# **CALL FOR INNOVATIONS:** BACKGROUND INFORMATION

In today's economy, Internet access is not a luxury; it's an essential public utility that New Yorkers depend on to make a living. Moreover, without broadband[1], families and businesses are deprived of the ability to fully participate in many aspects of contemporary life, including lack of access to information and health resources, commercial services, and educational opportunities.

The lack of affordable Internet services is the number one cited barrier to broadband adoption in New York City. Although broadband is almost universally available across the five boroughs, according to analysis by the Center for Economic Opportunity, 22% of New York City households do not have Internet service at home, with disparities amongst households above and below the poverty line. 36% of households below the poverty line do not have Internet access at home, compared to 18% of households living above the poverty line.[2] Recent data on smartphone use released last week by Pew Research Center similarly underscores the impact of price and affordability on Internet access. One-in-five American adults rely on smartphones as their primary source for Internet access, according to Pew, and half of all people with no or limited home internet have had to cancel or suspend their phone service because of financial constraints.[3]

Sluggish Internet speeds can also create barriers to local economic development and weaken New York City's global competitiveness. Despite recent investments by Verizon to build a citywide fiber-optic network, many New Yorkers cannot access or afford this high-speed service. And while businesses located in Manhattan's commercial corridors generally enjoy high-speed connections, start-up enterprises that are increasingly settling in previously underserved outer borough neighborhoods may struggle to secure affordable business connections or may be unable to build redundancy into their systems.

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## I. State of Internet Service in NYC

New Yorkers currently pay significantly higher prices for slower Internet service in comparison to other international cities around the world.[4] On the lower-cost end of broadband service, subscribers in New York City pay nearly $1,000 per year -- more than double the price for standard broadband services in many international cities. On the high-end of broadband service, customers in cities like Seoul and Tokyo can receive Internet access at speeds of 1,000 Mbps for under $35/month.[5] By comparison, an Internet connection with less than a third of the speed, 300 Mbps, will cost Time Warner Cable customers in New York City at

[1] According to the Federal Communications Commission, broadband refers to high-speed Internet access with minimum a download speed of 25Mbps, and a minimum upload speed of 3Mbps

[2] Analysis based on data from the U.S. Census Bureau's American Community Survey.

[3] Aaron Smith, "U.S. Smartphone Use in 2015," Pew Research Center, April 1, 2015. Available online at http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/

[4] According to Ookla Net Index, New York City residents reported a rolling mean download speed of 40.3 Mbps and mean upload speed of 11.6 Mbps from July-August 2014. The median cost based on user surveys from August 2013 to August 2014 was $3.35 Mbps. http://www.netindex.com/value/4,115/New-York,-US/

[5] http://www.numbeo.com/cost-of-living/prices_by_city.jsp?displayCurrency=EUR&itemId=33

about twice that price.[6] A 500 Mbps service through Verizon FiOS – if available – is priced at roughly $300/month in New York City.[7]

Internet service providers (ISPs) also have the lowest customer satisfaction rating of any industry, according to the American Customer Satisfaction Index.[8] In New York City, 311 receives thousands of complaints each year regarding the city's cable and Internet service providers. Common complaints include overbilling, service outages, poor customer service, and deceptive or misleading communication practices.[9] Simply put, we can do better.

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## II. Landscape of Current Internet Service Providers

The New York City Department of Information Technology and Telecommunications (DOITT) is responsible for granting and administering all telecommunications franchises for New York City. Telecommunications franchises allow for the installation and maintenance of wire, cable, optical fiber, conduit, antennae, and other structures on, over, and under the City's streets to facilitate the transmission of video, voice, and data.

