

9. Does the program focus on certain populations? Check all that apply.

- ☐ Individuals with disabilities
- ☐ Veterans
- ☐ Aging individuals (60 and above)
- ☐ Incarcerated individuals
- ☐ Individuals with a language barrier, including individuals who are English learners; and have low levels of literacy
- ☐ Individuals who are members of a racial or ethnic minority group
- ☐ Individuals whose household income is lower than 150% of the poverty level
- ☐ No particular focus on a population
- ☐ Other (please specify)

10. What is the annual project budget?

Cost in dollars

11. How much does the program cost to each participant?

Cost in dollars

12. What is the cost per participant served?

Cost in dollars

13. Please give us a sense of the geography you serve.

- ◯ Municipal-wide
- ◯ Neighborhood-wide
- ◯ Other (please specify)

14. How long has the program been active, in months?

Program length in months

15. How many people were served by the program in the last fiscal year?

- ◯ Under 25 people
- ◯ 26 to 50 people
- ◯ 51 to 100 people
- ◯ More than 100 people
- ◯ Other (please specify)

16. How many participants do you expect to serve over the life of the program?

- ◯ 1 to 50
- ◯ 51 to 100 people
- ◯ 101 to 250 people
- ◯ 251 to 500 people
- ◯ More than 500 people

17. If you had the resources, would you want to scale the project to serve more people?

- ◯ Yes
- ◯ No

*** 18. Does your organization have another digital equity program?**

- ◯ Yes
- ◯ No

City of New Bedford Digital Equity Program Questionnaire

Digital Equity Program #2

19. What is the name of the project?

Project name

20. What aspects of digital equity does the program address? Check all that apply.

- ☐ Availability and affordability of internet
- ☐ Digital literacy
- ☐ Cybersecurity
- ☐ Devices and technical support
- ☐ Online accessibility and inclusivity

21. Please describe the program in a few sentences:

22. Does the program focus on certain populations? Check all that apply.

- ☐ Individuals with disabilities
- ☐ Veterans
- ☐ Aging individuals (60 and above)
- ☐ Incarcerated individuals
- ☐ Individuals with a language barrier, including individuals who are English learners; and have low levels of literacy
- ☐ Individuals who are members of a racial or ethnic minority group
- ☐ Individuals whose household income is lower than 150% of the poverty level
- ☐ No particular focus on a population
- ☐ Other (please specify)

23. What is the annual project budget?

Cost in dollars

24. How much does the program cost to each participant?

Cost in dollars

25. What is the cost per participant served?

Cost in dollars

26. Please give us a sense of the geography you serve.

- ◯ Municipal-wide
- ◯ Neighborhood-wide
- ◯ Other (please specify)

27. How long has the program been active, in months?

Program length in months

28. How many people were served by the program in the last fiscal year?

- ◯ Under 25 people
- ◯ 26 to 50 people
- ◯ 51 to 100 people
- ◯ More than 100 people
- ◯ Other (please specify)

29. How many participants do you expect to serve over the life of the program?

- ◯ 1 to 50
- ◯ 51 to 100 people
- ◯ 101 to 250 people
- ◯ 251 to 500 people
- ◯ More than 500 people

30. If you had the resources, would you want to scale the project to serve more people?

- ◯ Yes
- ◯ No

31. Does your organization have another digital equity program?

- ◯ Yes
- ◯ No

City of New Bedford Digital Equity Program Questionnaire

Planned Programs

We would like to collect information on any digital equity programs your organization is currently in the process of planning but has not yet implemented. Please record as many details about the upcoming program as possible.

* 32. Is your organization in the process of developing a digital equity program?

- ◯ Yes
- ◯ No

City of New Bedford Digital Equity Program Questionnaire

Planned Programs

33. What kind of digital equity program(s) is your organization developing? Please select the categories that best fit the program type.

- ◯ Digital skills and literacy
- ◯ Data privacy and cybersecurity
- ◯ Devices (Laptops, computers, tablets)
- ◯ Technical support
- ◯ Digital navigators
- ◯ Broadband access
- ◯ Creating accessible and inclusive internet content

34. What is the annual budget need?

35. What else do you need to launch the program?

36. What work (if any) has already been completed to launch the new program?

City of New Bedford Digital Equity Program Questionnaire

Future Programs

We would like to hear about any interest your organization has in developing a project in the future to address current gaps in digital equity. Please fill this section out if you have interest in digital equity programming but have not yet started the process of planning for that program.

37. Does your organization want to develop a digital equity program?

- ◯ Yes
- ◯ No

38. What kind of digital equity program(s) is your organization interested in developing? Please select the categories that best fit the program type.

- ☐ Digital skills and literacy
- ☐ Data privacy and cybersecurity
- ☐ Devices (Laptops, computers, tablets)
- ☐ Technical support
- ☐ Digital navigators
- ☐ Broadband access
- ☐ Creating accessible and inclusive internet content

39. What are the most pressing needs you are trying to address?

40. What do you need to launch the program?

Appendix C: Thinkabit Lab Community Use

Hours of Operation:
Tuesday: 5:00pm - 7:00pm (2 hours)
Thursday: 5:00pm - 7:00pm (2 hours)
Saturday (one per month): 9:00am - 12:00pm (3 hours)

Staffing:
Adult staff - preferably a GLCPS staff member, $34/hour, $136 weekly ($238 w/Saturday)
Student staffing - trained high school students to support users with equipment use (2 students minimum), $15.75/hour (minimum wage), $63 weekly ($110.25 w/Saturday)

Requirements:
Subscriptions:
Glowforge - $600/year ($50/month)
Cuttle.XYZ - $750/year ($62.50/month) - design program, unlimited accounts
Cricut Design Space - $95.88/year ($9.99/month) - design program
Video Editing Program - $25 - $100 per month

Equipment/materials:
Cricut Maker Bundle - $519.00 (3 machines) - $1557 total
Accessories/Tools - $1000
3D Printers - MakeBot Method X - $3666 (higher print quality printer)
MakeBot Sketch Large - $3998 (includes 2 printers)
Filament Sketch - $312 (8 rolls)
Filament Method - $610 (9 rolls)
Podcaster Studio for recording - $1800
IPad Pro M2 - $1200
Recording Kit - $500
MacBook Pro - $1800
General power tools - $1000

