OFFICE OF THE NEW YORK STATE COMPTROLLER

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Broadband Availability, Access and Affordability in New York City

Highlights

- Fixed broadband connectivity exists via cable, fiberoptic (FTTP) and digital subscriber lines (DSL) in almost all of New York City.
- One in four City households had no broadband access via cable, FTTP or DSL internet subscription as of 2023.
- The share of households without fixed broadband citywide was lowest in 2021 as a result of availability and affordability measures taken to enable access.
- While still lower than pre-pandemic, shares of households without fixed broadband access citywide rose between 2021 and 2023.
- As of 2023, the Bronx had the highest share of households with income below the federal poverty level, with no broadband access and with access using cellular data plans only.
- Brooklyn had the second-highest share of households without broadband.
- Of 18 neighborhoods with the highest poverty levels citywide, 13 had some of the highest shares of households without broadband, and 10 had some of the highest using cellular data plans only.
- City efforts to support access is focused on connecting NYCHA residents, with a fiscal year (FY) 2025 budget of $39.4 million.
- The Bronx also experienced the highest weighted average monthly price for broadband service. Brooklyn faced the second highest average rate.

The shift to work and schooling from home during the height of the COVID-19 pandemic highlighted high-speed internet access as a household necessity countrywide, as well as across New York State. In New York City, the increase in demand occurred in the context of fixed broadband being unavailable to just 0.4 percent of City residents as of 2019, whereas 16 percent of City households reported having no access that same year.[1]

Using Federal Communications Commission (FCC), New York State Public Service Commission (PSC) and U.S. Census Bureau data, this report examines differences in, and issues related to, broadband availability, access and affordability across City neighborhoods. Discussion of broadband in this report generally refers to fixed broadband, and refers to cellular data, which may or may not be broadband, separately. As of 2023, FCC summary data showed broadband connections at more than 98 percent of the New York City's census blocks.

Affordability is one of the biggest challenges facing households, exacerbated by the fact that the price for broadband is higher in boroughs where median household incomes are generally lower than citywide. Recent policy and fiscal support for broadband in New York City households was focused mainly on ensuring New York City Housing Authority (NYCHA) residents have free broadband bundled with basic cable television. The decline in shares of households with broadband access since 2021 and recent expiration of the federal Affordable Connectivity Program suggests State and local support measures that can reach an even wider segment of lower-income residents citywide may still be needed.

In 2021, OSC noted that federal broadband funding provided an important opportunity to accelerate universal availability of the highest-speed connections in every part of New York State, enhance internet access for low-income households and improve affordability, particularly for low-income residents.[2] Broadband availability indicates a geographic area has been wired for that service. Access to broadband indicates that a household has a subscription for broadband services. Affordability may be a barrier to access when the cost to access broadband is prohibitive, particularly for higher speeds of service.

