Regional Assessment & Barriers Analysis

BRONX & BROOKLYN ENERGY HUB

NEW YORK STATE | Regional Clean Energy Hub
Partnering Organization

Bronx & Brooklyn Regional Clean Energy Hub

February 2025

Acknowledgements

Report Author
Tara Duvivier

With assistance from
Sydney Tiemann, Valeria Milesi, Sylvia Morse

Edited by
Sydney Tiemann, Eleanor Lauderback

Designed by
Njoki Gitahi

This report was made possible with funding from the New York State Energy Research and Development Authority (NYSERDA) as part of its Regional Clean Energy Hubs initiative.

Pratt Center wishes to thank internal stakeholders Tania Hidalgo, Pedro Barry, and John Ahrens at AEA, Jennifer Leisure and Robert McCool at Center for NYC Neighborhoods, Rachel Fleischer and Max Levitzke at Solar One, Sheril Hall at Bronx Neighborhood Housing Services, Marie Edwards at Bronxworks, Melisa Clark and Michelle Humphrey-White at CAMBA, and Angella Davidson at NHS Brooklyn.

Pratt Center would also like to thank Central Brooklyn Economic Development Corporation for facilitating a small business focus group which provided valuable feedback to inform this report.

The Bronx and Brooklyn Regional Clean Energy Hub is made up of Association for Energy Affordability (AEA), Center for NYC Neighborhoods, Solar One, Bronx Neighborhood Housing Services, Bronxworks, The HOPE Program, CAMBA, and NHS Brooklyn.

Contents

I. Executive Summary

The Bronx and Brooklyn Regional Assessment and Barriers Analysis (RABA) examines the conditions that present both key challenges and opportunities to expanding access to clean energy in disadvantaged communities (DACs) in the boroughs of the Bronx and Brooklyn.

The report provides a baseline characterization of the boroughs' demographic, economic, built environment, and civic landscape, as well as current clean energy program participation. It shows that the Bronx and Brooklyn are a densely-populated and -built region with a diverse and growing but highly unequal economy. Low- and moderate-income (LMI) communities and communities of color demonstrate less participation in clean energy upgrades, jobs, and other economic opportunities.

Despite these barriers, the Bronx and Brooklyn's DACs have strong community-based and non-profit organizations with a range of expertise in housing, workforce development, and other direct social services. Using these findings, this report identifies key challenges and opportunities for the Bronx and Brooklyn Clean Energy Hub and NYSERDA to expand access to the clean energy economy, especially in the boroughs' disadvantaged communities.

Key Takeaways

- **Baseline Regional Characterization and Baseline Assessment of Clean Energy Program Participation**

Sociodemographics
The Bronx and Brooklyn are among the most ethnically diverse areas in the state. Nearly all of the Bronx and half of Brooklyn consist of disadvantaged communities, where the median household income is not a living wage. More than half of Bronx residents and over 40% of Brooklyn residents speak a language other than English at home.

Building and Sector Assessment
There is a high proportion of 1-4 unit buildings in both boroughs. Residents face very high housing and energy costs, and low- and moderate-income residents are particularly struggling.

Clean Energy Workforce
The region's green economy is small but growing, driven by strong climate policies and investment. Over 85% the clean energy jobs in the Bronx are within the borough's DACs, while less than half the clean energy jobs in Brooklyn are located within its DACs, nearly half of jobs in the green economy are in building decarbonization, but other sectors, like offshore wind, are projected to grow. White workers are over-represented in green sectors and disproportionately work in higher paying jobs.

Baseline Assessment of Clean Energy Program Participaton
The Bronx received the least amount of NYSERDA funding per person compared to the other boroughs in New York City. NYSERDA funding distribution varies greatly in Brooklyn, with some areas that are not designated DACS receiving more funding. Areas with large foreign born populations in both boroughs receive the least
amount of funding.

• Barriers

Information Overload and Misinformation
There is an overwhelming amount of information about clean energy initiatives available from many different sources with different levels of trustworthiness. Misinformation and scams about clean energy home upgrades are spreading, particularly among solar energy programs.

Knowledge Gaps
Knowledge of clean energy opportunities is inequitably distributed, and outreach to some groups is harder than others. People of color, low-income people, renters, and people with lower levels of education know less about clean energy technologies and programs. There are a number of households in both the Bronx and Brooklyn DACs that don't have internet access, and older people are less likely to have or know how to use the internet to find out about opportunities.

Language Resources Needed
The Bronx and Brooklyn Hub spans both a much more diverse and a much larger population than most of the other Hubs in the state, but has not been given commensurate funding to conduct adequate outreach across all of these communities.

Complex Building Stock
NYC has an older residential building stock than the rest of the state, and its building typologies are very unique not only statewide but nationwide, making retrofits more complicated and costly.

Inadequate Incentive Programs
Homes often have structural or health and safety problems that must be addressed before installation of clean energy upgrades, and these fixes are not covered by home retrofit incentive programs like WAP and EmPower+. Programs that do cover repairs, like HomeFix and RESTORE, are vastly underfunded to meet the need for repairs.

• Opportunities

Strong Community Networks
There is a community of existing trusted CBOs in the Bronx and Brooklyn that have their own audiences, and can be partners. Many of the Hub organizations also provide other services for clients who could benefit from learning more about existing green economy/clean energy programs.

Wide Interest in Climate Initiatives
Increasing attention to and urgency of the climate crisis are pushing more housing and other organizations to incorporate strong sustainability components into their work. The green economy increasingly touches everything. Even organizations whose main focus is elsewhere understand that it is relevant to them.

Improved Technology and Opportunities
Funding from the Inflation Reduction Act (IRA) and other sources, policies like Local Law 97, and improved technologies are expanding access to home energy upgrades and the green economy.

• Recommendations

Launch Marketing Campaigns
The Hub and NYSERDA should launch multilingual campaigns to promote Hubs and available incentives, demystify technologies and programs, and dispel misinformation.

Build Partnerships
The Hub should continue to grow partnerships with CBOs, contractors, and green employers to strengthen its network.

Simplify and Expand Programs
NYSERDA should identify ways to simplify program application processes, develop strategies and programs to help renters and people with home repair needs, and use new funding streams to expand access and outreach.

Learn from the Hub
NYSERDA should learn from the Hub about the unique qualities and diversity of the region and tailor programs and outreach in response.

Support and Expand the Hub
NYSERDA should ensure that the Hub is equipped to help clients navigate the green economy through investment in training and marketing, and provide the Hub with more funding commensurate with the task of helping the region's vast and diverse DAC communities access the green economy.

II. Baseline Regional Characterization

Baseline Regional Sociodemographics

See Appendix A for a more detailed discussion of the topics covered here.

Table 1. Population, Age, and Sex[1, 2]

		The Bronx	The Bronx DACs	Brooklyn	Brooklyn DACs
Total Population		1,443,229	1,291,161	2,679,620	1,222,191
Age	Under 18	24.7%	25.3%	22.6%	22.9%
	18-64	62.0%	62.6%	63.1%	64.1%
	65+	5.7%	12.4%	6.2%	5.7%
Sex	Male	47.4%	47.4%	48.9%	46.8%
	Female	52.6%	52.6%	52.4%	53.2%

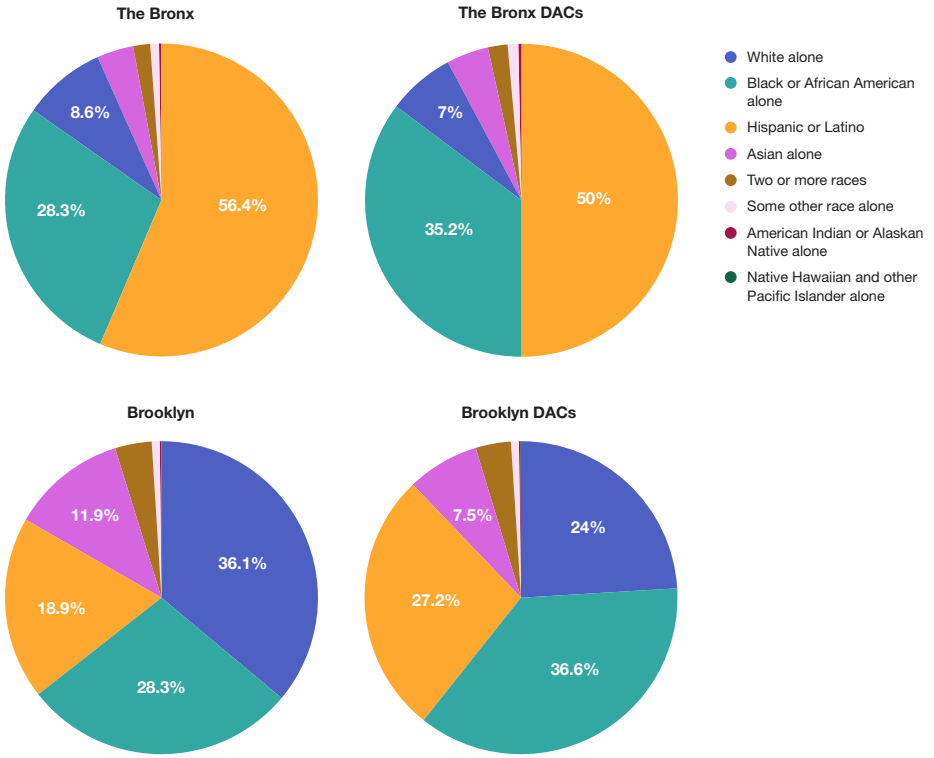
Nearly all (89%) of Bronx residents and nearly half of Brooklyn residents (46%) live in DACs.[3] The Bronx DACs are in most neighborhoods throughout the borough. Brooklyn DACs are concentrated largely in Northeast Brooklyn, including neighborhoods such as Brownsville and East New York.

• Race & Ethnicity

Approximately 18% of Bronx residents are White alone, and only 15% of DAC residents are white, compared to 55% of all NY State residents.[4] There is a large proportion of Hispanic/Latino in the Bronx, as shown in Chart 1. The Bronx DACs racial populations are similar to the borough as a whole. The Bronx is segregated, with many ethnic enclaves, as shown in Map 1. 34% of the Bronx population is foreign-born with more than half being U.S. citizens.