Through its franchise authority, New York City sanctions the operations of a diverse mix of Internet service providers. The City's three cable service franchises – Time Warner Cable, Cablevision, and Verizon – cover the largest territory and most residential households. Time Warner Cable, which has announced plans to merge with Comcast, provides service in Staten Island, Manhattan, Queens, and part of Brooklyn. Cablevision provides service in the Bronx and part of Brooklyn. In 2008, Verizon was granted a citywide franchise and now operates in parts of all five boroughs. The City also administers an open video system contract with RCN, which operates in some buildings in Manhattan, Queens, and Brooklyn. In fiscal year 2013, Time Warner Cable, Cablevision, Verizon, and RCN reported more than $2.6 billion in revenues for video services through their franchise agreements with the City of New York.[10]

In addition to cable TV franchises, more than 20 other companies hold franchises from the City that authorize the installation of non-cable-TV-carrying fiber optic broadband communications lines in the City's streets. Because these franchises do not authorize the provision of cable TV service, the entities that hold these franchises serve primarily commercial businesses, where the cable television entertainment element of broadband service is not a major driver of demand. In addition, most of these companies tend to focus their infrastructure investments on the main business districts where the largest concentrations of their biggest potential customers are located.

[6] According to the company, this 300 Mbps service was expected to be available to all Time Warner subscribers in New York City by the end of 2014.

[7] Hibah Hussain, Danielle Kehl, Patrick Lucey, and Nick Russo, "The Cost of Connectivity 2013." New America Foundation, Open Technology Institute, October 2013. Page 5. http://newamerica.net/sites/newamerica.net/files/policydocs/The_Cost_of_Connectivity_2013_Data_Release.pdf

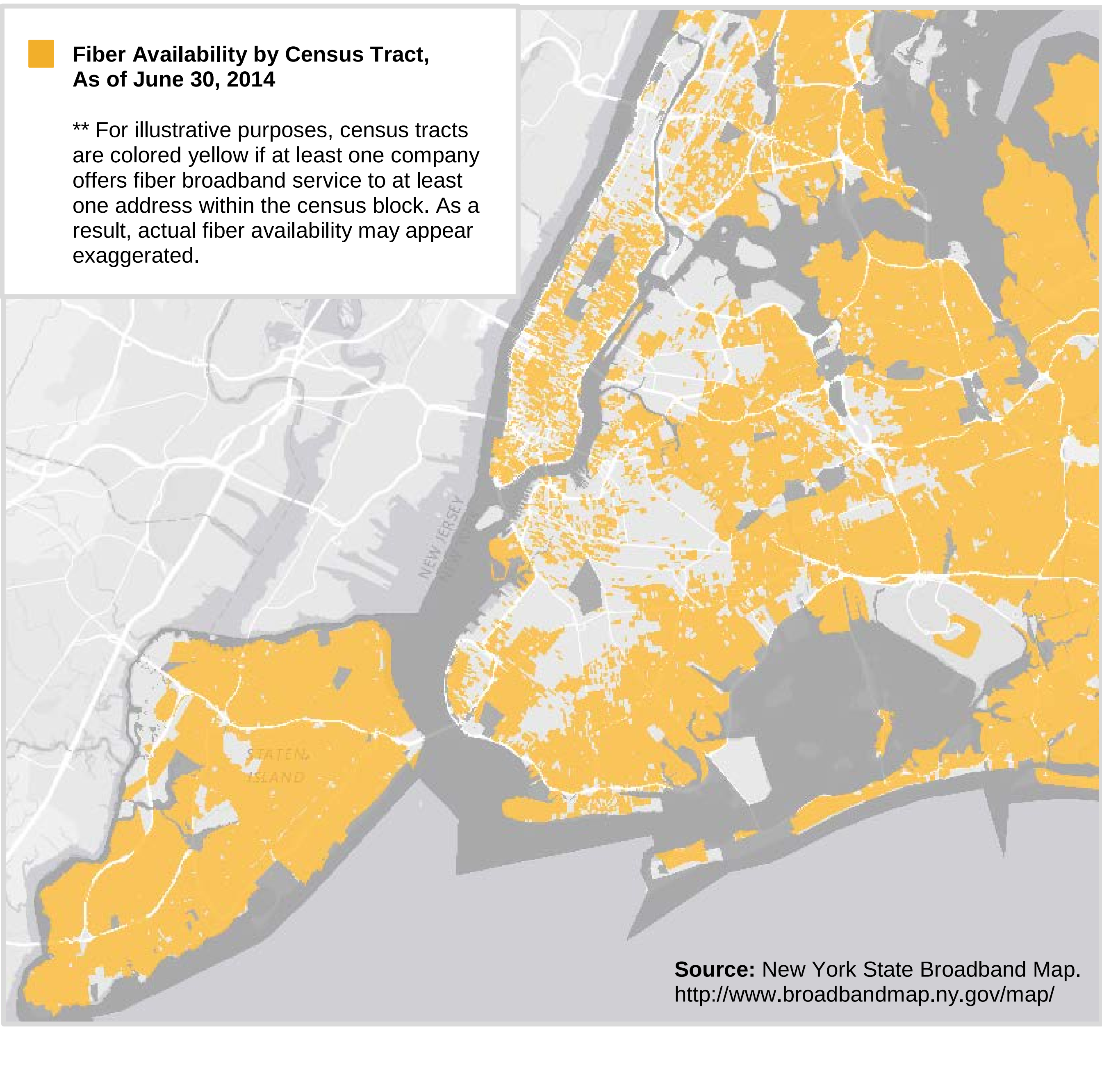
[8] University of Michigan, American Consumer Satisfaction Index, 2014. http://www.theacsi.org/index.php?option=com_content&view=article&id=148&Itemid=213