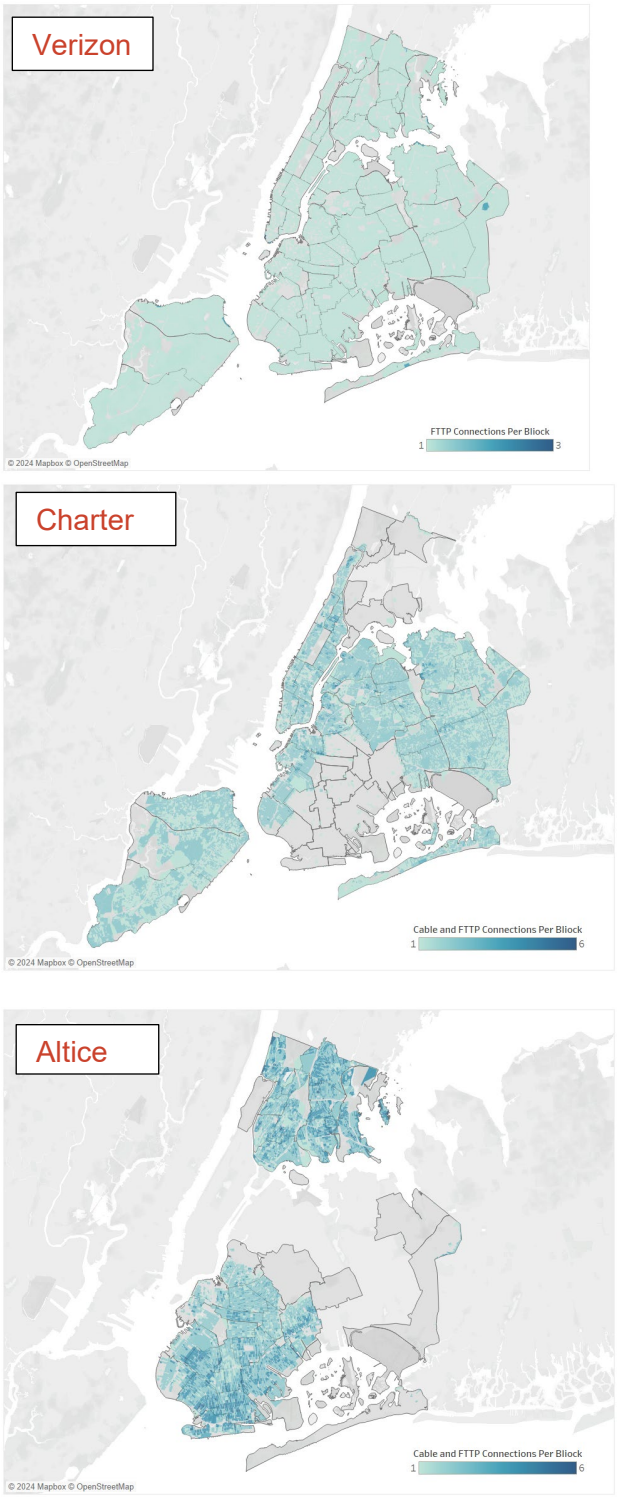
Availability

Availability is a measure that simply captures whether a household has fixed broadband service available via a local internet service provider (ISP).[3] Broadband internet at a speed of 25/3 megabits per second (Mbps) or higher was available to at least 98.1 percent of residents in the City's five boroughs as of December 2023.[4]

The rate of fixed broadband availability citywide was higher than for the nation (89.7 percent) or for rural New York State (87 percent), which suggests enhancements to local infrastructure are less of an impediment to internet access than in certain other parts of the State or country. Outside of the FCC standard for broadband availability, internet service is made available through expanded Wi-Fi options, such as LinkNYC, which are publicly available and do not have the same physical infrastructure needed to connect internet service to a residence or business, such as fiber, cable or copper (DSL).

In March of 2024, the FCC raised the standard for broadband internet download/upload speeds from 25/3 to 100/20 Mbps.[5] FCC data on broadband availability as of December 2023 showed a total of 11 ISPs providing broadband connections to various parts of the City via fiber-to-the-premises (FTTP), cable or DSL.[6] All FTTP and cable connections were reported to have maximum

FIGURE 1
Reported FTTP and Cable Broadband Connections in New York City, Largest Three Providers, 2023



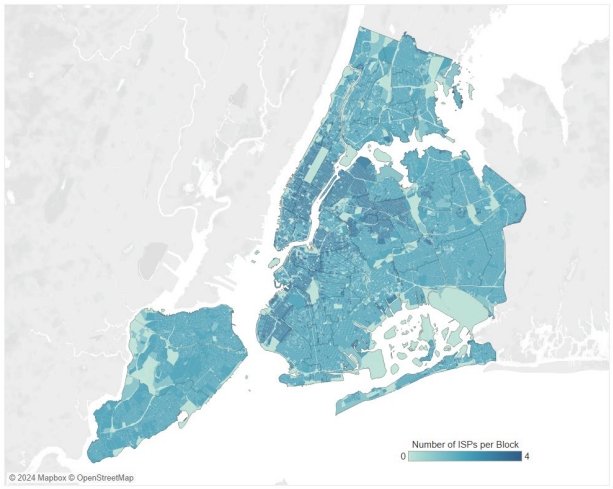
Sources: Federal Communications Commission Data; OSC analysis

advertised download speeds greater than the new standard of 100 Mbps.[7]

The 11 ISPs operating in the City include four incumbents with legacy infrastructure, providing connections ranging from 3,996 to 29,578 census blocks, out of the City's total 37,589 census blocks. The ISP with the greatest number of connections, Verizon, built on its existing telephone lines to establish FTTP broadband connections across the five boroughs (see Figure 1, top panel). The other three (Spectrum/Charter, Optimum/Altice, and Astound/RCN) each built in areas they serviced for cable television. The largest of the three cable ISPs reported mostly cable broadband connections (with just over 1,500 FTTP lines) mainly in Manhattan, Queens, the Brooklyn waterfront (west) and Staten Island (see Figure 1, middle panel), while the second-largest reported twice as many cable as FTTP connections, mostly in the Bronx and Brooklyn (see Figure 1, bottom panel). The smallest of the three operates mostly in Manhattan and Queens.