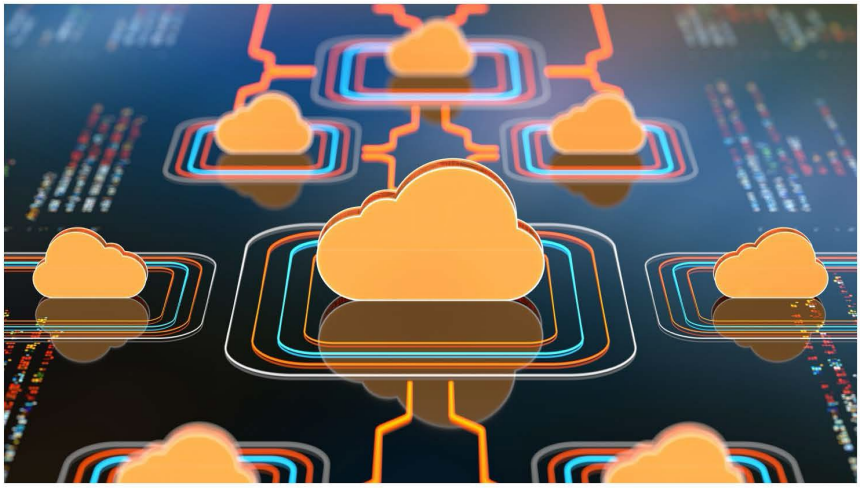
Training:
-staff training, including students, on equipment (varied)

Budget:

Annual Costs:		
Staffing	adult	$9,520.00
	students	$8,820.00
Subscriptions	glowforge	$600.00
	cuttle.xyz	$750.00
	cricut design space	$95.88
	video editing	$1,200.00
Startup Costs:		
Cricut Maker	bundle (3)	$1,557.00
	accessories/tools	$1,000.00
3d Printers	MakeBot Method X	$3,666.00
	MakeBot Sketch Large	$3,998.00
	filament (method)	$1,220.00
	filament (sketch)	$624.00
recording	Podcaster Studio	$1,800.00
	Ipad Pro M2	$1,200.00
	recording studio kit	$500.00
	MacBook Pro	$1,800.00
general equipment	power tools	$1,000.00
training of staff	varied depending on provider	$3,500.00
Estimated Total		**$42,850.88**

Appendix D: City speed test project report

The following slides were provided to CTC by the City of New Bedford.



Evaluating the Quality of Internet Connectivity in New Bedford

Prepared for The City of New Bedford by Digital Millennial Consulting LLC

May 7, 2024

I. BACKGROUND

In the digital age, internet connectivity has become a fundamental resource for education, akin to textbooks and school facilities. However, disparities in internet access can create significant educational inequalities. This is particularly evident in settings where students rely heavily on digital resources to complete assignments, participate in interactive learning, and access educational content online.

Disadvantages Due to Slow Internet Speeds

Students in New Bedford, as in many parts of the world, face the challenge of slow internet speeds, which can severely hinder their educational progress. Slow connectivity affects students' ability to participate in online classes, access cloud based educational tools, and submit assignments in a timely manner. Compared to their peers across the state and nationally who may have robust internet infrastructure, students in areas with poor connectivity are at a stark disadvantage. This technological divide not only impacts academic performance but also affects students' ability to develop digital literacy skills critical for modern careers. Throughout the testing period, New Bedford Public Schools continued to assist families lacking reliable internet access through the Emergency Connectivity Fund. This initiative was part of the district's commitment to ensuring equitable access to online resources, thereby minimizing any barriers to participation in the study.

Impact on Blue Collar Households

The issue of slow internet extends beyond educational implications; it also perpetuates socioeconomic disparities, particularly in blue collar households in New Bedford. For many families, the Internet is a gateway to job opportunities, skills training, and financial services that are crucial for economic advancement. Slow internet speeds limit these opportunities, making it challenging for blue collar workers to improve their job prospects, engage in continuous learning, and access essential services. This digital divide reinforces existing barriers to escaping poverty, as households without reliable internet are cut off from many of the digital resources that could help improve their economic standing.

Necessity for Enhanced Internet Infrastructure

Given the critical role of internet connectivity in leveling the educational and economic playing fields, concerted efforts are imperative to enhance the internet infrastructure in New Bedford. Improving connectivity not only addresses immediate educational needs but also contributes to long-term socioeconomic equity.

Initiative for High Quality Internet Access

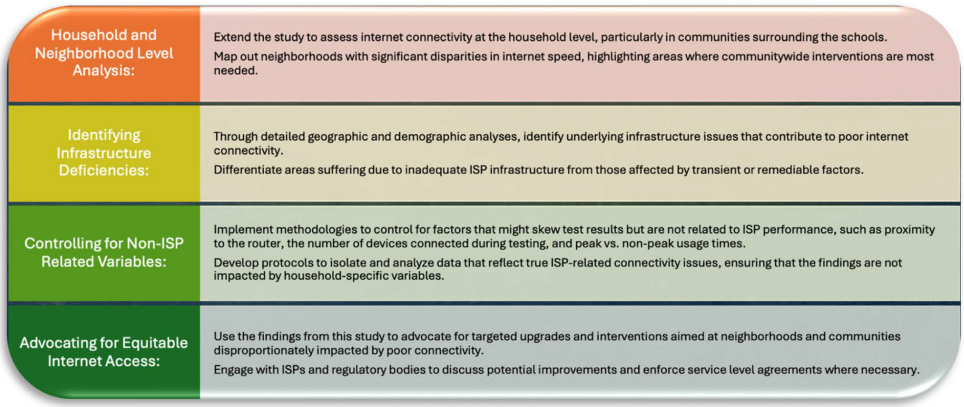
The City of New Bedford, aware of the disparities in internet access among its citizens, launched an initiative to meticulously assess the quality of internet connectivity. The objective was clear: to ensure that all residents, irrespective of their socioeconomic status, have access to reliable and highspeed internet. This initiative was not only about addressing immediate educational needs but also about paving the way for sustained economic empowerment of the entire community.

Collaborative Effort with New Bedford Public Schools

To achieve a comprehensive and accurate assessment, the City recognized the need to collect data that truly represented the diverse demographics and geographic spread of its population. New Bedford Public Schools, with its extensive reach across all communities and neighborhoods, presented the perfect partnership opportunity. The schools' **1:1** device program, which ensured that each middle school student had a Chromebook, provided an ideal framework for conducting a citywide speed test. Students representing a cross section of the entire city used their school issued Chromebooks to participate in this important study. This approach not only facilitated a broad and representative data collection but also engaged the community meaningfully, enhancing the collective understanding of the current state of internet infrastructure.

II. OBJECTIVES

The principal aim of this study is to comprehensively assess the current internet speeds within the City of New Bedford. This focuses on identifying neighborhoods and households experiencing substandard connectivity. The analysis seeks to pinpoint critical areas that require infrastructural improvements to ensure equitable access to high quality internet services. It is the hope that the study lays the foundation for addressing systemic issues in internet connectivity and advocating for necessary infrastructural enhancements. As a result, our core objectives include the following:



The overarching goal of this study is not merely to document existing deficiencies but to spark significant improvements in internet access across New Bedford. By identifying specific areas and factors contributing to poor internet service, this study aims to provide a data driven foundation for enhancing digital equity—ensuring that every student and household has the connectivity necessary to thrive in a digital centric world.