[9] NYC Stat, 311 Reporting. http://www.nyc.gov/html/ops/ll47/html/ll47_reports/ll47_reports.shtml

[10] New York City Department of Information Technology and Telecommunications. http://www.nyc.gov/html/doitt/html/business/franchise.shtml

## III. Challenges Reaching Underserved Communities

New York City's current franchises do not adequately facilitate and incentivize the entry of new Internet service providers into underserved residential communities. To date, the presence of two residential broadband infrastructure providers (for example: Time Warner Cable and Verizon FiOS in Manhattan, Brooklyn, Staten Island, and Queens; or Cablevision and Verizon FiOS in the Bronx and Brooklyn) has not resulted in price competition sufficient to reduce the cost of broadband service to a level that attracts a large segment of economically disadvantaged families and other residents. In addition, most of the smaller broadband providers in the city have been hesitant to expand services to communities in the outer boroughs with a relatively small commercial base. As a result, economic development in these areas may be stunted by a lack of access to commercial-grade broadband services at rates that small businesses and startups can afford.




**Fiber Availability by Census Tract, As of June 30, 2014**

** For illustrative purposes, census tracts are colored yellow if at least one company offers fiber broadband service to at least one address within the census block. As a result, actual fiber availability may appear exaggerated.

**Source:** New York State Broadband Map. http://www.broadbandmap.ny.gov/map/

## IV. Summary of Infrastructure Assets

The City of New York offers a range of infrastructure options for laying fiber-optic cables and is seeking input on how to better to leverage these assets. We also recognize that new opportunities may exist to better utilize fixed wireless and other point-to-point technologies. In addition, the City is also open to new ideas for repurposing existing structures. Much of the LinkNYC citywide Wi-Fi network, for example, will be built on top of the City's existing payphone infrastructure. We expect other opportunities like this may exist and are seeking partners who are interested in exploring these options.

The items below offer a partial list of City infrastructure, which can vary significantly by neighborhood and location. Items on this list should be considered in addition to private sector resources and physical locations in communities such as parks, libraries, schools and government buildings.

**Utility poles, street lights and traffic signals.** Utility poles are a primary way to deploy cable in parts of the outer boroughs. Verizon owns 225,058 utility poles in NYC,[11] charging users \$8.97/pole/year.[12] Con Ed owns 105,579 poles, charging users \$16.15/pole/year.[13] NYC DOT uses these poles to operate over 250,000 street lights throughout New York City. In addition, there are more than 12,000 intersections with traffic signals citywide.