In terms of neighborhood coverage, the largest incumbent ISP reported connections in all 55 Census-defined neighborhoods of the City, while the other three incumbents provided service to between 34 and 51 neighborhoods. A mapping of providers at the block level suggests competition was greatest in Manhattan and parts of waterfront Brooklyn and Queens, where ISP service areas may overlap (see Figure 2). Overlapping coverage is notable, as greater provider competition is generally associated with greater price competition, improving the affordability of options.

FIGURE 2
Numbers of Reporting ISPs per Census Block, 2023



Sources: Federal Communications Commission data; OSC analysis

Trends in Access

While the FCC data showed ISP broadband connections were available to nearly all parts of the City as of 2023, census data showed 91.8 percent of households citywide had internet access that year, up from 82.5 percent in 2017.[8] The ACS measure of households with internet access includes those that use cellular data plans only as well as those with fixed broadband service. As of 2023, 74.9 percent of City households accessed the internet using fixed broadband while 14.8 percent accessed the internet using cellular data only.

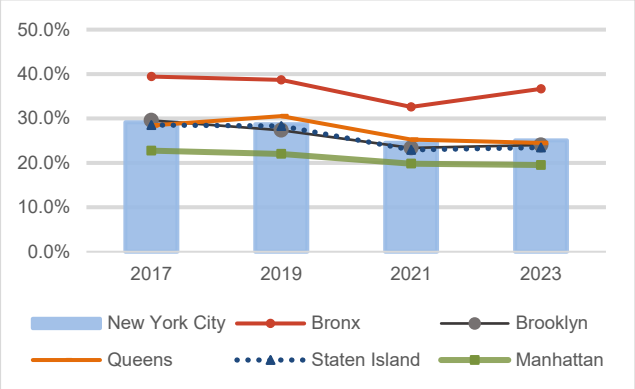
The share of households with broadband service in 2023 was higher than in 2017 (70.8 percent), yet lower than in 2021 (75.5 percent), when the pandemic spurred demand for high-speed internet to accommodate remote work and learning at home across the country. In response to elevated demand, government, private sector and non-governmental organizations worked to improve broadband availability where gaps existed, while state and federal level subsidies were made available to lower-income households to improve access and affordability.

The level of broadband access citywide in 2021 was the highest recorded since the introduction of this metric in the 2013 U.S. Census Bureau American Community Survey (ACS). As the pandemic subsided, it is possible some individuals resumed leveraging broadband via insitutional access (i.e. schools, libraries) or

returned to employment that is less reliant on internet access. In addition, funding for some subsidy programs, such as the federal Affordable Connectivity Program (ACP), were not renewed.[9] (For more details on federal funding for broadband, see OSC's 2023 broadband report)[10]. Businesses and community groups that provided new broadband connections especially in the South Bronx and Brooklyn during the height of the pandemic may also have seen a decline in the demand for their ISP services as the pandemic waned.

Ahead of the end of the ACP, the share of households without broadband internet access citywide rose slightly between 2021 and 2023 (see Figure 3). Citywide increases masked mixed results at the borough level, with the share of households without broadband in the Bronx increasing in both 2022 and 2023, while the other boroughs each had increases in just one of the two years. The total change in the share of households without broadband in the Bronx (which accounted for 16.3 percent of all City households in 2021) was a 4.1 percent increase, whereas changes in the shares of households without broadband in the other boroughs were each less than 1 percent.