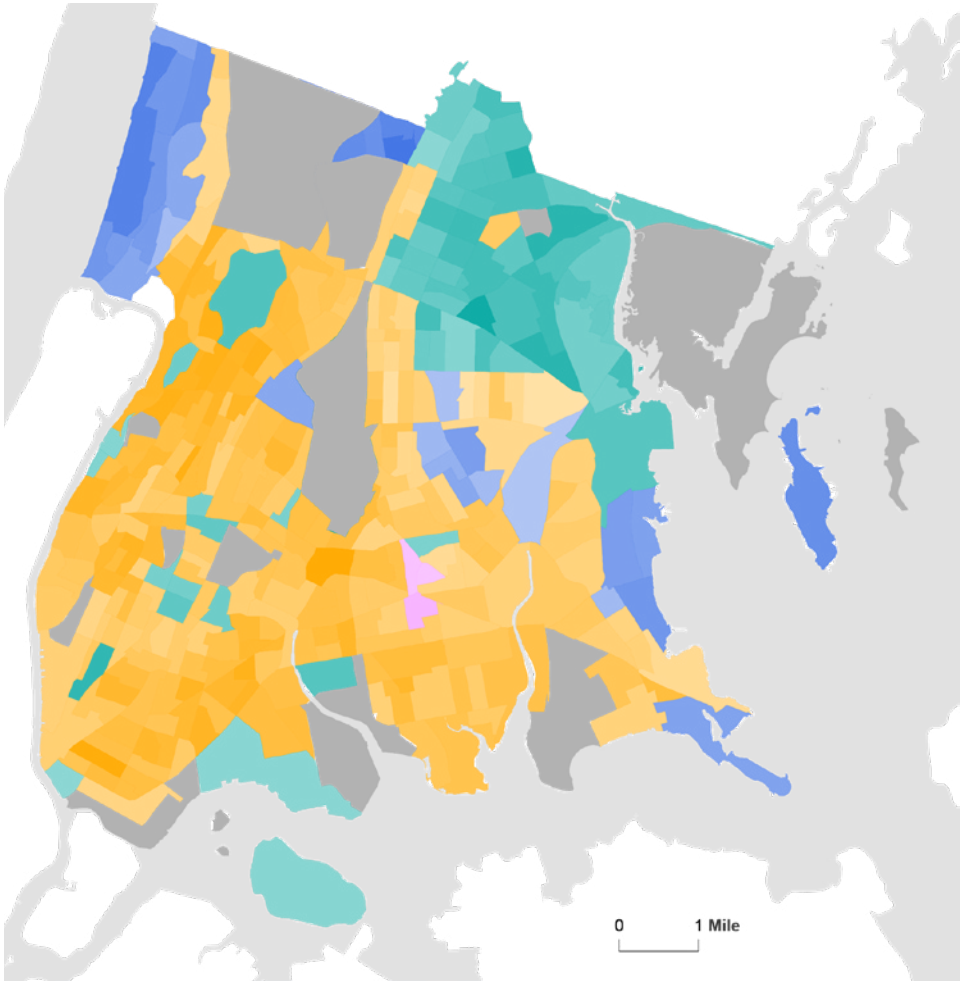
As shown in Chart 2, Hispanic/Latino residents comprise 28% of the DAC population in Brooklyn. Nearly 40% of the DAC population is Black, and nearly 8% is Asian. As shown in Map 2, Brooklyn's communities of color are predominantly located in the central and Northeast. Black and Hispanic/Latino residents are the predominant race/ethnicity in most neighborhoods of color in Brooklyn. 35% of Brooklyn's population is foreign-born and more than half are U.S. citizens. 60% of the foreign-born population in Brooklyn come from Latin America, with more than half coming from the Caribbean. There are significant concentrations of foreign-born Brooklyn residents outside of DACs.

Charts 1-4. Race & Ethnicity, The Bronx and Brooklyn[10]

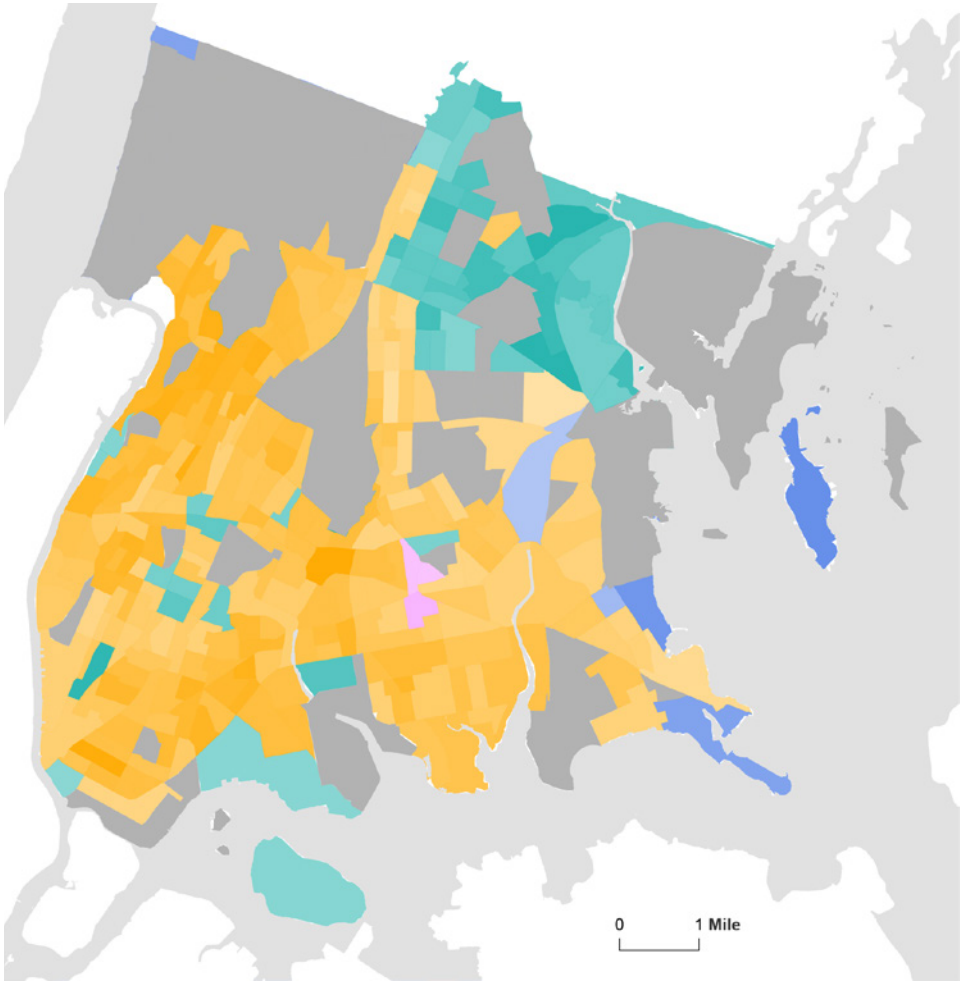


Map 1. Predominant Race by Census Tract, the Bronx[8]

The Bronx



The Bronx DACs



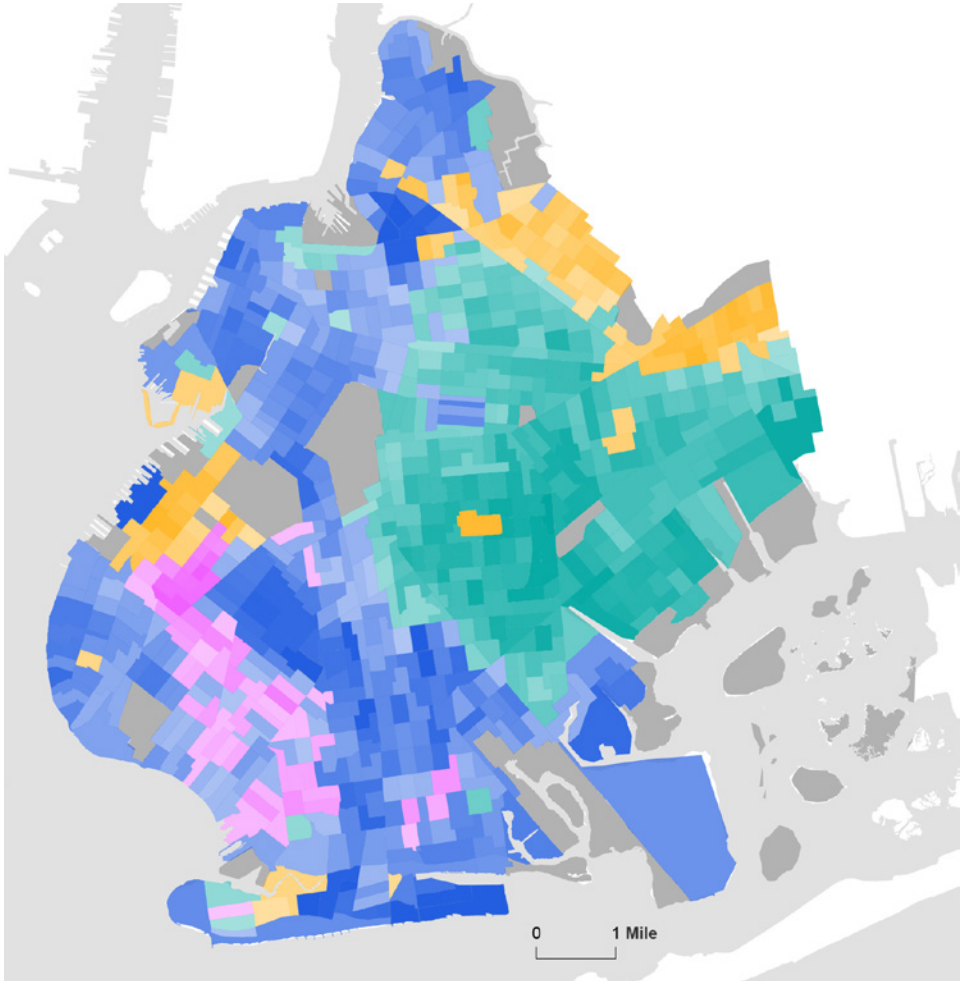
- White alone, not Hispanic or Latino
- Hispanic or Latino
- Black or African American alone, not Hispanic or Latino
- Asian alone, not Hispanic or Latino
- American Indian or Alaskan Native alone, not Hispanic or Latino
- Two or more races, not Hispanic or Latino
- Native Hawaiian and other Pacific Islander alone, not Hispanic or Latino
- Some other race, not Hispanic or Latino

Strength of predominance

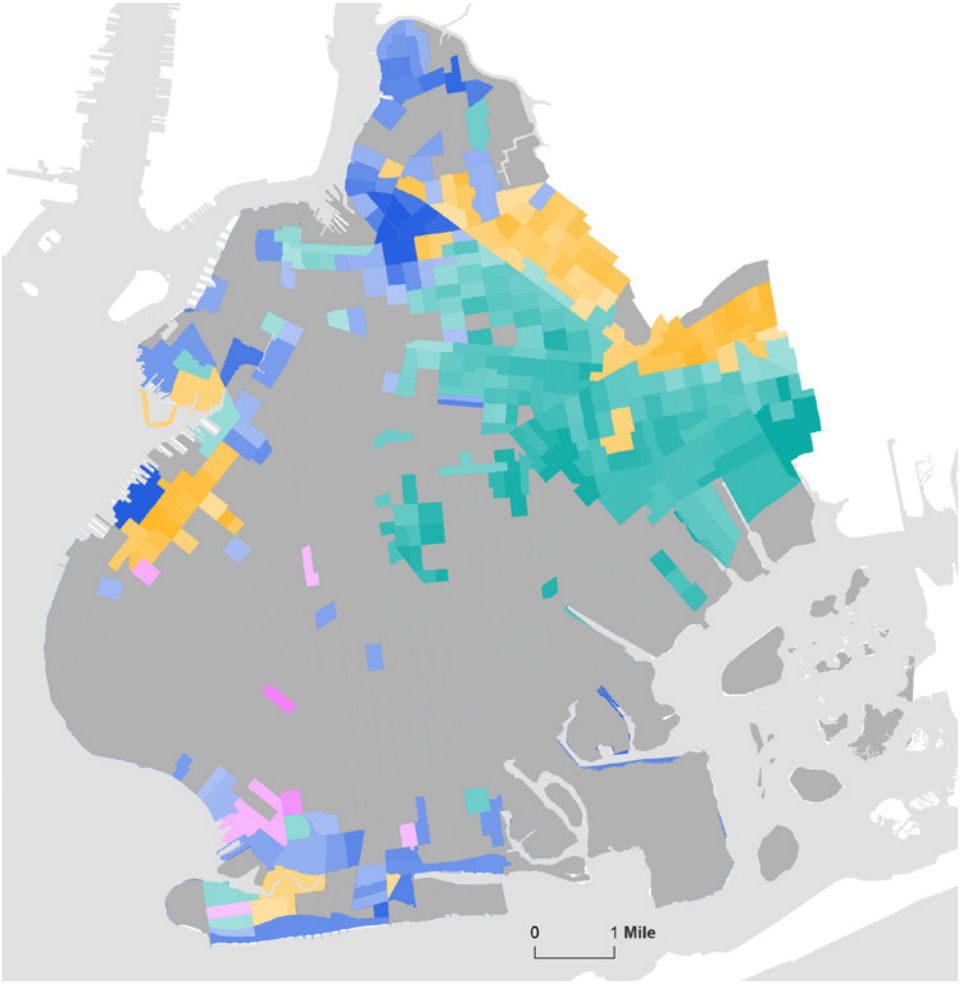
- 0-13
- 13-97
- 97-100

Map 2. Predominant Race by Census Tract, Brooklyn[9]