III. METHODOLOGY

The methodology employed for assessing internet speeds across New Bedford Public Schools was meticulously designed to ensure robustness, accuracy, and comprehensiveness. It incorporates advanced data collection tools, rigorous data handling protocols, and independent verification.

Independent Verification by Future State Consulting LLC

To further solidify the reliability of the findings, Future State Consulting LLC, a highly respected firm in data verification and analysis, independently reviewed all collected data. The review was led by Future State Consulting's Senior Data Architect and the Data Engineering team, who meticulously examined and verified the upload and download speeds, latency measurements, and geolocation data.

Application Deployment

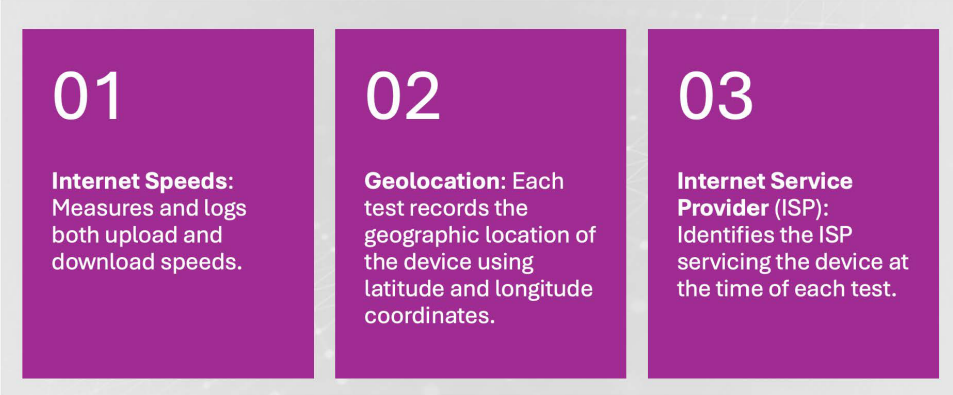
The study utilized a specially designed application deployed on Chromebooks provided to all middle school students in New Bedford Public Schools in the Spring of 2023. Given the district's 1:1 device strategy, approximately 3,000 students were equipped with these devices, which they could take home daily, ensuring comprehensive data collection across various environments.

Installation: The application is distributed and managed using the school system's Mobile Device Management (MDM) solutions, specifically the Chrome Management Console for Chrome OS devices and Microsoft Intune for Windows devices. These platforms enable secure and efficient deployment of the application across all student devices.

Functionality: The application operates discreetly in the background, collecting data on both upload and download speeds, which are displayed in kilobytes per second (KB/s). This approach minimizes disruption to the students' regular activities while providing continuous data collection.

Monitoring and Updates: Throughout the testing period, the system administrators monitor the application's performance and functionality. Any necessary updates or adjustments are managed remotely through the MDM solutions, ensuring that all devices run the most current version of the application without requiring physical access.

Data Points Collected:



Data Collection Template

Structured Template: A structured data collection template was employed to ensure uniformity in the data captured across all devices. This template was designed to record essential metrics such as upload and download speeds, and latency, alongside geolocation data pinpointed through latitude and longitude.

Nonidentifiable Data: At no point were personal identifying information (PII) or any details that could directly identify a student or their family collected. The focus was solely on technical metrics relevant to internet connectivity.

User Notification: Families were informed about the testing procedures through a detailed document outlining the purpose, scope, and nature of the data collection. This document ensured transparency and maintained the trust of the participants.

Data Privacy and Security

Security Measures: Robust encryption techniques were employed to secure data transmission from the devices to the central data repository. Access to this data was strictly controlled and limited to authorized personnel involved in the study.

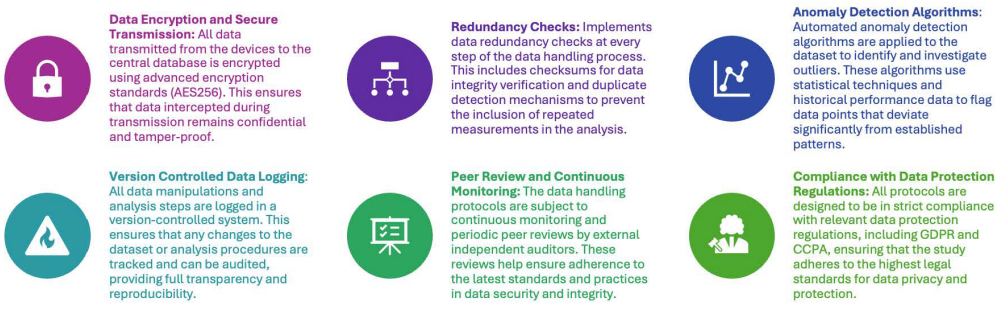
Geolocation Data: Location data was restricted to latitude and longitude coordinates, with no linkages to personal addresses or identifiable markers. This level of detail was sufficient for the study's needs without compromising family privacy.

Post Study Removal: Following the conclusion of the data collection phase, the application was remotely deleted from all devices through the district's management systems. This step was crucial to ensuring that no residual software could pose a security risk or infringe on user privacy.

Data Collection Tools

1. High Precision Measurement Software: Utilized state of the art network testing software designed to measure internet speeds with high precision, minimizing measurement error. The software conducts multiple tests over various protocols (TCP, UDP) to ensure comprehensive coverage of different types of internet traffic.
2. Automated Data Synchronization: The software automatically synchronizes data collection across devices to eliminate time discrepancies and ensure that tests are conducted simultaneously, reducing the influence of network fluctuation during data collection periods.
3. Integrated GPS Validation: Each test integrates GPS validation to confirm the accuracy of the geolocation data. This prevents any discrepancies in location tagging which could affect the geographic analysis of internet speed.

Rigorous Data Handling Protocols



Summary of Key Metrics

Average Download Speed: The mean download speed across all devices indicates the typical internet speed that students experience. This average is compared to national and local benchmarks to assess adequacy for educational needs.

Average Upload Speed: Similarly, the mean upload speed is evaluated to understand how well students can interact with cloud services and other upload-intensive applications.

Minimum and Maximum Speeds: Identifying the range of speeds gives insights into the best and worst connectivity scenarios within the school system.

Standard Deviation and Variance: These measures provide insights into the variability of internet speeds. A high standard deviation indicates a wide disparity in internet speed experiences among students.