**Under street conduits.** The City of New York allows for construction of conduits in the streets and avenues of all five boroughs, except that conduit used exclusively for mainline telecommunications purposes in Manhattan and the Bronx can only be constructed and owned by Empire City Subway. Through its street permitting process, the City can establish standards for street-based construction and maintenance to assure the City's streets are adequately protected.

**Empire City Subway conduits.** Empire City Subway (ECS), a subsidiary of Verizon, owns approximately 213,000 conduits and 66 million feet of conduit in Manhattan and the Bronx.[14] Annual rental rates, regulated by the City, are \$0.6909/ft. for a 2" or narrower conduit.[15] ECS's network was built for telephone lines after the Great Blizzard of 1888 and has suffered from over congestion and collapsed conduits which can require significant detours to reach a

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[11] Pollak, Michael. "Questions on Telephone Poles and Subway Globes." New York Times. August 8, 2014. http://www.nytimes.com/2014/08/10/nyregion/questions-on-telephone-poles-and-subway-globes.html

[12] Verizon Pole Attachment Agreement: www22.verizon.com/wholesale/attachments/pcl/PCL_NY_Pole_Agmt_1.pdf

[13] ConEd Pole Attachment Agreement: www.coned.com/team/docs/PoleAttachAgreeV10.pdf

[14] City of New York Comptroller Audit of Empire City Subway 2010: www.comptroller.nyc.gov/bureaus/audit/PDF_FILES_2010/FP08_103A.pdf

[15] Empire City Subway Rates and Billing: www.empirecitysubway.com/ratesbill.html

destination.[16] By contract with the City of New York, ECS is required to build, equip, maintain, operate, and keep in good repair, at its own expense, subways, conduits, and ducts as ordered by the City of New York.

**Micro-trenching.** Designed to reduce costs for the "last-mile," micro-trenching allows franchisees and revocable consent holders to install small 9" to 12" deep sawed trench from the manhole to the end-user. Micro-trenching requires the provision of excess capacity which can be leased by franchisees and revocable consent holders who wish to run fiber through the streets at the exact locations where micro-trenched conduit has already been installed, for 75 cents per foot per year. Micro-trenching is permitted in all five boroughs for fiber-optic service to properties within some, mostly lower-density zoning districts.[17]

**Con Edison conduit.** Con Edison electrical conduit exists in all five boroughs and Con Edison has contractual obligations to make its conduit available for use by telecommunications franchisees. Rental rates for innerduct range from $4.14 to $4.47 per foot.

**Elevated train tracks and highways.** New York City has more than 700 miles of elevated train tracks and highways which crisscross the five boroughs. Elevated subways are the property of the Metropolitan Transportation Authority (MTA). Most highway structures are owned by the State Department of Transportation (DOT), even though they are maintained by the City.

**Street furniture.** NYC DOT administers a citywide franchise with Cemusa for the construction and maintenance of street furniture. This includes roughly 3,500 bus shelters, as well as newsstands, automatic public toilets, and bicycle parking structures. The NYC Department of Sanitation also places, maintains and coordinates the placement of garbage and recycling receptacles on City sidewalks in business improvement districts and on street corners along standard collection routes.