Brooklyn



Brooklyn DACs



- White alone, not Hispanic or Latino
- Hispanic or Latino
- Black or African American alone, not Hispanic or Latino
- Asian alone, not Hispanic or Latino
- American Indian or Alaskan Native alone, not Hispanic or Latino
- Two or more races, not Hispanic or Latino
- Native Hawaiian and other Pacific Islander alone, not Hispanic or Latino
- Some other race, not Hispanic or Latino

Strength of predominance

- 0-13
- 13-97
- 97-100

• Language

More than half of Bronx residents and residents in the DACs speak a language other than English at home, compared to 30% of all NY State residents.[5] In the Bronx DACs, almost half the population speaks Spanish at home. Nearly 20% of DACs' total population are limited-English speaking, with a majority being Spanish language households.[6]

Over 40% of Brooklyn DAC residents and Brooklyn overall, speak a language other than English at home, compared to 30% of NYS residents. Top languages spoken in Brooklyn other than English include Spanish, German or West Germanic Languages, Russian, Polish, or other Slavic Languages, and Chinese. There is also a significant population of residents that speak French Haitian (Kreyol) or Cajun.[7]

Table 2. Household Language and Limited English Proficiency by Household[11]

Household Language	The Bronx	The Bronx DACs	Brooklyn	Brooklyn DACs	NYC	NYS
Spanish	46.80%	49.80%	14.60%	21.60%	23.30%	14.80%
French, Haitian, Or Cajun	1.60%	1.60%	3.50%	2.90%	2.30%	1.50%
West Germanic or Slavic Languages	0.50%	0.40%	10.40%	7.90%	5.10%	3.50%
Other Indo-European Languages	3.20%	2.90%	3.90%	2.80%	5.50%	3.90%
Asian And Pacific Island Languages	1.40%	1.10%	8.40%	4.90%	8.80%	5.10%
Other Languages	4.60%	4.70%	3.30%	2.40%	2.90%	1.80%

• Income

The Median Household Income (MHI) for the Bronx and Brooklyn is not a living wage. The Bronx MHI is not a living wage, based on the University of Washington's Self-Sufficiency Standard (SSS), which measures the income families need to meet an adequate standard of living around the country. The Bronx MHI in 2022 was $47,036, which is just 55% of the SSS for a family of two adults and two children, meaning that a family of that size earning the median income was $38,201 short of meeting its basic needs.[12] Median household income is lower for BIPOC people than white people. The MHI for Brooklyn as a whole is $74,692. Brooklyn DACs MHI in 2022 was $58,712, or 68% of the borough's SSS,[13] meaning that median earners cannot meet their basic needs. Brooklyn DACs residents MHI is nearly $16,000 less than the borough-wide MHI.

Table 3. Median Household Income by Race and Ethnicity[14]

	The Bronx	The Bronx DACs	Brooklyn	Brooklyn DACs	NYC	NYS
Race						
White Alone Householder	$55,583	$45,017	$95,280	$82,916	$102,992	$90,866
Black or African American Alone Householder	$47,762	$45,483	$59,090	$49,900	$58,011	$58,805
American Indian and Alaska Native Alone Householder	$46,568	$44,825	$57,771	$58,503	$59,928	$59,483
Asian Alone Householder	$70,275	$66,115	$82,647	$75,052	$84,031	$91,254
Native Hawaiian and Other Pacific Islander Alone Householder	$35,433	$35,426	*	$51,840	$59,792	$57,817
Some Other Race Alone Householder	$39,923	$38,557	$50,030	$43,341	$50,448	$55,421
Two or More Races Householder	$49,348	$47,725	$73,626	$61,407	$70,068	$74,254
Ethnicity						
Hispanic or Latino Householder	$41,220	$39,858	$55,916	$47,870	$53,670	$61,135
White Alone Householder, Not Hispanic or Latino	$75,289	$61,092	$99,789	$91,218	$110,890	$92,218
Overall MHI	$47,036	$43,799	$74,692	$58,712	$76,607	$81,386

** Not enough responses to make estimate for entire Brooklyn population*

• Education & Employment

The majority of people in the Bronx and Brooklyn have a high school education or more. However, educational attainment is lower in the Bronx and Brooklyn than in the rest of NYC and the state, especially in DACs. The Bronx labor force participation rate is 58% both in DACs and in the entire borough. This is slightly less than city and state rates, both around 63%. The Bronx unemployment rate is 6.5%, and 6.8% in DACs. This is higher than the state's 3.9% unemployment

rate.[15] Brooklyn's labor force participation rate is nearly 62% in DACs and 64% in the borough as a whole, which is comparable to NYC and NYS labor participation rates. Unemployment is significantly higher in DACs (5.3%) than it is borough-wide (4.6%), city-wide (4.8%), and state-wide (3.9%).[16]

Table 4. Educational Attainment Level for Persons Aged 25+[17]

Educational Attainment Level (Ages 25+)	The Bronx	The Bronx DACs	Brooklyn	Brooklyn DACs	NYC	NYS
Less than High School	25.50%	27.20%	16.20%	19.20%	16.70%	12.40%
High School Graduate or More (Includes Equivalency)	74.50%	72.80%	83.80%	80.80%	83.30%	87.60%

• Transportation

Just 25% of workers residing in the Bronx, and 37% of workers residing in Brooklyn, have jobs in the boroughs they reside in.[18] Average commute time in the Bronx is 45 minutes, 12 minutes longer than the NYS average. 58% of DAC residents and 56% of all Bronx residents take public transit to work, compared to 48% of NYC residents and 24% of NYS residents. 60% of Bronx households, and 63% of the borough's DAC households, do not have access to a car. The average commute time in Brooklyn is 43 minutes both in and outside of DACs, longer than both the NYC and NYS averages. More than half of Brooklyn residents both in and outside of DACs use public transportation to get to work. Nearly 64% of households in Brooklyn DACs don't have access to a car.[19]

Building and Sector Assessment

See Appendix B for a more detailed discussion of the topics covered here.

Table 5 shows buildings by land use, including small and large residential, small and large commercial, mixed use, and industrial. The Hub is focusing on small (1-4 unit) residential buildings, which are the focus of this section.

Table 5. Land Use Overview [23]

Buildings by Land Use	# of Buildings, The Bronx	% of Total Buildings, The Bronx	# of Buildings, Brooklyn	% of Total Buildings, Brooklyn
Residential	88,250	84%	281,461	84.60%
1-4 Unit	**77,273**	**73.5%**	**253,941**	**76.3%**
5+ Units	10,934	10.4%	27,473	8.3%
0 Units or Blank	43	0%	47	0%
Commercial*	3,213	3.1%	6,321	1.9%
Small (>25,000 ft²)	2,871	2.7%	5,536	1.7%
Large (<25,000 ft²)	262	0.2%	617	0.2%
0 Commercial sq. ft. or Blank	80	0.10%	168	0.1%
Mixed use (residential + commercial)*	5,327	5.1%	27,937	8.4%
1-4 Unit (residential)	**2,438**	**2.3%**	**19,870**	**6%**
5+ Units (residential)	2,634	2.5%	6,844	2.1%
0 Units or Blank	255	0.2%	1,223	0.4%
Industrial	1,519	1.4%	4,928	1.5%
All Other Land Use Types	6,774	6.4%	12,121	3.6%
Total	105,083	--	332,768	--

• Building Stock

Land use in the Bronx and Brooklyn is mostly residential. The majority of residential buildings in these boroughs have 1-4 units, over 70% of the boroughs' total residential units. In the Bronx DACs, 1-4 unit buildings make up 69% of residential units, compared to 16% of units in NYC.[20] In the Bronx as a whole, 72% of 1-4-unit buildings were built between 1900 and 1959, while 69% of buildings in DACs were built in that same time frame.

In Brooklyn DACs, 65% of residential units are in 1-4 unit buildings, compared to 16% of units citywide.[21] Buildings with 5+ units make up around 13% of buildings in Brooklyn overall and 8% in Brooklyn DACs. In Brooklyn as a whole, 49% of 1-4 residential unit buildings were built between 1900-1929 (Chart 6). A further 28% of buildings were built between 1930-1959, indicating an older housing stock than other boroughs such as Staten Island.[22]

• Household Energy

The average LMI resident in The Bronx and Brooklyn is energy cost-burdened, spending 6% and 5% of their income on energy, respectively. The average LMI owner of a 1-4-unit home in the Bronx spends even more, 12%. The average LMI owner of a 1-4-unit home in Brooklyn spends 6%. Average annual energy cost in the Bronx is $2,224, slightly less than that of NYS. Owners of 1-4-unit homes are particularly burdened by high energy costs, with an average annual energy cost of $5,356, more than double the state average. At $2,099, Brooklyn's average annual energy cost is nearly $300 less than that of NYS.[26]

In the Bronx, most owner-occupied, (about 63%), and nearly half of renter-occupied housing (about 46%) units use utility gas for heating. Only 20% of owner-occupied units and 29% of renter-occupied units use fuel oil, and 9% of owner-occupied units and 15% of renter-occupied units use electricity for heating. Around 71% of renter-occupied housing units and 81% of owner-occupied housing units in Brooklyn use utility gas for heating.[27] Slightly under 3% of owner-occupied and renter-occupied units use fuel oil. Approximately 7% of owner-occupied units and 13% of renter-occupied units use electricity for heating in Brooklyn.[28]

Chart 5. Age of 1-4 Unit Buildings, the Bronx[24]