Sampling Method & Rationale for Sampling Approach

To ensure the reliability and representativeness of the data collected in this study on internet speeds across New Bedford Public Schools and their surrounding communities, we adopted a statistically rigorous sampling method. The goal was to ascertain that each address included in our analysis provided a comprehensive view of connectivity across different times and conditions, minimizing biases associated with time specific or day specific fluctuations in internet usage and speed. As a result, the sampling strategy consisted of the following:

Minimum Data Points Requirement:

- Threshold for Inclusion: Each address was included in the study only if it had a minimum of 10 recorded speed tests.
- Temporal Distribution: These tests were required to be evenly distributed to include weekends and weekdays, as well as across three distinct time periods: mornings, afternoons, and evenings. This distribution ensures that the data captures variability in internet speed due to different usage patterns throughout the day and week.

Exclusion of Consecutive Testing:

To avoid the potential bias of network congestion or unrepresentative peak performance, we ensured that the speed tests for any given address were not conducted on the same

day. This criterion helps in mitigating the influence of transient network issues or temporary enhancements that might skew the results.

Statistical Justification:

- Reducing Temporal Bias: By spreading out the testing across different days and times, we significantly reduce the risk of temporal bias where certain days (e.g., weekends when heavy streaming might occur) or times (e.g., evenings when more devices are likely connected) could distort the overall picture of internet speed at a location.
- Adequate Sample Size: The minimum of 10 tests per address was determined based on statistical power calculations to ensure that the observed speeds at each address are a reliable estimate of the typical speeds experienced by users at that location. This sample size is sufficient to provide a 95% confidence level in the stability of the mean speed measurements, assuming normal distribution of speeds.

Ensuring Representativeness and Accuracy:

By adhering to this rigorous sampling method, the study ensures that each address sampled provides a reliable and representative estimate of typical internet speeds, free from biases introduced by specific temporal anomalies. This methodological rigor supports the study's goal of identifying systemic issues with internet speeds, rather than anomalies tied to specific, nonrepresentative conditions.

IV. RESULTS

This section presents the findings from a detailed analysis of internet speeds across New Bedford, conducted through a collaborative effort between the City and New Bedford Public Schools. The results reveal significant disparities in access to high quality internet, with clear geographic and temporal patterns of connectivity that impact educational opportunities and economic potential. These findings underscore the pressing need for targeted improvements in internet infrastructure to ensure equitable access for all residents. The subsequent sections will delve into the specific results of the geographic, temporal, and statistical analyses conducted, offering insights into the areas most in need of intervention and the potential strategies for enhancing internet services citywide.

Summary of Key Findings

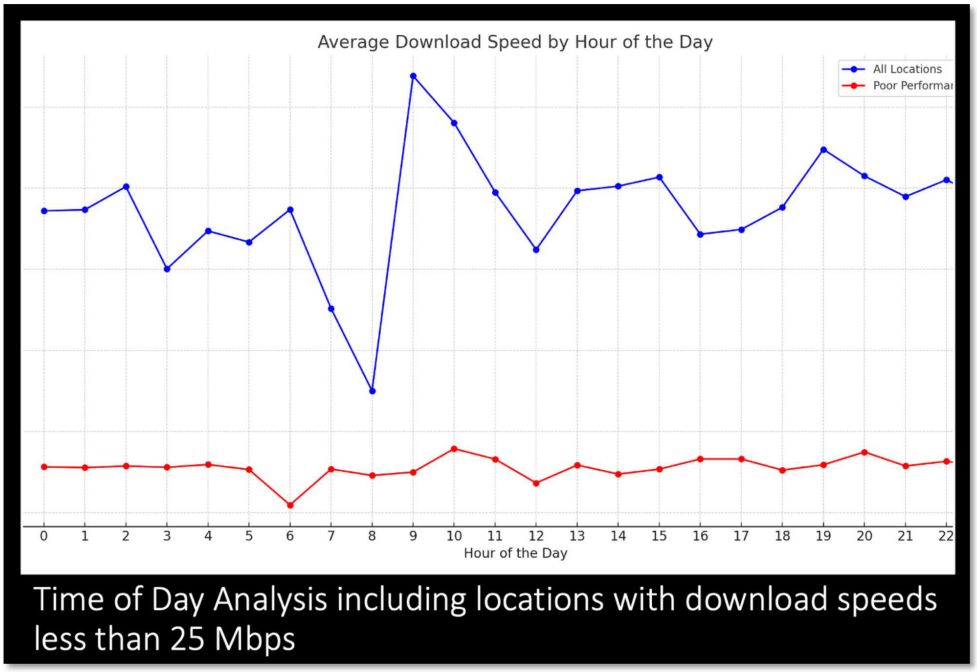
The overall speed test findings, as seen below, highlight the need for significant improvements in Internet Access. Based upon the recent changes made by the FCC regarding the definition of broadband, New Bedford needs to see an increase of 316% to its average download speeds to meet the new standard. Additionally, the city needs an increase by 761% to meet the new standard for upload speeds. Sixty-one percent of the locations tested had average download speeds of less than 25 Mbps.

	Average	Highest	Lowest	Median	Mode
Down	24.2523	112.86	0	11.34	7.30
Up	2.30873	78.72	0	1.47	1.46

- Significant geographic disparities in internet connectivity within New Bedford were observed, with some regions experiencing markedly lower internet speeds.
- Temporal Variability: Locations with poor performance, remains consistently low throughout the day, rarely surpassing 10 Mbps. This flat trend across all hours highlights a chronic deficiency in internet speeds, irrespective of typical high or low usage times.
- Below Benchmark Performance: Over 61% of tested locations recorded internet speeds below the FCC's recommended thresholds for educational connectivity, highlighting a critical need for infrastructure enhancements.

Temporal Analysis

The temporal analysis of internet speeds in New Bedford, detailed in the accompanying graph, underscores a critical aspect of connectivity issues—the variance in download speeds throughout the day and the stark differences between average locations and those identified with poor performance.



Time of Day Analysis including locations with download speeds less than 25 Mbps

The graph illustrates the average download speeds at hourly intervals for both typical locations ("All Locations") and those identified specifically as having poor performance ("Poor Performance"). Key observations from this analysis include:

Consistency Across All Locations: The blue line representing all locations shows moderate fluctuations throughout the day, with a noticeable dip in the early morning hours followed by a recovery. The relatively stable performance during typical waking hours suggests that most areas have adequate infrastructure to handle daily demand.

Stark Contrast in Poor Performance Locations: The red line, indicative of locations with poor performance, remains consistently low throughout the day, rarely surpassing 10 Mbps. This flat trend across all hours highlights a chronic deficiency in internet speeds, irrespective of typical high or low usage times.