**Payphones and emergency call boxes.** In December 2014, the City of New York approved a franchise with a New York City-based consortium called CityBridge to operate and replace the City's public payphones with a five borough communications network called LinkNYC. The network will include up to 10,000 Links providing free high-speed Internet service, free domestic phone calls, and other features. CityBridge is partnering with TransitWireless to build

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[16] Matthew Flamm. "Crossed Wires: Untangling NYC's broadband underground." Crain's Business. April 7, 2014. http://www.crainsnewyork.com/article/20140407/TECHNOLOGY/304069996/chaotic-underground-conduit-network-needs-untangling#

[17] Micro-trenching districts as defined pursuant to the New York City Zoning Resolution: R1, R2, R2A, R2X, R3, R3-1, R3-2, R3-A, R3-X, R4, R4-1, R4A, R4B, R5, R5-A, R5-B, R5-D, C1-1, C1-2, C1-4, C1-5, C2-1, C2-2, C2-3, C2-4, C2-5, C-3, C4 (but only to premises with a commercial floor area ratio of 2.0 or less), M-1 (but only to premises with a manufacturing floor area ratio of 2.0 or less), M-2, M-3, and special purpose districts (but only to premises with a floor area ratio of 2.0 or less).

out the five borough fiber network; construction is expected to begin in fall 2015. New York City also operates more than 14,000 emergency call boxes on sidewalks across the five boroughs. PURVIS currently builds and maintains these call boxes for the FDNY.

**NYC Wireless Network (NYCWiN).** NYCWiN is a government-dedicated broadband wireless infrastructure created to support public safety and other essential City operations. The network provides agencies real-time access to high-speed voice, video and data communications throughout the five boroughs. On March 3, 2015, the Department of Information Technology and Telecommunications released a Request for Expression of Interest and Information (RFEI) to solicit information regarding viable operational models for NYCWiN, and to better understand the different practical operational models available. DOITT is also seeking recommendations regarding ways to leverage the existing NYCWiN infrastructure (379 sites with nearly 100 percent coverage of the City's 305 square miles). The RFEI is available for download at http://www.nyc.gov/html/doitt/html/miscs/rfei-nycwin.shtml

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## V. Sample Neighborhood Profiles

The City of New York is especially interested in responses that focus on underserved and low-income communities where Internet adoption rates are typically lower. For illustrative purposes and to help spark innovative ideas and proposals, three generic profiles for sample neighborhoods are presented below.

**Neighborhood 1:**
**Outer-borough, low to moderate-density residential**

This neighborhood includes primarily lower-density building stock, with a mix of small business commercial activity and single-family or multi-family homes.

Current Service: Time Warner Cable provides its hybrid/fiber coax infrastructure to the residential blocks in the neighborhood. Verizon's FiOS fiber-to-the-premises service is available to some buildings and copper-based services are offered to buildings not yet served by FiOS, including commercial blocks. Average download speed: TWC, 31.61 Mbps; VZ, 45.74 Mbps.[18]

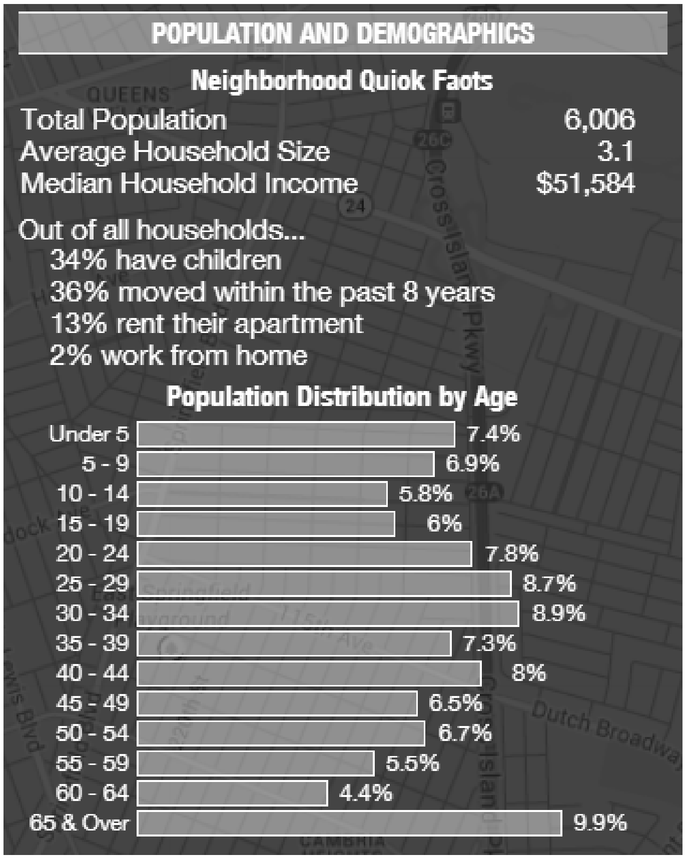
Infrastructure: Available infrastructure includes utility poles, some underground infrastructure, above ground train lines and highways, and micro-trenching.