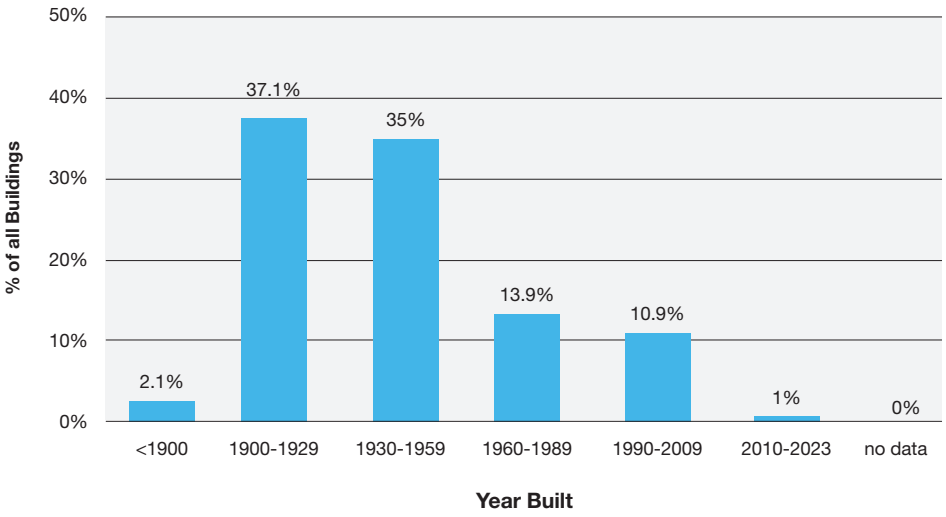


Chart 6. Age of 1-4 Unit Buildings, Brooklyn[25]

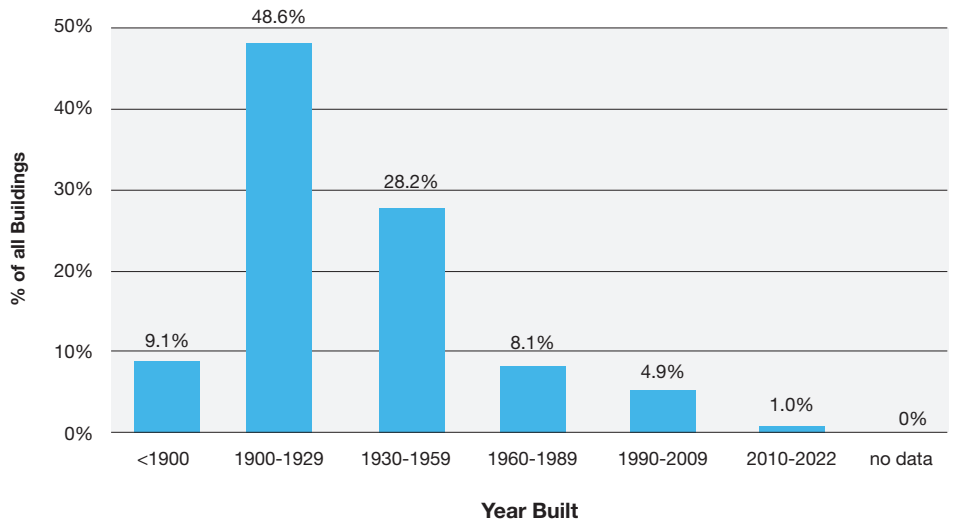


Chart 7. Average Household Annual Energy Costs, The Bronx[29]

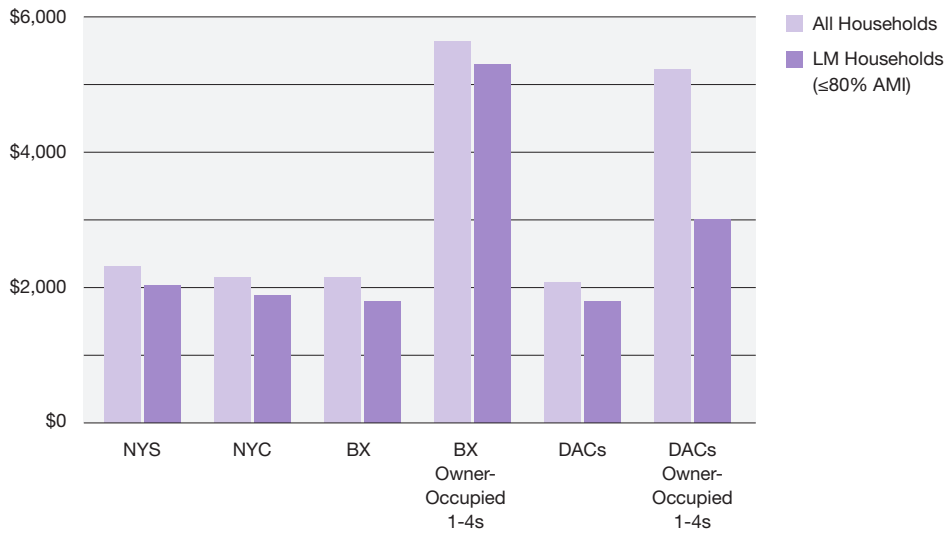
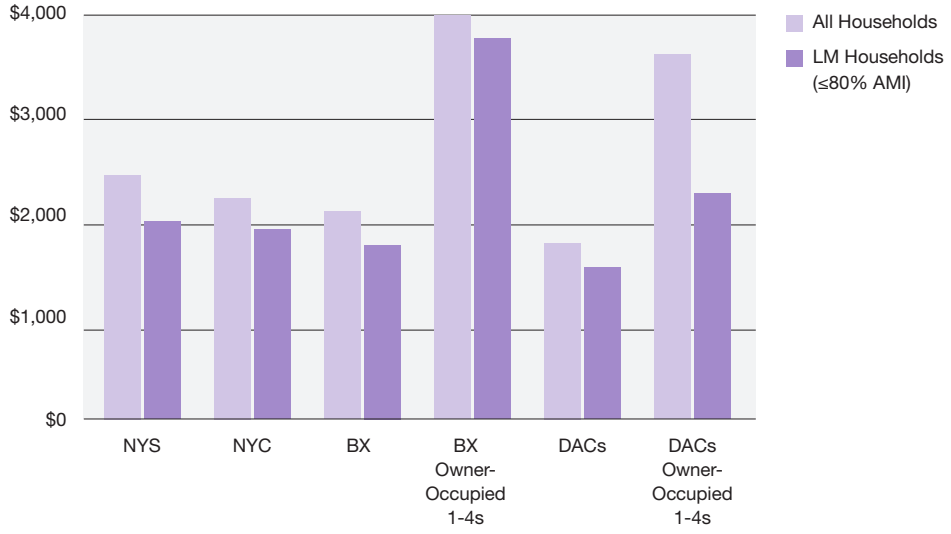


Chart 8. Average Household Annual Energy Costs, Brooklyn[30]



• Housing Vacancy and Tenure

NYC is in the midst of a housing crisis: housing costs have risen more quickly than incomes over the last decade, and the majority of households citywide are rent-burdened.[31] Low vacancy rates are a primary indicator of this crisis. According to 2022 ACS estimates, the most recent year for which borough-level vacancy data is available, the vacancy rate in the Bronx was 1.86%. Brooklyn was 2.55%. More recent citywide data suggests that housing is even more scarce today: the 2023 Housing and Vacancy Survey shows that the net vacancy rate for rental units has decreased dramatically since 2021 from 4.5% to 1.4%. Among lower-cost units, vacancy rates are even lower.

The Bronx, like the rest of NYC, is majority renter. This is especially true in DACs, where 81% of occupied units are home to renters, compared to 41% in NYS. A larger percentage of renters in DACs occupy buildings that are 5+ units: nearly 68%. In DACs, only 10% of Hispanic residents own their home, compared to 37% of non-Hispanic white residents and 40% of Asian residents. The homeownership rate in Brooklyn (28%) is slightly less than NYC's homeownership rate overall (29.9%). There is only a 19% homeownership rate in Brooklyn DACs. Within DACs, Asian households makeup a large percentage of homeowners, followed by white and Black households.

Regional Clean Energy Workforce

The Green Economy in the Bronx and Brooklyn continues to grow. **NYSERDA estimates that in 2022, The Bronx had 3,468 clean energy jobs and 9,153 in Brooklyn.**[33] In the Bronx, a majority of these jobs are located within the borough's DACs. The Bronx had 3,007 clean energy jobs in its DACs—over 85%. Less than half of the clean energy jobs in Brooklyn were in DACs (4,258).[34] The City of New York estimates that the city as a whole had 133,000 green economy jobs across 21 sectors in 2021, representing 3% of all jobs citywide and $16 billion in earnings.[35] Nearly half of these jobs are in building decarbonization (49% of green economy jobs), among which roughly half are in HVAC and renewable heating and cooling, nearly a third are in ENERGY STAR, efficient lighting and reduced water consumption products, 11% are in green building management and operations, and 6% are in advancing materials and insulation.

Approximately 9% of green economy jobs are in energy, of which 37% are in solar, 20% are in hydropower, and 16% are in on-shore wind, and the remainder are in a range of other sub-sectors.[36] The citywide clean energy workforce landscape aligns with statewide trends; building decarbonization and energy efficiency represented nearly three-quarters of all clean energy jobs in the state in 2022.[37]

Green economy jobs have grown approximately 5% per year between 2016 and 2021, driven primarily by 1) local climate and energy policy, including new buildings and energy regulations and targets, 2) federal and other government investment in resiliency and infrastructure projects and green technologies, 3) consumer market demand for sustainable products, and 4) increased private investment in clean energy technology. As these trends continue, the City projects ongoing rapid growth in the green economy to 400,000 jobs (or 7% of all jobs) by 2040, primarily in buildings (an estimated 85,000 jobs) and finance and consulting (an estimated 80,000 jobs). The majority of these jobs will be in existing professions adopting sustainable practices and an estimated 30% will be in new jobs. (Other estimates for job growth include the State's Just Transition Working Group's projection that the city will see an increase of 43,000 green jobs by 2030, and Green Economy Network's projection of 90,000 new green jobs between 2021 and 2030.)

Offshore wind will be an important green industry for Brooklyn. In the coming years. Empire Wind will create an offshore wind hub at South Brooklyn's Marine Terminal, which recently broke ground in June 2024. It is estimated that more than 1,000 union jobs in Brooklyn will result from this project.[38]

The demographic composition of the green workforce skews white: in 2020, 72% of green economy workers statewide identified as white, 15% as Hispanic/Latinx, and 8% as Black.[39] White workers are overrepresented in green sectors as compared to the overall workforce, and disproportionately work in higher-paying jobs. Black, Latinx, and Asian workers are overrepresented in lower-paying jobs, including building trades jobs that do not require a college degree.

Women are also underrepresented in the green economy, particularly in the building trades, where less than 2% of jobs are held by women, as well as in design and engineering jobs. This is consistent with statewide clean energy workforce demographic disparities.[40]

Some buildings trade jobs that are expected to see growth, such as roofers, solar installers, maintenance/repair workers, and construction workers see slightly lower median annual salaries ($53,300-$52,500). The green economy offers lower barriers to entry and better salaries than many other high-demand fields. The majority of the annual projected job openings in clean energy occupations typically require no more than a high school diploma or equivalent. Green jobs that are open to people without a college degree generally pay better and are more secure than other jobs open to people with similar levels of education. For example, many building trades jobs that do not require a college degree have average salaries above $73,000.[42]

The City's Green Economy Action Plan will prioritize education, training, and outreach for those occupations in the green economy that pay living wages of $63,000 per year (in today's dollars) or more. Many of these jobs do not require significant new skills training or education specific to green technologies or policies. Approximately a third of projected job openings in clean energy require a bachelor's degree, like engineers, managers, and sales representatives.[43]

Despite many green jobs not requiring advanced degrees, some require technical training. Expanding training programs while lowering barriers to participation will be key to helping green businesses find workers and underemployed workers get jobs, while enabling the industry to diversify. There are a variety of existing workforce programs offering training in numerous sectors of the green economy to Bronx and Brooklyn residents. Of particular note are programs at CUNY's Bronx Community College, Lehman College (Bronx), City Tech (Brooklyn), and Kingsborough Community College (Brooklyn). These campuses are investing in offshore wind and other green economy training programs.[44] Programs include training related to green

energy work such as welding for offshore wind infrastructure, electric car repair training, solar energy harvesting, and biodegradable batteries.