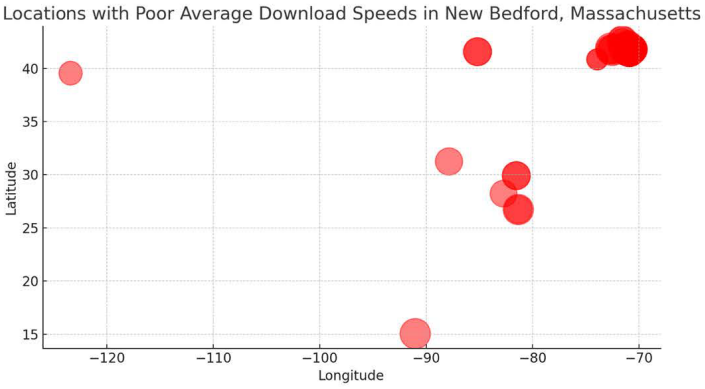
Infrastructure Inadequacy: The consistently low speeds in poorly performing locations, unaffected by time of day variations that typically influence internet speeds (due to factors like network congestion during peak hours), point to fundamental infrastructure inadequacies rather than mere fluctuations in usage patterns.

Geographic Analysis

The geographic analysis of the internet speed test data is crucial in identifying spatial patterns of connectivity across New Bedford Public Schools. By segmenting the city into regions and analyzing the internet speeds within these segments, we can pinpoint areas with consistently low or high internet performance.

Data Segmentation

Grid System: The city was divided into a grid of equal sized cells. Each cell represents a specific area where all collected data points contribute to the aggregated performance metrics.

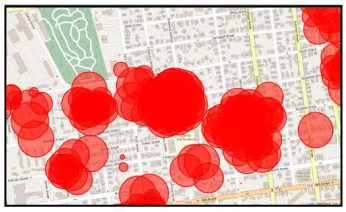


Data Collection: The latitude and longitude coordinates collected by the application were used to map each speed test result to its corresponding cell in the grid.

Performance Metrics Calculation

Cellwise Aggregation: Within each grid cell, the average download and upload speeds were calculated. This aggregation helps smooth out individual anomalies and provides a clearer picture of overall connectivity in each area.

Clusters with downloads less than 10 Mbps



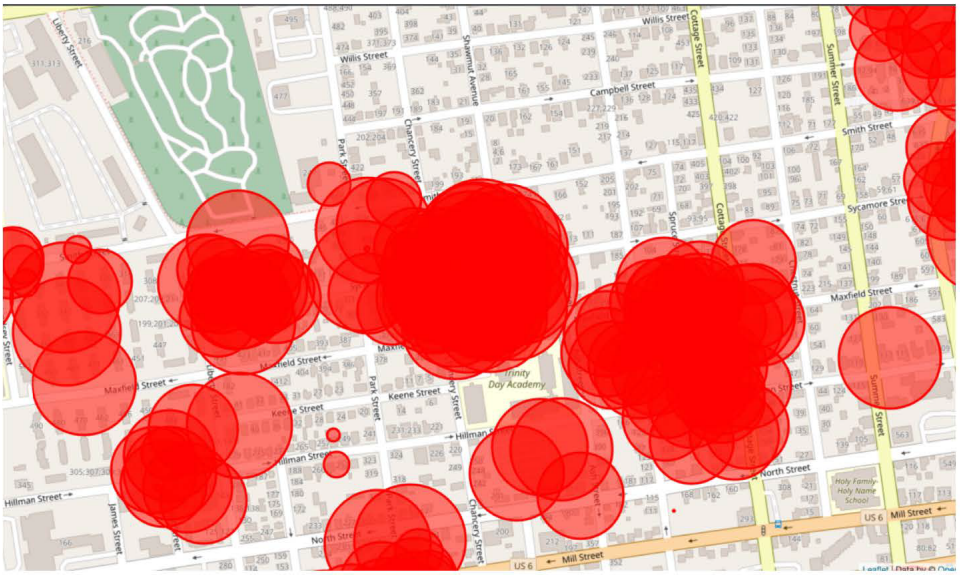
Clusters with downloads less than 25 Mbps

Highlighting Extremes: The cells with the highest and lowest average download speeds were identified to spotlight areas with exceptionally good or poor connectivity. There are 4,683 unique locations in New Bedford, or 61% of locations tested, where the average download speed is less than 25 Mbps. In contrast, **2,851 unique locations tested fell below average speeds of 10 Mbps.**

Visualization

Cluster Maps: For a more detailed view, cluster maps that group nearby areas with similar performance were created. These clusters help in understanding larger zones of influence where connectivity issues might be systemic rather than isolated.

There are 4,683 unique locations in New Bedford, or 61% of locations tested, where the average download speed is less than 25 Mbps. In contrast, 2,851 unique locations tested fell below average speeds of 10 Mbps.



Comparative Analysis

Comparison with Demographic Data: The speed test results were overlayed with demographic and socioeconomic data. Families experiencing poverty were more likely to have slower Internet service than others. However, further research regarding this finding is needed for this claim to be conclusive.

Comparison with FCC National Broadband Map

The Federal Communications Commission (FCC) set national benchmarks for internet speeds, deeming a minimum of 25 Mbps as adequate for various applications, including educational purposes (The FCC has since changed the standard to a minimum of 100 Mbps). These benchmarks are crucial for ensuring that residents across the United States have access to sufficient internet speeds to support their daily activities.

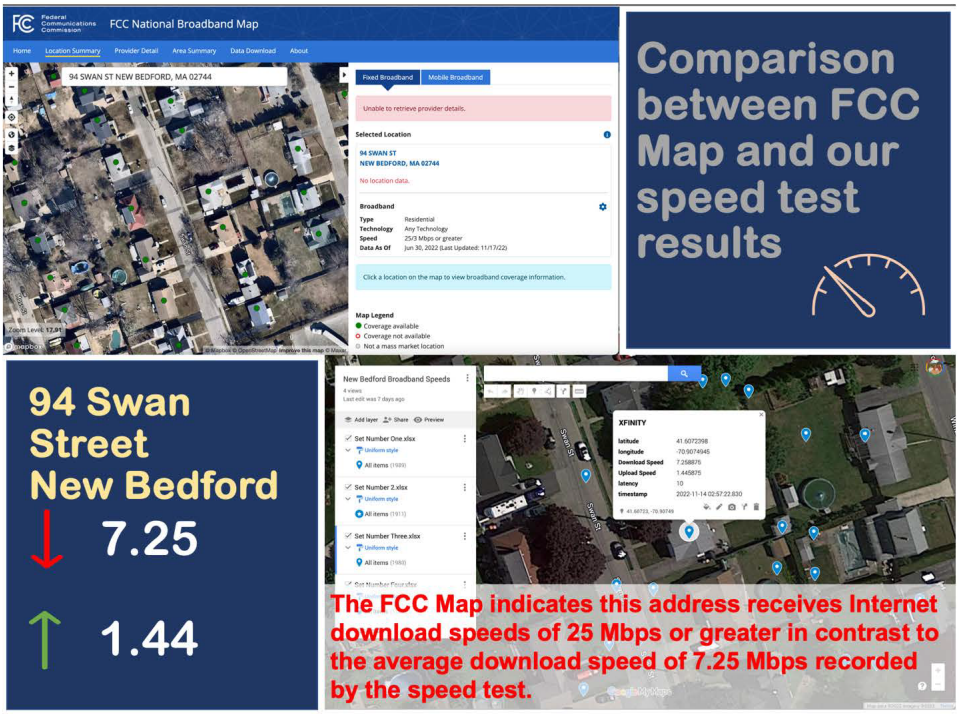
Methodology of Comparison

Our study involved a detailed comparison between the FCC's National Broadband Map, which purportedly shows locations meeting or exceeding the 25 Mbps threshold, and