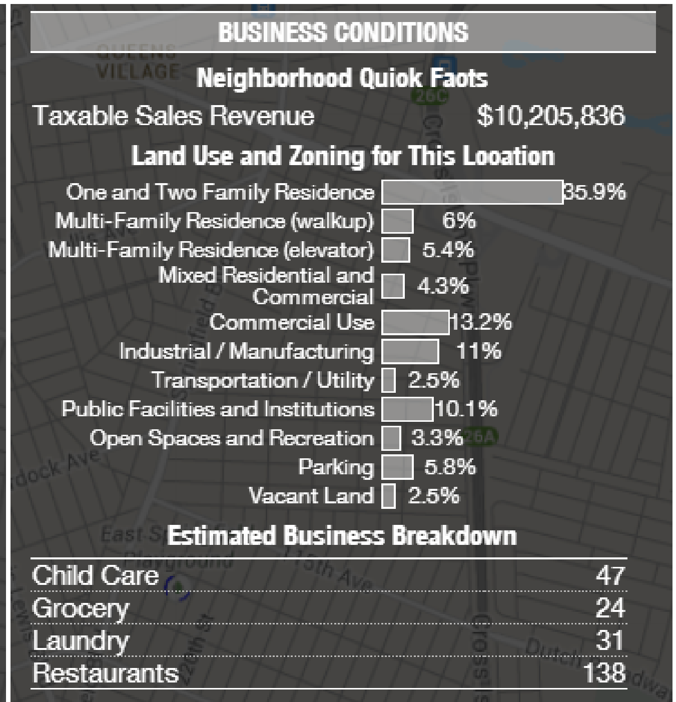
Unique Opportunities: High costs of real estate in Manhattan and downtown Brooklyn have made these neighborhoods increasingly appealing for both new businesses and prospective

[18] Ookla Net Index. http://www.netindex.com/

homeowners. Vibrant commercial corridors tend to be concentrated near train lines.

Sample Neighborhood Demographics:




**<u>Neighborhood 2</u>:**

**Upper Manhattan or the Bronx, Moderate to high-density residential**

This neighborhood is largely residential, with a mix of low- and high-rise buildings, with a relatively high proportion of its community living in New York City Housing Authority (NYCHA) housing and/or receiving public assistance.

Current Service: The neighborhood is served by one of the city's two long-standing cable companies (Time Warner Cable or Cablevision) and Verizon's FiOS service is available to some, though not yet all households in the neighborhood. Average download speed: TWC, 44.44 Mbps; VZ, 47.55 Mbps.[19]