Important policy changes are underway at all levels of government that will significantly expand the green economy. Notably, the federal Inflation Reduction Act will add an estimated $34 billion to NYS's green economy through 2030 and expand the market for home and business building retrofits.[45] Compliance with Local Law 97 is projected to create more than 40,000 green jobs and to expand the annual building retrofit market to $20 billion, more than 13 times larger than its size in 2021.[46] Finally, the State's upcoming Cap and Invest Program is projected to fund between $4 to 8 billion in statewide decarbonization investments annually and create over 28,000 green jobs by 2030.[47]

Regional Partners

Only a small selection of key partners are listed here. Find a full list of potential partners in Appendix C. Neither the following list nor Appendix C are intended to be exhaustive.

Civic Institutions and Community Centers: Secular gathering places like schools, hospitals, community centers, and libraries that people are already connected to and frequent in their day to day lives.

Hub collaboration:
Outreach partners. Potential hosts of energy education and workforce programs. Certain community institutions, particularly CUNY, offer workforce and other sustainability programming that the Hub can plug into.

Key partners:
Brooklyn Public Library • New York Public Library • CUNY (esp. City Tech, Lehman College Bronx and Kingsborough Community Colleges) • NYC DOE schools • NYC Parks• Senior centers • Youth Recreation Centers • NYCHA Community Centers • YMCA

Religious Congregations: Mosques, churches, temples, synagogues, etc. Regular meeting places for particular cultural communities that may be hard to reach in other ways. Congregants trust their congregations to give them accurate information. Some congregations are connected to social services programs.

Hub collaboration:
Outreach partners. Potential hosts of energy education and workforce programs. Congregations may also be interested in assistance with retrofitting their physical spaces.

Key partners:
Green Faith • Catholic Charity Network

Cultural or Immigrant Organizations: Secular groups that provide services or programming to benefit a particular ethnic/cultural group or work primarily with immigrants.

Hub collaboration:
Outreach partners, client referrals. Potential hosts of energy education and workforce programs. These organizations are often skilled at working with non-English speakers and people from different cultural backgrounds, and can help the Hub reach and tailor its messaging to the communities they serve.

Key partners:
AYAB Alliance • Make the Road • Haitian American Community Coalition • New Immigrant Community Empowerment (NICE) • The YMCA's New Americans Initiative

Housing Organizations: Organizations providing or helping people find or stay in affordable housing, or organizations working to repair or retrofit housing.

Hub collaboration:
Outreach partners, client referrals. Potential hosts of energy education programs. Certain housing organizations are program administrators for important home repair or retrofit programs, like HomeFix and WAP. The Hub can work with individual residents to navigate the landscape of existing housing programs and organizations and harmonize their offerings. The Hub can also help organizations build their own capabilities interfacing with home retrofit programs.

Key partners:
Bronx NHS • NHS Brooklyn • Neighborhood Restore •CNYCN (HomeFix) • AEA (WAP) • CAMBA

Social Services Organizations: Organizations providing a range of services to disadvantaged communities including food, legal and administrative assistance, afterschool programs, etc. These groups often offer wide ranging services that can also encompass housing and workforce related programs.

Hub collaboration:
Outreach partners, client referrals. Potential hosts of energy education and workforce programs. The Hub can turn to these organizations when clients need wraparound services that are outside of its scope.

Key partners:
Food pantries • NYC Hospitals • Bronxworks • CAMBA

Environmental Organizations: Organizations working on environmental or sustainability issues. Includes resiliency or disaster preparedness organizations.

Hub collaboration:
Outreach partners. Pre-existing community solar, home retrofit, and green workforce programs that the Hub can plug into. Technical expertise on home retrofits. Potential to partner or collaborate on future energy education programs and community campaigns.

Key partners:
Solar One • Urban Green Council • RETI Center • South Bronx Unite • Food & Water Watch • Sunset Park Redevelopment Committee

Workforce Development Organizations: A mix of nonprofit and for profit organizations offering green workforce training, general remedial education, and English language learning programs. Some organizations

focus on particular communities, such as youth, NYCHA residents, justice involved people, or immigrants.

Hub collaboration:
Client referrals. Preexisting green workforce programs that the Hub can plug into. Potential to partner or collaborate on future workforce programs. English learning and remedial education programs are essential wraparound services that many clients may need before being able to work in the green economy.

Key partners:
NYC Employment and Training Coalition • Green Economy Network • HOPE Program • Green City Force • Soulful Synergy • Solar One • Willdan • TMI Waterfront • La Colmena • Nontraditional Employment for Women (NEW) • Interstate Renewable Energy Council (IREC) • Energy Economic Development Corporation • AEA • Bronxworks

Economic Development Organizations: Organizations that promote business interests and economic growth. Some organizations are very involved in promoting the growth of the green economy, especially offshore wind, and green job training programs.

Hub collaboration:
Outreach partner for work involving small businesses and green employers.

Key partners:
NYC EDC • Central Brooklyn Economic Development Corporation • Brooklyn Chamber of Commerce • Bronx Chamber of Commerce • South Bronx Economic Development Corporation • BIDs

Contractors: Companies that install green home upgrades like solar panels, heat pumps, weatherization, etc. Other types of contractors, like electricians and plumbers, are also important in home repairs and retrofits.

Hub collaboration:
Client referrals. Having a strong network of trusted contractors will streamline the home retrofit process for clients. Contractors are also a potential green employer. Potential to educate contractors on low income programs and new technologies.

Key partners:
MWBEs and other companies owned by people of color and women, especially those from DACs in NYC • See Appendix D for some of our key contractor partners.

Major Green Employers: Companies that work in renewable energy, building decarbonization, sustainable manufacturing, recycling/composting, etc.

Hub collaboration:
Potential employers for clients seeking to work in the green economy.

Key partners:
Offshore wind companies working on Empire Wind project • See Appendix D for other potential green employer partners

Other businesses: Various other private businesses not directly involved in the green economy.

Hub collaboration:
Various, see description of key partners.

Key partners:
Small landlords (potential clients for retrofitting affordable rental housing) • Management companies (potential clients for retrofitting affordable rental housing and a connection to landlords) • Local/ethnic media (outreach partners in hard-to-reach communities) • Neighborhood gathering places (businesses like barbers, cafes that function as community spaces.)

City Government: Mayor's offices, executive agencies, and other branches of city government.

Hub collaboration:
Various, see description of key partners.

Key partners:
NYC Accelerator—offers assistance to large buildings in decarbonizing • NYC Public Housing Authority (NYCHA)—outreach partner for workforce programs) • Community boards—local planning bodies with appointed boards. Outreach partners. • NYC Department of Housing Preservation and Development (HPD)—administers the HomeFix home repairs program • NYC Department of Small Business Services (SBS)—outreach partner for small businesses.

Local Elected Officials

Hub collaboration:
Outreach partners.

Key partners:
State Assembly members • State Senators • City Councilors • US Representatives • Borough Presidents

Utilities: Electricity and gas utilities.

Hub collaboration:
Outreach partners. Line of communication to streamline incentive application and retrofit processes. Potential green employers.

Key partners:
ConEd • National Grid

Regional Assets

Assets are defined as existing organizations, partnerships, or organizational capabilities and programs that can assist with overcoming a barrier or accomplishing a recommendation.

Hub team organizations have a long history in the Bronx and Brooklyn DACs, and these communities know that the Hub organizations are helpful, trustworthy partners. Hub organizations have extensive experience working with and engaging diverse communities in different languages. People already know to turn to them for help for many housing, workforce, and other needs.

The eight Hub team organizations are collectively very experienced in all aspects of the Hub's work. The Hub is an extension of the housing counseling, retrofits, workforce development, and business development work that Hub organizations have been doing for many years.

Hub team organizations have existing relationships with other organizations throughout the Bronx and Brooklyn that can expand the reach of outreach and wraparound services. Hub organizations also take part in other coalitions and many provide other services such as homeowner assistance, supportive housing, and workforce development.

The Bronx and Brooklyn have established civic engagement and information infrastructure.

- Local elected officials often offer strong constituent services and programming.
- Community Boards also play an important role in relaying information about programs to the community.
- Established community-based organizations play leadership roles in sharing information about public policy and programs in their communities.
- The Bronx and Brooklyn are also host to a range of public and shared spaces that are essential for community gatherings and outreach, including parks, libraries, senior centers, hospitals, recreation centers, and schools.

Many organizations throughout the boroughs have complementary missions and expertise to the Hub organizations, focusing on housing counseling, repair and retrofits, green economic development, job training, and more. (See Regional Partners section).

- These organizations run a number of useful events that the Hub can plug into, such as job and housing fairs. The hub is presently taking on these types of events in their current outreach
- Bronx and Brooklyn residents have access to green job training programs both in our boroughs and citywide, and access to this type of training is continually improving.
- Partnerships will be especially useful in connecting clients to wraparound services such as social and legal services, remedial education, language learning, and accessing financing.

City and State governments, including institutions like EDC, CUNY, and the Mayor's Office, are aligned in developing the local green economy, especially in key industries like offshore wind.

III. Baseline Assessment of Clean Energy Program Participation

Baseline Assessment of Regional Clean Energy Programs

For a list of home retrofit and green programs, see Appendix D.

Overall, the Bronx has received about $30 million and Brooklyn about $68 million in NYSERDA residential and multifamily funding since August 2023.[48] As shown in Table 6, this works out to about $20 per person in The Bronx and $25 per person in Brooklyn. The Bronx, which has more renters, more immigrants and non-English speakers, and lower incomes, is especially poorly served by NYSERDA programs. The Bronx receives the fewest dollars per person in NYSERDA funding in comparison to the other boroughs.[49]

The CLCPA mandates that at least 35% of program impacts, with a target of 40%, flow to DACs and LMI households. As shown in Chart 9 and 10, NYSERDA has not been successful in meeting these targets. In the Bronx, NYSERDA hits the CLCPA target of 40%, but with 90% of Bronx residents living in DACs, there is much need for deeper investments. In Brooklyn, nearly half of the population resides in DACs and NYSERDA just meets its CLCPA target there as well.

Map 3 shows Bronx census tracts by the amount of NYSERDA Residential and Multifamily funding they have received per person. Large funding amounts for Residential/ Multifamily are concentrated in only a few census tracts, which is concerning considering most of the tracts in the Bronx are DACs. Most census tracts have received less than $25 per person which does align with the overall lesser funding the borough receives as a whole ($20).