actual speed measurements collected at various addresses within New Bedford. This comparison was conducted to validate the accuracy of the FCC's reported data and assess the real-world internet speeds experienced by the residents.

Findings from the Comparison

Despite the FCC map indicating that certain addresses met or even exceeded the 25 Mbps threshold, our findings tell a different story. In our comprehensive analysis, we discovered that just over 75% of these locations actually experienced speeds well below the 25 Mbps mark. This significant discrepancy raises concerns about the reliability of national data reporting and its impact on policymaking and resource allocation. For New Bedford, it suggests that many residents might not be receiving the level of service that is officially reported, potentially leading to a lack of necessary interventions or funding aimed at improving local internet infrastructure.



V. CONCLUSION

The comprehensive study of internet connectivity in New Bedford has provided critical insights into the underlying factors affecting internet speeds across the city. Our analysis, supported by data collected from over 3,000 middle school students' devices, reveals significant disparities in internet access that impact both educational opportunities and broader socioeconomic equity. As outlined in our analysis summary, the primary issues contributing to poor internet performance in New Bedford include:

Potential Issue	Description	Analysis	Root Cause Probability
Infrastructure Age and Quality	Older infrastructure can lead to slower speeds. If certain parts of the city have outdated or degraded infrastructure, such as old copper wires instead of newer fiber-optic cables, it can significantly impact performance.	This is likely the cause based on our knowledge of the age of existing infrastructure in the city.	
Network Congestion	High usage in a particular area, especially during peak times, can slow down internet speeds. If more users are accessing the internet in a specific location simultaneously, it can lead to network congestion.	Network congestion is not a factor given the time-of-day analysis shows no variability in comparison to the parts of the city that have average performance.	
ISP Coverage and Capacity	Not all ISPs have equal coverage and capacity in every area. Some neighborhoods might be serviced by ISPs that don't have the infrastructure to support higher speeds, especially if there's a lack of competition.	This is also a likely factor given the lack of competition in New Bedford as the city only has one fixed broadband provider.	
Distance from ISP Hub	The further a location is from the ISP's central hub or local exchange, the slower the internet speed might be, especially for certain types of connections.	We are unable to tell if this the location of the ISP hub is playing a factor since we do not know its location.	

High Medium Low

Strategic Recommendations

Based on our findings, we recommend the following strategic actions to address the identified issues:

Infrastructure Upgrades: Prioritize the replacement of outdated infrastructure with modern alternatives capable of supporting higher broadband speeds. This should be focused particularly in areas identified as having the poorest performance.

Enhance ISP Competition: Advocate for policies that encourage more ISPs to enter the New Bedford market or expand the capacity of existing providers. Increased competition is likely to improve service quality and availability.

Community Engagement and Awareness: Continue to engage with the community to raise awareness about the importance of high-speed internet and how it can significantly impact educational and economic opportunities.

This study underscores the urgent need for concerted efforts to enhance internet connectivity in New Bedford. By addressing the root causes identified, New Bedford can ensure that all residents have access to reliable and fast internet, thereby removing a significant barrier to educational and economic advancement. Moving forward, it is crucial that these efforts are supported by continued data-driven analysis and community involvement to ensure that the implemented solutions effectively address the community's specific needs.

About Digital Millennial Consulting LLC (DMC)

Founding and Vision

Founded in 2006 and headquartered in Washington, D.C., Digital Millennial Consulting LLC (DMC) has been steadfast in its commitment to bridging the digital divide. The company was built on the enduring vision to "Ensure all individuals have access to digital resources to maximize their potential regardless of socioeconomic status, race, religion, and geography." This vision has guided DMC through numerous initiatives, impacting educational and community settings across the United States.

Early Initiatives and Collaborative Research

DMC's journey began with a focus on using technology to address the math skills deficit in underserved communities. Early research, in collaboration with prestigious partners like the US Department of Education, US Department of Commerce, and DC Public Schools, explored the potential of technology access paired with high-quality digital content to close educational gaps. This collaborative research spearheaded the launch of Project K-Nect in 2007, marking the inception of the first mobile learning program in the U.S. that leveraged mobile broadband. The project specifically targeted at-risk students in North Carolina, aiming to bolster math skills among those who scored poorly and lacked internet access.

Expanding Impact

Since its inception, DMC has significantly expanded its reach in the following areas:

Educational and Governmental Collaboration: DMC has worked with over 330 school districts, 120 municipalities, 15 state governments, and three federal agencies. A notable collaboration was with the FCC on the Edu 2011 program, which assessed the efficacy of off-campus internet access for K12 students, influencing policies on ERATE funding expansion to support at-home internet access.

Technology Deployment: DMC has facilitated more than 50 large-scale 1:1 initiatives, deploying over 700,000 computers to students, thus substantially enhancing educational equity and access to technology.

Pandemic Response: During the COVID-19 pandemic, DMC played a crucial role in managing internet access for Baltimore City Schools, overseeing the identification of needs, fulfillment, and continuous evaluation of internet services provided to students.

Broadening the Digital Equity Horizon

Beyond education, DMC has been instrumental in helping municipalities nationwide to design and implement digital equity strategies. These efforts include evaluating municipal broadband solutions to close the digital opportunity gap effectively. Through these initiatives, DMC not only enhances connectivity but also ensures that digital resources are used optimally for community upliftment.