FIGURE 3
Shares of Households Without Broadband Access Citywide, 2017 through 2023



Sources: U.S. Census Bureau American Community Survey 1-year files; OSC analysis

The impact of pandemic-era support for broadband access may be seen through participation in the now-expired ACP. As of January 2024, FCC data showed total ACP enrollment of almost one million (979,867) across the City. Of this total, 25 percent was for connections in the Bronx, representing 45.8 percent of households in that borough. Enrollments in the other boroughs ranged from 21.8 percent (Staten Island) to 26.2 percent (Queens) of respective total borough households.

Aside from anticipated shifts in federal support, it is possible that declines in broadband access may in part reflect reductions in the need for high-speed internet in homes as some residents returned to the office and school, where they may access the internet outside of the home.[11]

The share of households using fixed broadband and cellular plans increased between 2017 and 2021. Since 2021, the share using cellular data plans only continued to rise consistently through 2023, while the share using fixed broadband declined slightly from the 2021 level. This is notable since reliance on cellular data for internet access impacts lower-income households disproportionately.[12] While there are cost implications of these choices for households, mobile applications also may have less functionality compared to desktop and laptop browsers, meaning users may not have the same robust access to online portals.

Access and Household Incomes

Access data suggests a phenomenon that is seen nationwide: poorer households may choose to forgo internet access, use cellular service to access the internet or leverage connections of friends, family or neighbors or anchor institutions (such as libraries) to access the internet. The Bronx, where more than one in three households has no broadband access, has the highest share of households with income below the federal poverty level and the highest share accessing the internet via cellular data plans (see Figure 4).

Households without broadband access citywide in 2023 included a 5.7 percent share with no internet connection of any type, a significantly lower proportion than the 2019 share of 12.6 percent with no internet connection of any type (Figure 4). Notably, the Bronx and Brooklyn had the highest shares of households with no internet connection of any type, just over 7 percent, compared to 4 percent in Manhattan.

The disparities in fixed broadband internet access are more pronounced at the neighborhood level, with more than one-third of households in seven of the 10 Census-defined neighborhoods in the Bronx (mostly south and central) having no access. Three of Brooklyn's 18 neighborhoods (including Coney Island/Brighton Beach and Ocean Hill/Brownsville) had more than one-third of households without fixed broadband access. One neighborhood in Queens (Jamaica/St. Albans/Hollis) and one in Manhattan (Harlem) also saw households without fixed broadband access exceeding one-third of all households. In Staten Island's North Shore, 28 percent of households have no broadband internet, the highest share among the borough's three neighborhoods. All but one of these neighborhoods were in the bottom half of poverty measures in the same year and each had a share of households with income below the federal

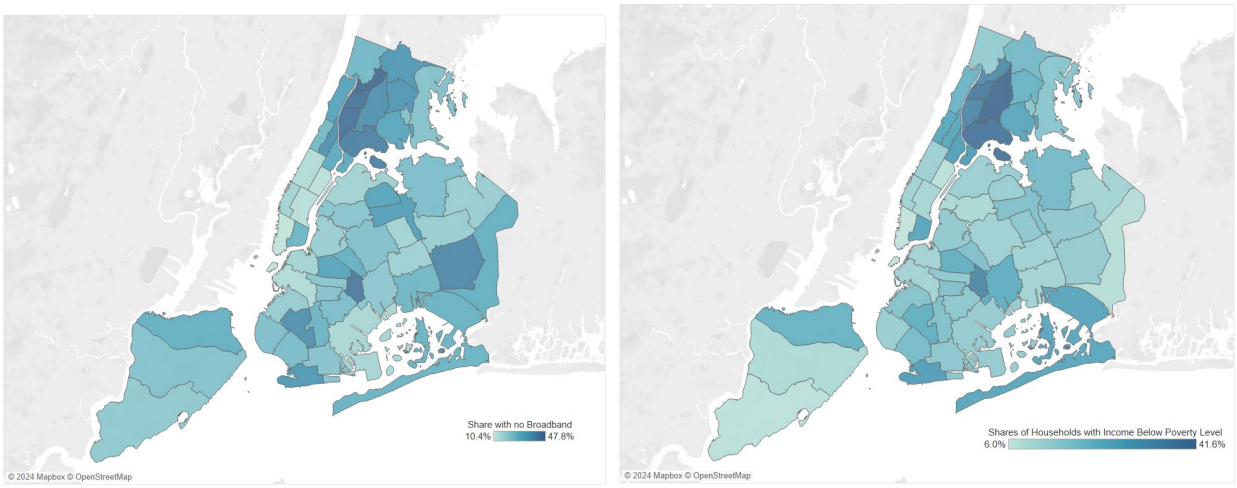
FIGURE 4
Household Poverty and Internet Access Status, Percentages