The bottom five neighborhood tabulation areas (NTAs) in the Bronx by NYSERDA funding per person, including Spuyten-Duyvil, Kingsbridge, Kingsbridge Heights, Norwood, Longwood, and Parkchester, are all poor neighborhoods of color and have received on average only $2 per person in NYSERDA funding. These areas have only seen an annual energy cost savings of $1.50. In some of these areas, spending per person and energy savings are less than $1. The top five neighborhood tabulation areas (NTAs) in the Bronx by NYSERDA funding per person, includes Woodlawn-Wakefield, Melrose South-Mott Haven North, Crotona Park East, Claremont-Bathgate, and Morrisania-Melrose. Most of these areas are lower income neighborhoods than the bottom five and have received spending per person that exceeds $30, with annual bill savings ranging from $8-33. While this is a move in the right direction, considering that most of the borough is considered a DAC, there is inconsistency in where money is allocated. Many of the areas that receive less than $25 per person do have higher counts of projects in those tracts, which is likely due to the projects in these areas going to larger multifamily buildings with a high density population.

In Brooklyn, the distribution of NYSERDA funding appears to have a broader range of distribution, with some census tracts within DACs receiving upwards of a $100 or more per person. However, the distribution of funds per census tract within the DACs is often lower than non-DAC tracts. The bottom five neighborhood tabulation areas (NTAs) in Brooklyn are Greenpoint, Brighton Beach, Sunset Park, Starrett City, and Northside-Southside (a section of Williamsburg). These consist of neighborhoods of various diversity, but are low-to moderate in income. These areas also have significant amounts of single family homes (which in other borough analysis shows to indicate more NYSERDA spending).

NYSERDA has spent between $2-6 per person in these areas, with an average savings of less than $3 per person. As these areas have large foreign-born populations from Southeast/East Asia, Latin America, and Eastern Europe, language barriers may be the reason why spending in these areas is low. The top five neighborhood tabulation areas (NTAs) in Brooklyn include Brownsville, East New York, East Flatbush-Farragut, East New York (Pennsylvania Ave), and Ocean Hill. These areas are close in proximity to each other, and are DACs, with some of the lowest median incomes in Brooklyn. NYSERDA spending per person on average exceeds $60 and annual savings of $20 per person.

Chart 9. NYSERDA Funding Impacts in DACs: Bronx, NYC, New York State[51]

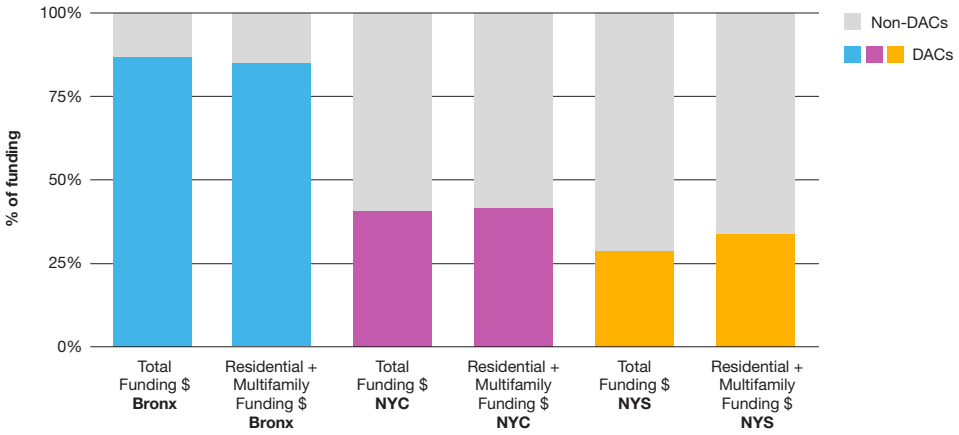
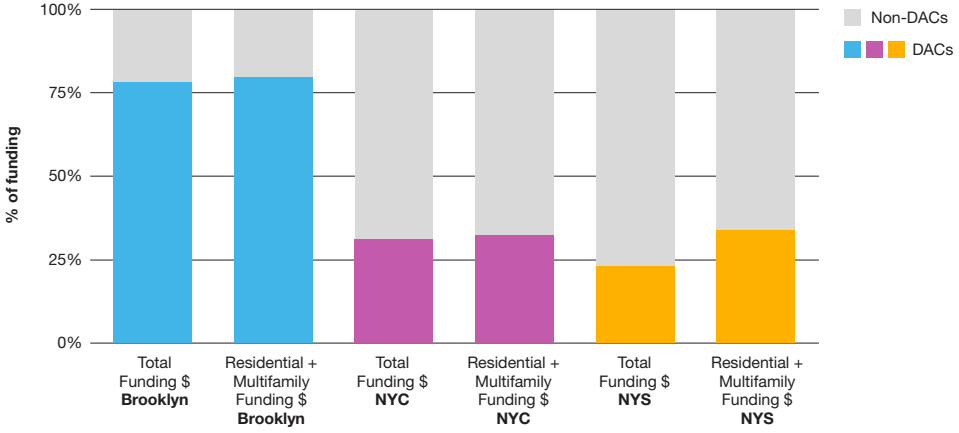


Chart 10. NYSERDA Funding Impacts in DACs: Brooklyn, NYC, New York State[52]



• Existing NYSERDA Community Campaigns

NYSERDA has not implemented any community campaigns in the Bronx or Brooklyn.

IV. Stakeholder and Community Engagement

Outreach Tools & Methods

Community engagement and stakeholder research were central to our analysis of regional assets, barriers, and opportunities in the Bronx and Brooklyn. Research and engagement methodologies included individual interviews with Clean Energy Hub members, a focus group of small businesses, and surveys of residents and jobseekers.

Over 700 people were engaged during RABA development through a focus group and a resident survey. Feedback from public engagement formed the backbone of the Barriers and Opportunities Chapter, as well as the Regional Partners and Regional Assets sections of the Baseline Regional Characterization. See those sections for an understanding of the main takeaways from community engagement.

• Interviews

Pratt Center worked with the Hub organizations to hold a small business focus group, summarized in Table 15, that corresponded with their existing programs or target communities. Participants in the focus groups were given a $40 incentive.

• Survey

The Hub designed and fielded an online survey intended for residents of our boroughs with a focus on DACs. The survey was offered in English and Spanish. Due to funding limitations, the Hub could not translate it into more languages to match The Bronx and Brooklyn's diverse populations. It was open for nearly three months. Hub organizations promoted the survey through various channels. Remote outreach included email blasts, social media posts, and phone calls. In person outreach included tabling at various events throughout both boroughs and Hub organizations that provide wraparound services were able to survey people as they were assisting them with other matters.

The survey focused on information sources and community group respondents engage with, sustainable home upgrades, and clean energy job training and placement. It had logical rules that asked different respondents different questions. For example, renters saw a shortened version of the home upgrades section, since they have less agency to make these upgrades. A summary of survey results can be found in Appendix G.

The survey received 732 total responses, with 299 coming from The Bronx and 388 from Brooklyn.[53] This was well above our target numbers for each borough (200 per borough). 89% of survey takers took the English version, and 4% took the Spanish version, with most of the Spanish language respondents coming from The Bronx). 48% of respondents were renters and 22% were homeowners (the rest had other housing situations). 59% of respondents who gave their income had a household income of less than $60,000 per year.

Key findings regarding The Bronx & Brooklyn stakeholders' information, perspectives, and participation in clean energy programs are summarized below. Survey results are detailed in Appendix A.

Stakeholder and Community Engagement Feedback

• Clean Energy Upgrades

Residents who filled out the survey expressed interest in clean energy upgrades. Renters noted a challenge in doing so as the upgrades they would like to do are limited as they do not own their homes or are unaware of what upgrades are available to renters. Owners want to do clean energy upgrades and are more motivated to do these upgrades if they are part of a larger repair effort such as a roof replacement or mold or lead abatement. Making the temperature in their homes more comfortable and protecting their home from natural disasters and power outages are also motivating factors.

Participants in the small business focus group expressed the desire to participate in clean energy upgrade programs. Food businesses were highlighted, as they face

a lot of challenges with refrigeration, particularly in summer as their refrigerators overheat and risk shutdown due to lack of adequate HVAC to keep spaces cool and well-ventilated. As many are renting their commercial space, there are challenges in addressing the larger HVAC issues. It was noted that many businesses in one Business Improvement District (BID) use reduced operating hours as a cost savings measure, which is not ideal on many levels though it is effective. Reduced hours impact street safety and limit economic opportunity for business owners and their employees. While many businesses have participated in programs to switch to LED bulbs, their usage bills are still high as there are limited options in obtaining electricity from other utility providers. This also impacts street safety, as these businesses are hesitant to keep lights on during off-hours. There is interest in exploring other energy upgrades such as solar, but their perspective is that there currently isn't enough on-the-ground assistance to facilitate these conversations.

• Workforce Development Training and Green Jobs

There is an interest from residents in these boroughs to enter the green economy workforce. Nearly half of respondents to the survey indicated interest in working in the green sector. Solar manufacturing/installation and renewable energy/energy efficiency were areas that respondents had the expressed the most interest. Many respondents were interested in gaining or improving basic computer skills and job seeking skills as well as GED and remedial training.

• Information Sources

Residents rely on their personal networks, social media, internet searches, TV/radio, and community events for information. Many do attend events such as religious services, resource fairs, and cultural events. Flyers, newspapers, mailers and other printed materials aren't as popular for information. Small businesses prefer to use social media, newsletters, texts, flyers, and on-site visits scheduled in advance to learn about opportunities. There is a growing need for language accessibility beyond Spanish for businesses. BIDs can also be very helpful in connecting businesses to agencies and other clean/green energy entities, but they need to be engaged for this to move forward.

V. Barriers and Opportunities

Barriers

1. Barriers to Outreach & Communication

There is an overwhelming amount of information about clean energy initiatives available from many different sources of different levels of trustworthiness. People don't know where to turn for accurate information. (1.1)

- Self-interested private sector companies are often the loudest promoters of clean energy upgrades.
- Misinformation and scams about clean energy home upgrades are spreading, particularly among solar energy programs. It was noted by a few Hub organizations that what they've heard from their clients are anecdotal stories of friends and family being taken advantage of, or the organizations are working directly with people who have been taken advantage of when attempting to access clean energy programs.

Public organizations like NYSERDA, and the programs it offers, have limited name recognition and trust, and are not well promoted. (1.2)

- Marketing has been very limited. Most people find out about clean energy opportunities through personal networks, social media, and web searches, meaning they are only reaching people who are already interested and motivated.[54]

Knowledge of clean energy opportunities is inequitably distributed, and outreach to some groups is harder than others. There has not been sufficient effort to close these information and outreach gaps. (1.3)

- The RABA survey found that people of color, low-income people, renters, and people with lower levels of education know less about clean energy technologies and programs, and that young people and seniors were less likely to attend community events where they could learn about these programs.
- 14% of households in both the Bronx and Brooklyn DACs don't have internet access, and older people are less likely to have or know how to use the internet to find out about opportunities.[55]

NYC communities are far more diverse ethnically and linguistically than typical Upstate communities, and NYSERDA has not invested enough in multilingual, culturally competent outreach programs. (1.4)

- 19% of Bronx DAC households and 13% of Brooklyn DAC households have limited English proficiency, compared to 8% of NYS households.[56]
- NYC agencies routinely translate materials in up to 11 languages, but NYSERDA materials are often only available in English and sometimes Spanish.[57]
- Enabling non-English speakers to participate in clean energy programs requires deep investment in multilingual events, applications, one on one assistance, and more, not just translating flyers informing them of programs and events not equipped for further translation.
- Cultural differences may require different approaches to outreach and messaging in different communities.
  - Whatsapp is a very important information source in some immigrant communities, as are newspapers published in their native languages. These channels are often ignored by the government.
  - Historically-marginalized communities often lack trust in government institutions and require increased investment of time to gain their trust.
  - Some organizations find more success talking through applications and processes with their clients, even those where English is their first language, but are foreign-born. They need everything explained carefully in order to feel comfortable. This is time consuming and reduces capacity within organizations.
  - Some applications are online-only. Some clients want paper copies to review and read more carefully and this inability to access paper copies results in them becoming disinterested in applying.