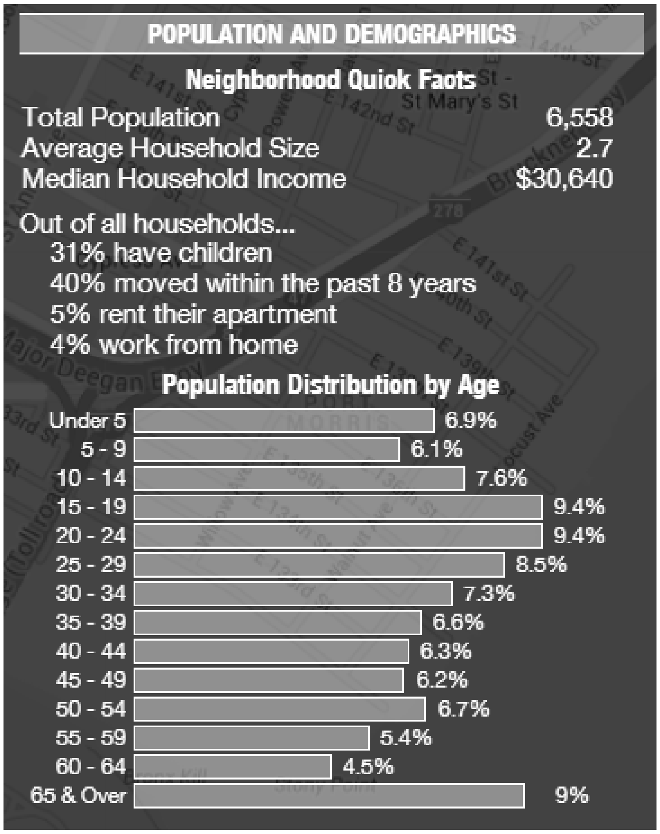
Infrastructure: Available infrastructure includes Empire City Subway ("ECS") conduits, micro-

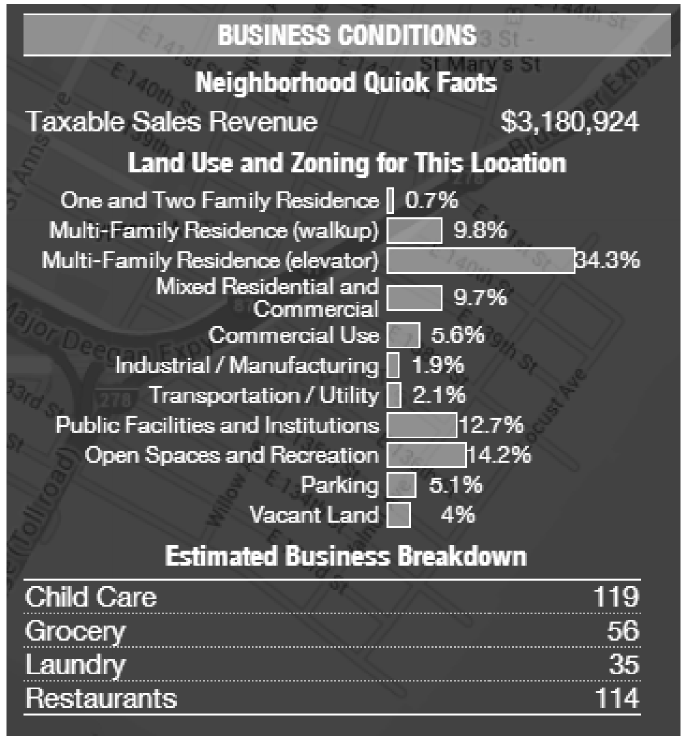
[19] Ookla Net Index. http://www.netindex.com/

trenching, above ground trains, and some elevated roadway.

Unique Opportunities: High population density makes these neighborhoods prime for new ISPs.

Sample Neighborhood Demographics:




**Neighborhood 3:**
**Newly developed/former industrial zone**

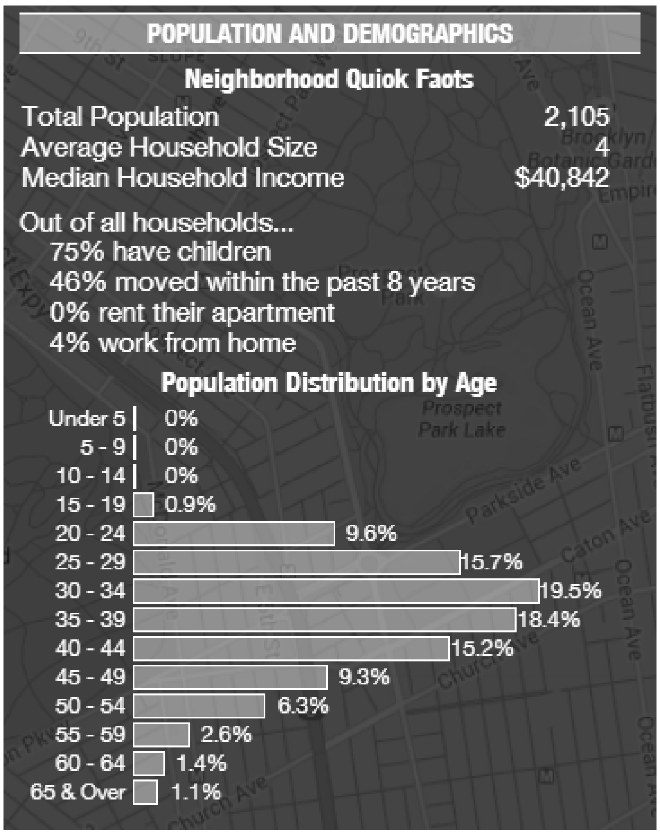
This neighborhood is, historically, primarily an industrial area along the City's waterfront that traditionally benefitted from proximity to maritime transportation. The area is seeking to transition to light industrial fabrication and assembly and craft-based activity, media and arts production and studio space, and other alternatives forms of commerce that can adaptively re-use spaces previously dedicated to heavier industrial activity.

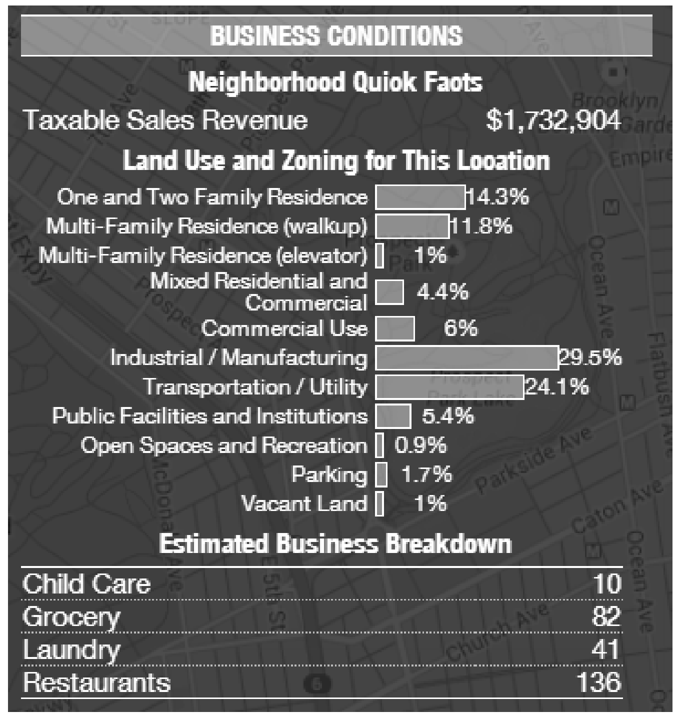
Current Service: Because the neighborhood is off the beaten path from locations where traditional telecommunications infrastructure was in high demand, the initial investment to bring fiber optic-based broadband facilities to the neighborhood has discouraged existing providers from bringing their services to the area. Verizon provides residential service nearby, as does Time Warner Cable, but there are no or very limited commercial fiber options for businesses in the industrial area. Average download speed: TWC, 30.31 Mbps; VZ, 44.51 Mbps.[20]

Infrastructure: Available infrastructure includes utility poles, above ground transit, elevated roadway, and micro-trenching.

Unique Opportunities: If provisioned with low-cost, high-speed internet, former industrial zones can provide for ideal locations for technology startups.

Sample Neighborhood Demographics:




[20] Ookla Net Index. http://www.netindex.com/