Borough	2023				2019			
	Income Below Poverty Level	Broad-band	Cellular Data Only	No Internet	Income Below Poverty Level	Broad-band	Cellular Data Only	No Internet
Bronx	28.9%	63.3%	20.3%	7.1%	27.3%	61.3%	18.5%	16.2%
Brooklyn	18.5%	76.0%	12.6%	7.2%	17.3%	72.7%	10.1%	13.8%
Manhattan	15.8%	80.5%	12.4%	4.0%	14.5%	78.0%	9.4%	9.3%
Queens	14.5%	75.5%	16.8%	4.3%	11.6%	69.5%	15.6%	11.6%
Staten Island	13.3%	76.5%	12.0%	6.3%	8.6%	71.7%	9.8%	13.3%
New York City	**18.2%**	**74.9%**	**14.8%**	**5.7%**	**16.4%**	**71.3%**	**12.6%**	**12.6%**

Sources: U.S. Census Bureau American Community Survey 1-year files; OSC analysis

FIGURE 5

Share of Households Without Broadband Access (Left) and With Incomes Below the Federal Poverty Level (Right) by Neighborhood, 2023



Sources: U.S. Census Bureau American Community Survey 1-year files; OSC analysis

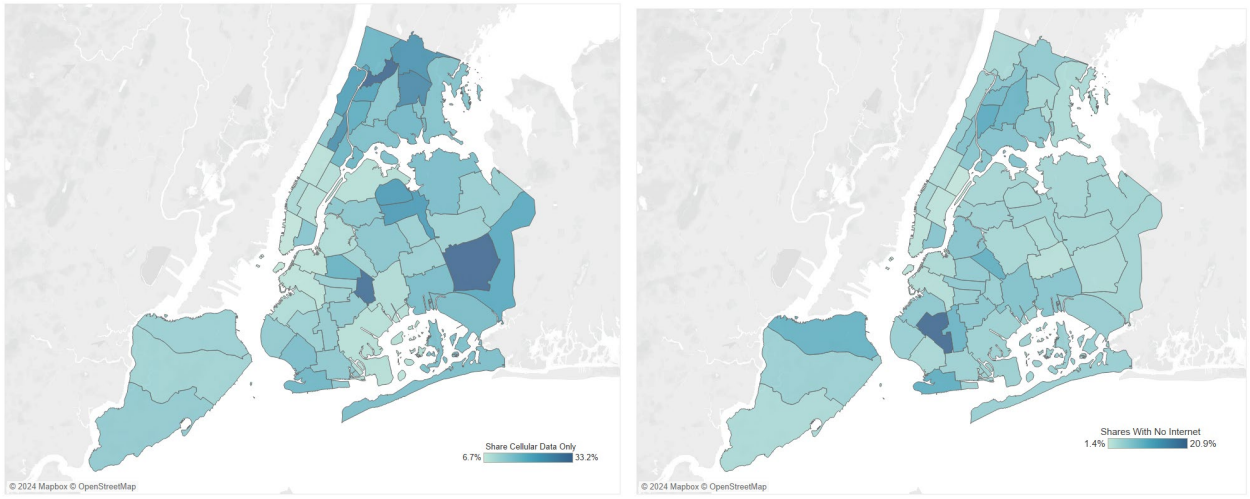
poverty line that was greater than the citywide rate.

At the borough level, the shares of neighborhood households without broadband access mostly aligned with areas where the share of households with income below the federal poverty level was highest (see Figure 5). There is also some overlap between poverty levels and the neighborhoods where higher shares of households access the internet via cellular data plans only (see Figure 6, left panel).