The Bronx and Brooklyn Hub spans both a much more diverse and a much larger population than most of the other Hubs in the state, but has not been given commensurate funding to conduct adequate outreach across all of these communities. (1.5)

- For example, the RABA Survey struggled to reach Arabic speaking populations in the Bronx, as well as Russian, Urdu, and Haitian Kreyol speakers in Brooklyn. Asian communities in both boroughs were also excluded due to translation limitations with the RABA survey. Time constraints and lack of resources did not allow for the facilitation of a focus group with some of these language speakers.

2. Barriers to Residential Program Implementation

People don't know about all technologies and programs that exist to upgrade their homes. (2.1)

- As shown in Chart 11, while more than 25% of respondents were aware of technologies such as energy efficient appliances, LED bulbs, electric/induction stoves, and solar panels, they were far less aware of other technologies.
- As shown in Chart 12, there was no clean energy incentive program that even half of RABA survey respondents had heard of. Nearly a third of respondents had not heard of any of the programs. Only 12% of people had heard of the EmPower+ program. Only one of the three most known programs was a NYSERDA program—Comfort Home.
- As discussed earlier, there are knowledge disparities of clean energy technologies and programs across racial, income, educational, housing tenure, and other lines.
- There are knowledge disparities of home energy incentive programs across housing tenure, racial, educational, and other societal groups.

Some of the non-environmental benefits of home energy upgrades, like lower energy bills and healthier, more comfortable homes, are not well known or publicized, and people can be skeptical of the benefits of clean energy technologies. (2.2)

- Respondents to the RABA survey ranked lowering utility bills and making needed home repairs like a roof replacement, or mold or lead abatement as part of the upgrade as the highest motivators.
- Messaging has focused too much on helping the environment and technical details, not enough on personal benefits.
- Technologies have improved greatly in recent years, and people may have out-of-date ideas about their costs and benefits.
- As discussed earlier, misinformation about clean energy technologies and programs is spreading and erodes trust in claims from reputable sources. Certain communities also have less trust in government generally.
  - Certain technologies, solar panels, have been particularly targeted by misinformation. In the RABA survey, solar panels ranked highest as the clean energy upgrade people did not want, followed closely by electric/induction stoves.

NYC has an older residential building stock than the rest of the state, and its building typologies are very unique not only statewide but nationwide, making retrofits more complicated and costly.[58] (2.3)

- Over 70% of buildings in Bronx and Brooklyn DACs were built before 1960.[59]
- Older homes often need electrical upgrades and improved insulation before being able to handle more sophisticated electrical equipment.
- Other design features of some older or more urban building typologies, such as low ceiling heights, masonry walls, small rooms, pipes wrapped in asbestos, and lead paint, can present further challenges to green upgrades.

Homes often have structural or health and safety problems that must be addressed before installation of clean energy upgrades, and these fixes are not covered by home retrofit incentive programs like WAP and EmPower+.[60] Programs that do cover repairs, like HomeFix and RESTORE, are vastly underfunded to meet the need for repairs. (2.4)

- Solar installations often require a roof replacement, and weatherization often requires lead/mold/asbestos abatement. Many RABA survey respondents ranked highly the ability to address these types of repairs as a motivation to get clean energy upgrades.
- Affordable housing, rentals, and older buildings are more likely to have problems, and residents of these housing types are lower income and have fewer resources to deal with the problems.
- Repair funding through the HomeFix, RESTORE, and AHC programs is only sporadically available and difficult to access, and these programs come nowhere close to meeting the demand for repairs from people who qualify for them.
  - Only people who are current on their mortgages and bills qualify for these programs
- NYSERDA relying on these external funding sources to fix these issues is not a successful or scalable solution.

Homeowners have competing priorities vying for their time and money. (2.5)

- Median incomes in NYC, especially in DACs, do not match the cost of living and housing prices. People are stretched thin paying for day to day expenses.
- Increased flooding and other climate hazards are adding to the list of maintenance problems that homeowners must prioritize.
- Clean energy investments often do not respond to an immediate need. Even if they improve home health/comfort, this may not be an immediate priority.

It is difficult to find accurate information on how much home upgrades will cost in advance of actually making the investment and how much residents' long term savings will be, making financial planning difficult. (2.6)

- Many online resources citing estimated costs are based on figures from outside New York City which are much lower than actual costs in the city.
- Quotes often vary widely between contractors.

- Inflation means that many estimates that are only a few years old are likely out of date.
- Initial project scopes and budgets often balloon if complications - such as finding undiscovered leaks when insulating, lead paint, problems fitting equipment through small doorways, and required energy service upgrades - arise. This is especially common in older buildings with maintenance issues.

Incentive programs do not provide enough help to surmount cost barriers for low income households and are not structured in a way that meets their needs. (2.7)

- Eligibility for the EmPower+ Low Income Incentive, WAP, and HEAP programs is set at 60% of State Median Income (SMI). Using SMI rather than AMI to determine eligibility excludes hundreds of thousands of low to moderate income NYC residents who may be over the income limit but face much higher costs of living than many other parts of New York State.[61]
  - The IRA defines low income as under 80% of AMI, which is currently the income limit for the EmPower+ Moderate Income Incentive.[62]
- Many tax credits, including those from the IRA and the NY State Solar Tax Credit, are nonrefundable, meaning that low income people with low tax liability receive less benefit from them (and very low
  - Incentives in the form of tax credits or rebates require residents to pay upfront and be refunded later. Most low income people do not have the on-hand capital to bridge this gap in time.
  - There is often no assurance of exactly how much money they will get back as a rebate, which is stressful and makes financial planning difficult.

Middle income people are often left out of the more generous incentive programs, but can't afford market options. (2.8)

- Many programs offer incentives to middle income people in the form of loans. Many people are turned off by the conditions of loans or the very idea of taking a loan.

Many homeowners can't afford home upgrades even after incentive programs. (2.9)

- Even if clean energy upgrades eventually pay off, many homeowners can't afford a large upfront cost.
- As shown in Table 6, "I can't afford the upfront cost of the upgrades I'm interested in" was the biggest barrier to installing an upgrade for respondents to the RABA survey.

Table 6. Obstacles to Making a Home Energy Upgrade

How big of an obstacle would these be to making a home energy upgrade?	Average (scale of 1-5)
I cannot make the upgrades I'm interested in on my own as a renter (ONLY RENTERS)	4.1
I don't know what kinds of upgrades, technologies, and programs exist and what is possible for me to do as a renter	3.6
Other home repairs or upgrades are a bigger priority for me (ONLY HOMEOWNERS)	3.3
I don't know what kinds of upgrades, technologies, and programs exist and what it is possible for me to do	3.2
I can't afford the upgront cost of the upgrades I'm interested in	3.9
The process of receiving upgrades (getting permission from landlord, how to access incentive programs, etc.) is complicated (ONLY RENTERS)	3.8
The process of receiving upgrades (how to find a contractor, how to access home incentive programs, etc) is complicated (ONLY HOMEOWNERS)	3.6
I don't want people coming into my home to install upgrades.	2.4

The process of getting a home retrofit is very complex and confusing, and there is no easy-to-follow, defined path. Customers must develop extensive knowledge on a variety of technologies, programs, and procedures to decide on their own path. (2.10)

- A significant number of RABA survey respondents said there was at least one technology that they wanted but didn't know how to access or afford.
- Incentive programs are confusing. Multiple programs do similar things (often at different levels of government), and it is unclear which can be overlapped, which are standalone, what technologies each incentive program covers, caveats, etc.
- Incentives and qualifying criteria have been changing quickly (EmPower+, IRA, etc)
- There is no centralized, consistently updated source of information where people can get accurate, authoritative information about every step of the retrofit process and the options available to them.
- As discussed in Barrier 1.1, many sources of information offer conflicting, not always accurate information.

Chart 11. Knowledge of Clean Energy Technologies[64]

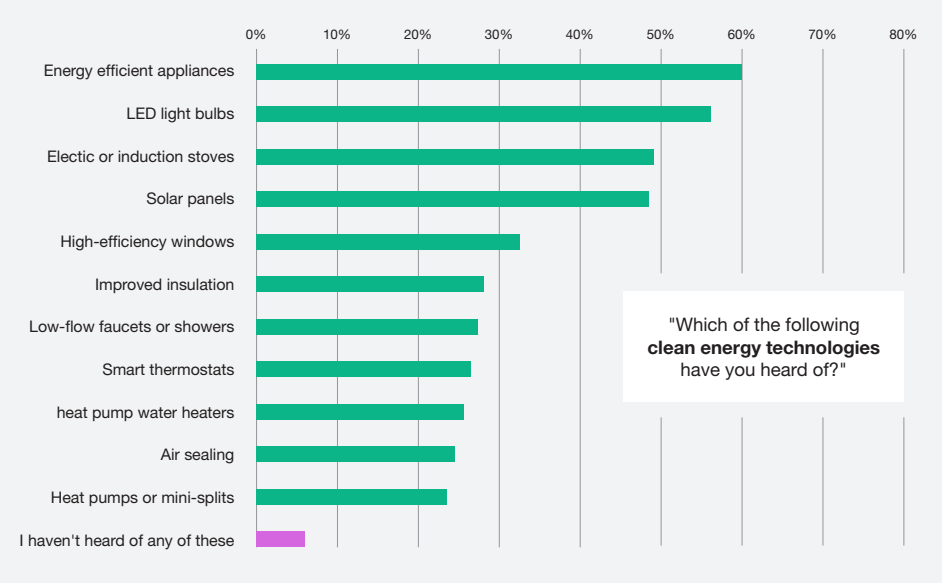
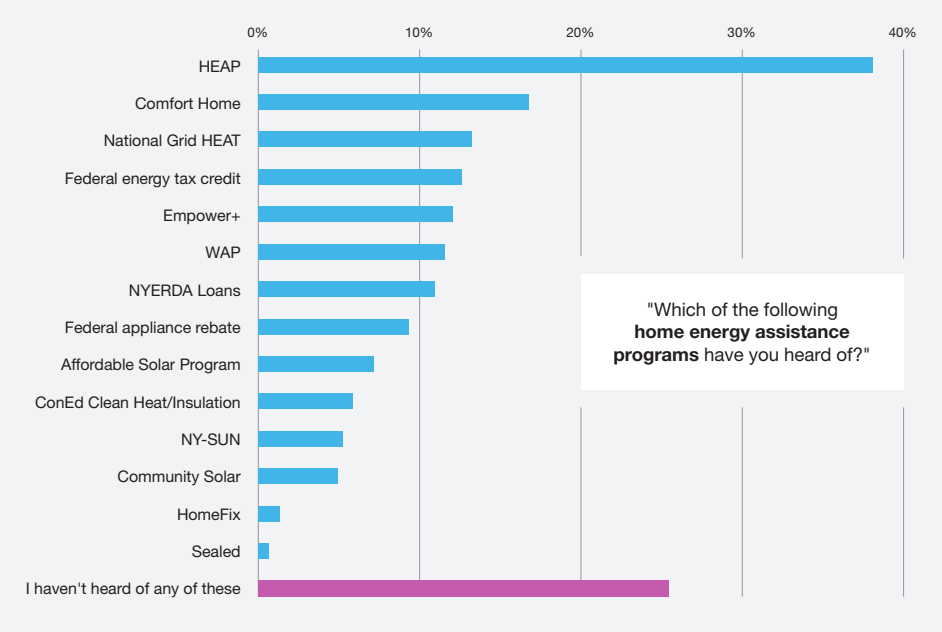


Chart 12. Knowledge of Home Energy Assistance Programs[65]



- Project scopes from contractors are confusing for customers and hard to interpret. Work scopes often don't come with an explanation of what each item is, making it difficult for customers to understand what is happening in their homes.
- Subcontractor agreements coming from DOE and NYS contain complex legal language that people cannot easily understand on their own.