Lasting Impact

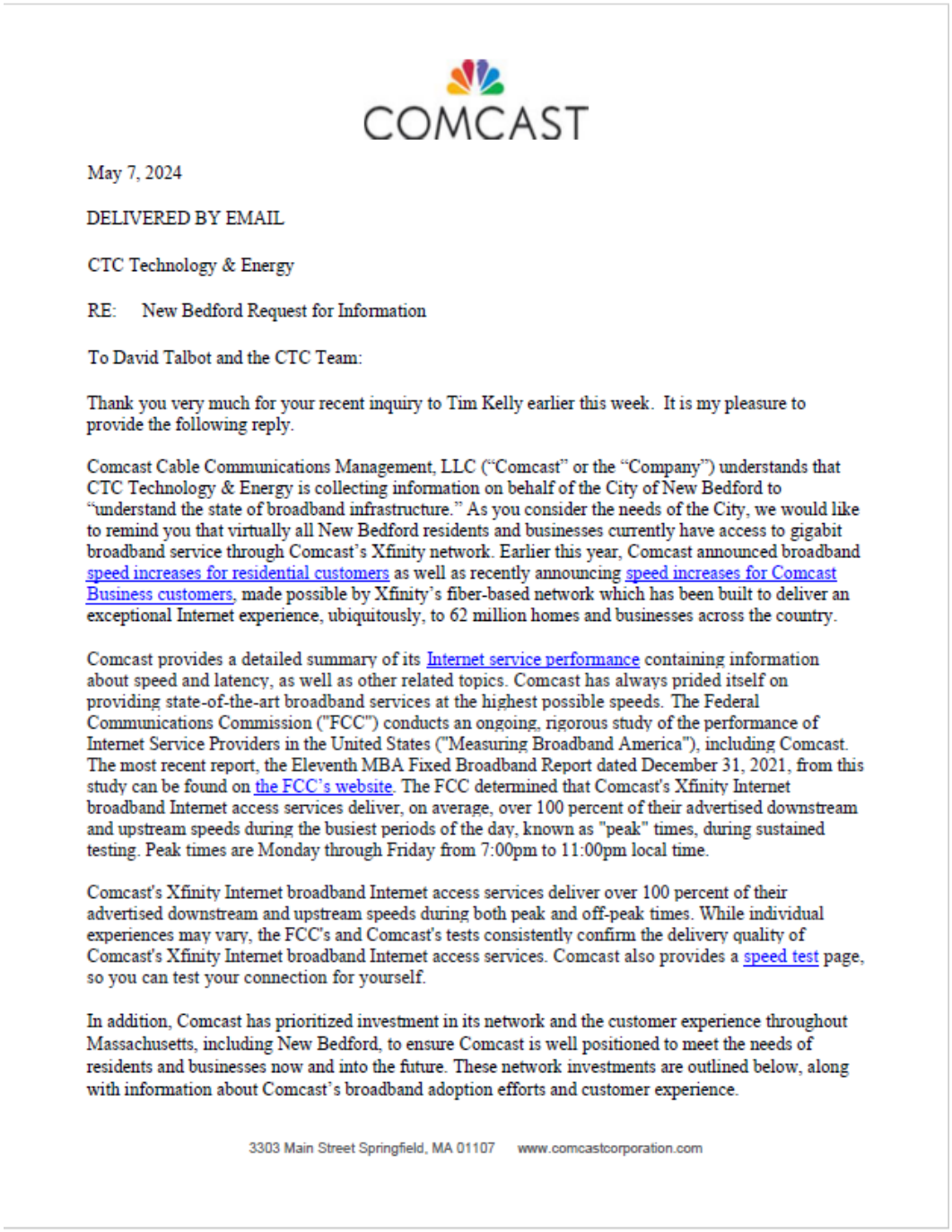
To date, DMC's efforts have connected over 500,000 students to the internet, a testament to the company's impact in transforming educational environments through enhanced digital access. The strategies developed and implemented by DMC serve as models of effective digital equity interventions, paving the way for future innovations in public and educational technology integration.

Conclusion

Digital Millennial Consulting LLC continues to be a pioneer in the field of digital equity, driving significant advancements in how communities engage with and benefit from technology. As DMC looks to the future, it remains committed to its founding vision, continually seeking new avenues to empower individuals and communities through equitable access to digital tools and resources.

Appendix E: Comcast statement about its network capabilities

CTC made a standard inquiry to Comcast to describe its network capabilities in New Bedford. The following letter was provided to CTC by Comcast.



COMCAST

May 7, 2024

DELIVERED BY EMAIL

CTC Technology & Energy

RE: New Bedford Request for Information

To David Talbot and the CTC Team:

Thank you very much for your recent inquiry to Tim Kelly earlier this week. It is my pleasure to provide the following reply.

Comcast Cable Communications Management, LLC ("Comcast" or the "Company") understands that CTC Technology & Energy is collecting information on behalf of the City of New Bedford to "understand the state of broadband infrastructure." As you consider the needs of the City, we would like to remind you that virtually all New Bedford residents and businesses currently have access to gigabit broadband service through Comcast's Xfinity network. Earlier this year, Comcast announced broadband speed increases for residential customers as well as recently announcing speed increases for Comcast Business customers, made possible by Xfinity's fiber-based network which has been built to deliver an exceptional Internet experience, ubiquitously, to 62 million homes and businesses across the country.

Comcast provides a detailed summary of its Internet service performance containing information about speed and latency, as well as other related topics. Comcast has always prided itself on providing state-of-the-art broadband services at the highest possible speeds. The Federal Communications Commission ("FCC") conducts an ongoing, rigorous study of the performance of Internet Service Providers in the United States ("Measuring Broadband America"), including Comcast. The most recent report, the Eleventh MBA Fixed Broadband Report dated December 31, 2021, from this study can be found on the FCC's website. The FCC determined that Comcast's Xfinity Internet broadband Internet access services deliver, on average, over 100 percent of their advertised downstream and upstream speeds during the busiest periods of the day, known as "peak" times, during sustained testing. Peak times are Monday through Friday from 7:00pm to 11:00pm local time.

Comcast's Xfinity Internet broadband Internet access services deliver over 100 percent of their advertised downstream and upstream speeds during both peak and off-peak times. While individual experiences may vary, the FCC's and Comcast's tests consistently confirm the delivery quality of Comcast's Xfinity Internet broadband Internet access services. Comcast also provides a speed test page, so you can test your connection for yourself.

In addition, Comcast has prioritized investment in its network and the customer experience throughout Massachusetts, including New Bedford, to ensure Comcast is well positioned to meet the needs of residents and businesses now and into the future. These network investments are outlined below, along with information about Comcast's broadband adoption efforts and customer experience.

3303 Main Street Springfield, MA 01107 www.comcastcorporation.com

Comcast's Investment in our Xfinity network

In the last three years, ***Comcast has invested over $958.2 million in private, at-risk capital in Massachusetts*** to build, maintain and operate one of the largest fiber-based deployments in the country. This significant investment has enabled Comcast to stay ahead of consumer demand, as the need for fast, reliable, and secure Internet continues to grow. For example, our last Xfinity Internet Report demonstrated that nearly a billion devices connect in Xfinity households, a 12x increase from just a few years ago.