In some instances, the data also shows higher shares of households with no internet in areas where a high proportion of the population may opt to forgo internet use for religious reasons, such

FIGURE 6

Share of Households With Internet Via Cellular Data Only (Left) and Without Internet (Right) by Neighborhood, 2023



Sources: U.S. Census Bureau American Community Survey 1-year files; OSC analysis

FIGURE 7
Shares of Households Without Broadband Access, Median Household Income and Broadband Price by Borough and Citywide

Borough	2023 Household Shares		2024	2024 Average Price as Share of 2023 Median Income	2023 Estimated Average Yearly Electricity Cost	2024 Electricity Cost as Share of 2023 Median Household Income
	With No Broad-band Access	With Income Below Poverty Level	Average Price for 100/20 Broad-band			
Bronx	36.7%	28.9%	79.83	2.0%	180.34	4.6%
Brooklyn	24.0%	18.5%	69.76	1.1%	160.91	2.5%
Manhattan	24.5%	15.8%	56.00	0.7%	156.27	1.9%
Queens	23.5%	14.5%	62.89	0.9%	172.46	2.5%
Staten Island	19.5%	13.3%	66.68	0.8%	195.31	2.5%
New York City	**25.1%**	**18.2%**			**167.70**	**2.6%**

Sources: U.S. Census Bureau American Community Survey 1-year files; OSC analysis

as Borough Park/Kensington (see Figure 6, right panel).

Affordability

As is clear from earlier sections, while availability is a prerequisite for broadband access, affordability is one of the key determinants of whether households purchase high-speed internet service. In addition to the alignment of shares of households with no broadband access and those with incomes below the federal poverty level, the boroughs face differences in broadband prices and other measures of cost and affordabiliy, according to data from the PSC (see Figure 7).

The affordability challenges in some parts of the City result in part from the price for internet service at download speeds closest to the new standard of 100 Mbps, which is, on average, the highest in the Bronx and lowest in Manhattan. These are the boroughs with the lowest and highest shares of households with income below the povety line, respectively. As shares of median household income, the price for broadband internet at speeds of 100/20 Mbps or more was highest in the Bronx and Brooklyn.[13]

As a comparison point against other utilities, the average price for high-speed internet as a share of median household income is over 40 percent of the average electricity cost for households in the Bronx and Brooklyn. This rate suggests a pattern of higher prices for broadband service in boroughs with higher levels of poverty may be compounding affordability issues, requiring tradeoffs for households, ultimately creating barriers to access where there is greater need.

The affordability challenge is even more evident at the neighborhood level. Out of 18 City neighborhoods (one-third of the total 55) with the highest shares of households with income below the federal poverty level, 13 neighborhoods also have some of the highest shares without broadband and 10 neighborhoods have some of the highest shares that access the internet using cellular data plans only. Of these neighborhoods, seven are located in the Bronx, four in Brooklyn and two in Manhattan (see Figure 8).

FIGURE 8

Neighborhoods Citywide With Highest Shares of Households Without Broadband and With Cellular Data Plan Among the One-Third With Highest Poverty, 2023

Borough	PUMA	Neighborhood	Shares of Households Below Federal Poverty Level	With Cellular Data Only	Without Broad-band
Bronx	4263	Morrisania, Tremont, Belmont, & West Farms	41.6%	14.4%	37.2%
Bronx	4221	Melrose, Mott Haven, Longwood, & Hunts Point	39.6%	15.7%	41.7%
Bronx	4205	Morris Heights & Mount Hope	37.6%	21.6%	45.4%
Bronx	4204	Highbridge & Concourse	34.2%	19.4%	45.6%
Brooklyn	4316	Ocean Hill & Brownsville	34.2%	31.9%	44.0%
Bronx	4207	Fordham, Bedford Park, & Norwood	32.9%	33.2%	47.8%
Brooklyn	4313	Coney Island & Brighton Beach	28.1%	17.7%	35.0%
Manhattan	4111	East Harlem	27.9%	17.7%	29.8%
Bronx	4209	Soundview & Parkchester	25.9%	17.3%	30.9%
Manhattan	4110	Harlem	25.7%	25.4%	36.8%
Brooklyn	4312	Borough Park & Kensington	23.4%	11.9%	37.7%
Brooklyn	4303	Bedford-Stuyvesant	23.3%	18.6%	31.5%
Bronx	4211	Pelham Parkway & Morris Park	22.2%	26.9%	35.6%

Sources: U.S. Census Bureau American Community Survey 1-year files; OSC analysis

Policy and Fiscal Resources

Federal funding for the State from the Infrastructure Investment and Jobs Act are being committed through the State's ConnectALL office. Some of this funding is mainly expected to enhance availability of internet, such as the Broadband Equity, Access and Deployment program, where New York City has generally been a leader statewide. However, the State is still accepting applications for grant funding for access and affordability programs.

A proportion of families may also qualify for the federal Lifeline program, which provides a subsidy of up to $9.25 per month off the cost of a telephone, internet or bundled service, although this amount remains smaller than the $30-per-month subsidy that was available to eligible subscribers under the ACP.[14]

Given the unique nature of the City's broadband needs compared to the rest of the State, new support programs need to be carefully targeted to materially impact the access rates citywide. Broadband deployment within the City requires navigating the dense urban infrastructure to meet the needs of City residents, who account for more than 40 percent of the State's population. These challenges stand in contrast to much of the rest of the State, where gaps in deployment result in part from the dispersion of communities, villages and towns across large expanses of land.

In addition to community-led efforts to increase availability in areas where residents were most challenged (such as the South Bronx), efforts to support broadband internet access during the height of the pandemic included a program to connect up to 30,000 households at 13 NYCHA premises, facilitated by agreement between the City and five ISPs.[15] This effort was followed in September 2022 by a program providing a free bundle of high-speed internet (up to 300 Mbps download speed) and basic cable television

services (along with required equipment) to all NYCHA residents, as well as free internet via Wi-Fi in agreed common spaces within each development.[16]

The current program for NYCHA connections is facilitated by agreement between the City and two ISPs, and targets 202 developments citywide. Data shows 80 percent of households at 220 NYCHA developments were connected as of November 2024.[17] Connections are funded by the City, and program expenses for fiscal years 2023 and 2024 totaled $17.9 million and $36.4 million, respectively. As of October 2024, the City had obligated payments of $22.7 million (of a budgeted $39.4 million) for fiscal year 2025. Currently, there are no funds budgeted under the program for FY 2026 and beyond.

In pursuit of broadband access equity, the State also passed the Affordable Broadband Act in its 2021 budget, requiring ISPs to provide a broadband service to qualifying low-income households for $15 to $20 per month, taxes and fees included.[18] In response to action brought by an ISP consortium, the Court of Appeals upheld the Act in an April 2024 ruling.

In August 2024, the State entered into a settlement agreement with one of the largest ISPs to reestablish a program offering broadband at 30 Mbps for no more than $15 per month, for a period of four years. For years two through four, the ISP can raise the price by no more than the rate of inflation.[19]

ConnectALL also provides a list of these affordable options provided by the ISPs by county. Including the large ISP mentioned above, five of the 11 broadband providers for which FCC data was analyzed for this report offer discounted broadband service at prices ranging from $20 to $35 per month for download speeds ranging from 30 Mbps to 50 Mbps, or via FTTP to qualifying subscribers.

Looking Ahead

More than availability, the challenge for residents to access the internet in New York City appears to be driven by a lack of affordable options for some. To reduce these inequities, the State and City have taken steps to expand free options and provide low-cost options. Still, inequities in access, particularly to high-speed broadband internet persist, with less options and higher relative cost for broadband connections prevailing in areas where median incomes are lower and poverty rates are higher. Competition among available providers may be another means of encouraging a slowdown in price growth as well. While many more can now access affordable internet than prior to the pandemic, public officials must continue to consider these rates in the pursuit of overcoming the remaining hurdles to closing the digital divide in New York City.

Endnotes

[1] Office of the State Comptroller (OSC), " *Availability, Access and Affordability, Understanding Broadband Challenges in New York State*, September 2021, https://www.osc.ny.gov/reports/availability-access-and-affordability-understanding-broadband-challenges-new-york-state.

[2] Ibid.

[3] Ibid., p.2.

[4] Federal Communications Commission (FCC), FCC National Broadband Map (Fixed Broadband Summary by Geography Type for New York at the Census Place link), data downloaded October 2024. https://broadbandmap.fcc.gov/data-download. U.S. Census Bureau guidance cites census places as "incorporated or census designated places", with New York being the City inclusive of its five boroughs. https://www2.census.gov/geo/pdfs/reference/guidestloc/ny_gslcg.pdf

[5] FCC, "FCC Increases Broadband Speed Benchmark," press release, March 14, 2024, https://docs.fcc.gov/public/attachments/DOC-401205A1.pdf.