Comcast operates one of the largest fiber deployments in the nation. In addition to an all-fiber backbone that connects cities coast-to-coast, Comcast has consistently added and expanded fiber throughout the portion of its network that serves customers directly. New Bedford customers have access to the same fiber-based network and advanced suite of services that our customers in Boston and cities around the country have access to. Comcast has extended fiber in the City and across the country, powering the deployment of Comcast's full range of services to both commercial and residential customers, including symmetrical multi-gigabit broadband speeds. Comcast's fiber-based network is continuously monitored and protected by proprietary, internally developed artificial intelligence ("AI") and machine learning technologies that can automatically detect issues like fiber tears, and dramatically reduce the estimated time to repair. In a world where fiber cuts and tears are a daily experience across the country, smart AI that detects and mitigates such incidents means the difference between customers being offline for a few minutes or several hours.

Comcast's significant ongoing network and technology investments enable us to continually deliver innovative products and services that keep residents and businesses on the cutting edge. In fact, we are currently rolling out the nation's largest and fastest multi-gig network deployment, reaching 62 million homes and businesses before the end of 2025. The Xfinity network provides a combination of reliability, security, power, resilience and innovation.

Notably, this work also accelerates the transition to DOCSIS 4.0. This is a technology platform that Comcast is using to digitize and virtualize much of the physical device technology and to move many of those activities into the cloud, allowing Comcast to innovate at the speed of software and to deliver multi-gig upload and download speeds to tens millions of Americans over the connections they already have in their homes.

Comcast has been deploying similar technologies for years as part of this evolution – in the industry it is known as Distributed Access Architecture (DAA) and "virtualized" Cable Modem Termination Systems (vCMTS). Comcast will be able to deliver those multi-gig speeds over its existing hybrid fiber coaxial network. In preparation for faster network speeds, Comcast launched its latest Wi-Fi 6E Gateway, one of the first in the world to support multi-gig symmetrical Wi-Fi last year.

Because Comcast is evolving its network architecture, equipment, and customer devices, we are uniquely positioned to deliver these advancements in speed, reliability, and performance to everyone we serve, not just a select few. And because much of this work is powered by software, these changes can be made with far less disruption to customers than other technologies. For more information on

Comcast's multi-gig network deployment, see https://corporate.comcast.com/press/releases/comcast-expand-evolve-wifi-largest-multi-gigabit-network.

Comcast's Management of our Xfinity network
Our Xfinity network is designed for peak usage ensuring it can meet residents' demands anytime of the year. Our technicians regularly evaluate local network infrastructure and make any necessary adjustments to maintain optimal performance and reliability expected by our customers. If a customer is not receiving the speeds they expect, they should contact us at 1-800-XFINITY or chat with us online to assess their issue and determine if they need to update any of their equipment.

Additionally, Comcast has large engineering and technical operations teams both locally and nationally that work around the clock to maintain service reliability and provide direct support to business and residential customers. Comcast proactively monitors and maintains its network 24/7 through its dedicated Network Operations Center (NOC). The NOC monitors network equipment, service health, and performance and responds to network events and service degradations, dispatches local field technicians, and informs customers of service issues, in many cases before the customer has noticed the problem.

Comcast's Internet Experience
Comcast's network and Internet experience are powering homes today and into the future.

- **Ultimate Capacity**: Xfinity customers connect more than 1 billion devices across the company's network annually. With the next-generation Xfinity gateways, we deliver the most advanced WiFi technology carrying three times more bandwidth to power streaming, gaming, videoconferencing, and more, simultaneously.
- **Fastest Internet**: More than a third of Xfinity Internet customers subscribe to gigabit speed products. Recently Comcast connected the first customers in the world to a DOCSIS 4.0 connection, delivering symmetrical gig speeds over existing connections in customers' homes with plans to continue to rollout these speeds across the country over the coming years.
- **Unprecedented Coverage**: The latest Xfinity Gateway provides a more reliable connection throughout the home. Customers can get wall-to-wall WiFi coverage with a powerful WiFi Boost Pod that extends coverage to hard-to-reach areas of the home.
- **Most Reliable Connection**: Comcast is scaling the nation's largest and most reliable network that passes 62 million homes and businesses and counting. The company launched Storm-Ready WiFi, a new device that comes powered with cellular and battery backup to help keep customers connected even when the power goes out.
- **Ultra-Low Latency**: The Xfinity network and the latest Xfinity Gateway are a powerful combination that deliver ultra-low latency for those moments when response times matter most like video games, a fast-growing category with Xfinity households averaging more than one gaming console per home.

In addition to our network capacity, resiliency and scalability, Comcast would like to highlight our Xfinity and Comcast Business services; our network expansion and broadband adoption efforts; and our investments in the customer experience.

Xfinity Services
Xfinity Internet, with speeds faster than a gigabit available, which includes access to a network of 22 million Xfinity WiFi hotspots in locations across the country; Xfinity Mobile, mobile service with 5G cellular and millions of WiFi hotspots available to Xfinity Internet customers; and Xfinity Home, a total home security and automation solution.

For more information on these services, please visit www.xfinity.com.

Recently, Comcast introduced NOW, which offers affordable, pre-paid Internet, mobile, and TV plans to any customer in our service area – including home internet plans starting at $30/month for 100 Mbps and NOW Mobile plans offering unlimited 5G and WiFi hotspot data for $25 per month.

Comcast Business Services
For local businesses, Comcast Business offers a suite of connectivity, communications, networking, cybersecurity, wireless and managed solutions to help organizations of different sizes prepare for what's next. Powered by the nation's largest Gig-speed broadband network, and backed by 24/7 customer support, Comcast Business is the nation's largest cable provider to small and mid-size businesses and one of the leading service providers to the Enterprise market. Comcast Business has been consistently recognized by industry analysts and associations as a leader and innovator, and one of the fastest growing providers of Ethernet services.

Comcast's Broadband Adoption Efforts – Comcast Internet Essentials
Comcast has long been committed to addressing the digital divide through Comcast Internet Essentials, the most comprehensive and successful low-income broadband adoption program in the nation. Since its introduction in 2011, Internet Essentials has connected a cumulative 620,000 low-income Massachusetts residents to Internet at home, some for the first time. The program provides qualifying households with broadband service at speeds of up to 50 Mbps/10 Mbps for $9.95 a month or speeds of up to 100Mbps/20Mbps for $29.95/month as well as free digital skills training in person and online. Customers have the option to purchase a low-cost Internet-ready computer.

Please contact me at dan_glanville@comcast.com if you would like to set up a meeting or if you have any questions related to the contents of this letter.

Sincerely,

Daniel M. Glanville
Vice President, Government & Regulatory Affairs

3303 Main Street Springfield, MA 01107 www.comcastcorporation.com