[6] The data referenced here and used for assessing availability in this report is that reported to the FCC by ISPs, as downloaded at https://broadbandmap.fcc.gov/data-download. Unlike with the 2022 summary data reported, the FCC has not yet verified this data. Within the dataset broadband is coded as FTTH, which is fiber-to-the-home and is interchangeable with FTTP, fiber-to-the-premises (used often in the narrative of the FCC reports).

[7] DSL (copper) connections at maximum reported download speeds of 100 Mbps or more were reported for less than 100 census blocks, and mainly in just two boroughs of the City. These figures are based on the unverified (raw) data.

[8] The City, borough and neighborhood household level data in this report are from the U.S. Census Bureau American Community Survey 1-year files, 2013, 2017 through 2023. Neighborhoods in this report are Public Use Microdata Areas (PUMAs), defined by the Census Bureau to accommodate data collection and analysis below county level. There are 55 PUMAs for New York City which generally overlap but are not fully aligned with the 59 Community Districts (four NYC PUMAs each approximate two districts). As of 2022, the American Community Survey PUMAs are based on 2020 Census (PUMA 2020), while PUMAs for 2012 to 2021 are based on the 2010 Census. Consequently, no comparisons over time are made for the neighborhoods in this report.

[9] FCC, "Affordable Connectivity Program Fact Sheet: ACP Has Ended for Now," https://www.fcc.gov/sites/default/files/ACP-Fact-Sheet-Post-ACP-Ending.pdf.

[10] OSC, Economic Policy Insights, *New Federal Dollars for Broadband Deployment,* July 2023, https://www.osc.ny.gov/files/reports/pdf/new-federal-dollars-for-broadband-deployment.pdf.

[11] James Barron, "Is R.T.O. Finally a Reality?", *The New York Times*, October 2, 2024. https://www.nytimes.com/2024/10/02/nyregion/rto-offices-manhattan.html.

[12] Julie Greco, "Many Low-Income NYers Rely on Costly Cell Plans for Internet Access," *Cornell Chronicle*, June 6, 2024, Cornell University, Many low-income NYers rely on costly cell plans for internet access | Cornell Chronicle.

[13] This analysis uses the weighted average price for broadband at 100 Mbps download speed for each county included in the New York State Public Service Commission's 2024 Report of the Availability, Reliability and Cost of High Speed Broadband Service in New York State, https://mapmybroadband.dps.ny.gov/assets/reports/2024-NYS-Broadband-Report.pdf.

[14] See Endnote 7.

[15] New York City Office of the Mayor. "Recovery for All of Us: New York City Announces Free and Low Cost Broadband Access for 13 NYCHA Developments, Servicing Up To 30,000 Residents", press release, May 6, 2021, https://www.nyc.gov/office-of-the-mayor/news/338-21/recovery-all-us-new-york-city-free-low-cost-broadband-access-13-nycha

[16] New York City Big Apple Connect, https://www.nyc.gov/assets/bigappleconnect/, New York City Housing Authority, "Big Apple Connect Expanded to Provide Free Internet/TV to 300,000+ Residents at 202 NYCHA Developments", *The NYCHA Journal,* March 23, 2023. https://nychajournal.nyc/?s=Big+Apple+Connect+Expanded+to+Provide+Free+Internet%2FTV+to+300%2C000%2B+Residents+at+202+NYCHA+developments.

[17] The City of New York, Office of Technology and Innovation, Big Apple Connect (BAC) Enrollment Statistics, downloaded November 25, 2024. https://data.cityofnewyork.us/City-Government/Big-Apple-Connect-BAC-Enrollment-Statistics/t4kb-prwp

[18] Joe Supan, "After the End of the ACP, New York Requires Low Income Plans From Broadband Providers," CNET, August 24, 2024. https://www.cnet.com/home/internet/after-the-end-of-acp-new-york-requires-low-income-plans-from-internet-providers/

[19] New York State Governor, "Governor Hochul Announces Settlement to Provide Discounted Broadband to Low-Income New Yorkers," press release, August 15, 2024, https://www.governor.ny.gov/news/governor-hochul-announces-settlement-provide-discounted-broadband-low-income-new-yorkers

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