For renters, both the options for upgrades and the potential benefits of them are greatly reduced. (2.11)

- 80% of occupied units in the Bronx DACs, and 72% in Brooklyn DACs, are occupied by renters.
- As shown in Table 6, RABA survey respondents who were renters ranked “I can't make the upgrades I’m interested in on my own as a renter” as the biggest barrier to making a home upgrade.
- Renters have little agency to make large changes to their homes. There are few options available to renters, and few renters know about these options.
- Renters have little leverage to get their landlords to make upgrades, and may fear eviction or rent increases if they complain about utility bill issues.
- Landlords do have agency to make changes, but retrofits are more complicated in buildings with renters, even in smaller buildings. Getting access to the unit from the tenants and figuring out financing, including requiring tenants to prove their income eligibility, is more complicated than retrofitting a single family owner occupied home.
- Split incentive: the benefits of home energy upgrades in rental housing are split between occupants and owners, giving each side less of an incentive to make the upgrade.
- Many landlords live elsewhere so don’t get the health/comfort benefits, while renters do not want to go through the hassle of dealing with landlord/ construction when they do not see monetary benefits and may not live there long-term.
- Buildings over 25,000 square feet are required to sharply cut their carbon emissions by NYC’s Local Law 97 or pay steep penalties, giving landlords a strong incentive to make upgrades. But smaller rental buildings have no such mandate. Many rental buildings in The Bronx and Brooklyn are under 25,000 square feet.

While electrification is often touted as a way to lower energy bills, for renters, electrifying heating systems often has the opposite effect - making residents pay for heat via their electricity bills that was previously covered by building owners. (2.12)

- Converting more rental units to electric heat has the potential to significantly worsen already high levels of housing and energy cost burden unless paired

with reforms or affordability programs. Rent-regulated units are not exempt from this, as capital repairs can be passed onto renters through Major Capital Improvement (MCI) or Individual Apartment Improvement (IAI). While these increases are capped at a certain percentage, these increases are in addition to whatever rent annual rent increase rent-regulated tenants are subject to and can impact affordability.

3. Barriers to Workforce & Business

Jobseekers:

People don't know much about the green economy, and there is a lack of clarity about what it encompasses. (3.1)

- It is difficult to find comprehensive, reliable information about the field, paths into it, types of jobs, and necessary skills/qualifications for these jobs.
- People do not know about specific companies that are hiring within the field, or job training programs that can help them get skills and find a job.
- Many people do not realize how green jobs help individuals and communities, not just the environment.
- While the industry is growing, it is still relatively small. Few people know anyone working in it. This is especially challenging in NYC, as many communities consist of people of color but the green economy workforce is largely white.
- In the RABA survey, Hispanic, Black, and Asian respondents were much more likely than white respondents to indicate that they were unsure or wanted more information about the green economy, as were women, and people with lower levels of education.

The green economy is dominated by white men, which presents barriers to women and people of color learning about or participating in the industry. (3.2)

- 75% of green economy workers identify as male.[66] Construction is particularly dominated by men. In the RABA survey, women were significantly less likely than men to be interested in working in manual labor and technical trades.
- 72% of green economy workers identify as white.

People are not aware of green job training programs, and these programs can be difficult to participate in. (3.3)

- As shown in the RABA Survey results (Appendix G) the largest obstacle noted by respondents in participating in a green jobs training program is that they did not know how to find one.
- Programs are time consuming and often cost money. They can be difficult to participate in, especially for those with a full time job or a family. Free programs have an opportunity cost when there are no stipends provided, and people will choose working over training.
- Many workers need general job skills in addition to more specialized skills. This includes educational remediation (for example core literacy, writing, and math skills).
- When asked about skills they are interested in gaining/improving, respondents to the RABA survey ranked general skills, like basic computer skills, job-seeking skills, and obtaining a driver's license highest.
- Because many green jobs haven't yet arrived, it is difficult to know what to train for - both for potential participants and for organizations designing programs.

There are challenges in placing trainees who have completed programs
It can be a daunting task to place recently trained workers with businesses. Businesses often don't see the benefits of hiring employees from a non-traditional background (not having attended college). (3.4)

- Competing workforce training programs which offer similar credentials (OSHA, Scaffolding, etc.).
- Some businesses do not wish to pay a living wage to new employees
- Some potential employees would like to be paid more, seeing the value in their training.
- Incentivizing businesses to hire trained workers is a long bureaucratic process.
- There is a prevalence of agencies/organizations (ConEd, NYSERDA, Willdan, etc), resulting in multiplying, duplicative paperwork.
- Public sector agencies can move on a very slow timeline, which adds costs, makes project planning and scheduling difficult, and further discourages participation.
- Potential employees are also frustrated by this process (internships, on-the-job training requirements) as they feel they are ready to work.

Immigrants, people of color, low income people, unhoused people, justice involved people, and other marginalized groups experience general systemic barriers to employment.[67] (3.5)

Businesses:

For businesses that are not already established in the green economy, finding opportunities, funding, and information is difficult. (3.6)

- The green economy is still very nascent. Many projects that will create jobs,

like offshore wind on have yet to arrive, and there are many unknowns about what these projects will end up looking like and the impacts they will have.
- There is no centralized place to look for green opportunities, making it difficult to figure out what skill sets, certifications, or training employees might need and how to offer it.
- For businesses that are not directly in the green economy but offer complementary services (for example, plumbing), the challenge of finding opportunities is even greater.

Businesses pivoting to the green economy must invest in significant capacity building. (3.7)
- It is often hard to find skilled workers, and there are not enough programs to help with job training.
- Rapid change in the industry, both among personnel and programs, discourages companies from investing in training.

Non-Green Economy/Clean Energy Small Businesses want to lower energy costs, but don't have much support. (3.8)
- Non-green economy small businesses haven't been engaged regularly by utility companies for clean energy/cost saving measures.
- LED bulbs are in use by many small businesses but because their usage in businesses is so high and there is a monopoly on energy providers, there really isn't much of a cost savings.
- Some businesses shorten their operating hours to conserve energy—not ideal for the business or their employees—and can impact neighborhood safety if blocks of storefronts implement similar tactics, resulting in less-active streets.
- Food businesses are at greater risk, especially in the summer months, for outages due to refrigeration. HVAC in the buildings can not support the refrigeration systems, which tend to overheat. This also contributes to the overall energy consumption/grid stress experienced by neighborhoods throughout the summer.

Opportunities

1. Outreach and Comunication Opportunities

Communications channels outside of existing NYSERDA and private sector marketing offer opportunities to increase the reach and effectiveness of outreach. (1.1)
- There is a community of existing trusted CBOs in the Bronx and Brooklyn that have their own audiences, and can be partners. Many of the Hub organizations also provide other services whose clients could benefit from learning more about existing green economy/clean energy programs.
- Some local elected officials have been champions of the green economy and have experience communicating with their own communities.
- Word of mouth, especially from within one's own community, can be a powerful motivator to get clean energy upgrades or work in the green economy.
- In the RABA survey, 56% of respondents said they often turn to personal networks for important information related to housing and job opportunities.

Other organizations are interested in being more involved in the green economy. (1.2)
- Increasing attention to and urgency of the climate crisis along with standards like Enterprise Green Communities, regulations like Local Law 97, and funding streams like the IRA and Infrastructure Bill are pushing more housing and other organizations to incorporate strong sustainability components into their work.
- The green economy increasingly touches everything. Even organizations whose main focus is elsewhere understand that it is relevant to them.

Hub Organizations are trusted sources and provide many services. (1.3)
- Most Hub organizations are over 10 years old—many have been operating for more than 30 years—and provide an array of services, many completely unrelated to the green economy.
- They are trusted and are able to introduce programming and activities and community campaigns within the green economy in ways clients may be more receptive to as they receive assistance for other issues. They are also in partnership with many other organizations throughout the region.

Renters can be allies in advancing energy upgrades (1.4)
- The majority of residents in the Bronx and Brooklyn are renters. Working more closely with renters to implement permissible upgrades in their units

and appealing to property owners for more building-wide upgrades can build momentum which may result in more energy upgrades in rental housing stock.

2. Clean Energy Program Adoption Opportunities

There is wide interest in sustainable home upgrades. (2.1)

- When asked in the RABA survey which motivators to getting a home energy upgrade were most effective, survey respondents ranked almost every motivator as very effective.
- When asked about what technologies people did want or already had, survey respondents ranked LED light bulbs and energy efficient appliances, highly.

Few people in the Bronx and Brooklyn have participated in existing energy incentive programs available to them. This lack of participation signals that with the right programs and support, there are huge opportunities to enroll more people. (2.2)

- Nearly 80% of respondents have not participated in any listed program.
- Only 1% of people have participated in EmPower+.

There are synergies between existing housing and financial counseling programs offered by Hub organizations and other organizations throughout these boroughs and clean energy advising. (2.3)

- Housing/financial counseling can help people understand what they can afford and create a plan for how to pay for upgrades that incorporates a holistic understanding of their financial picture.
- Organizations offering these services often have programs that allow them to give clients more favorable rates.

Significant funding is becoming available to expand home energy upgrades for LMI and DAC residents. (2.4)

- NYS was awarded $250 million to expand solar deployment in LMI communities as part of the federal Solar for All grant program.[68]
- The federal government recently awarded $20 billion to a network of “green banks” that will focus on expanding green energy investment in DACs nationwide.[69]

Clean energy technologies are becoming better adapted to the urban environment through increased market interest and strategic government investment. (2.5)

- The new Gradient window heat pump, developed as part of a NYCHA competition, has the potential to make installing heat pumps in older NYC apartment buildings dramatically cheaper and simpler.[70]

3. Business & Workforce Opportunities

Green jobs offer higher pay than many other jobs open to people with lower levels of formal education. (3.1)

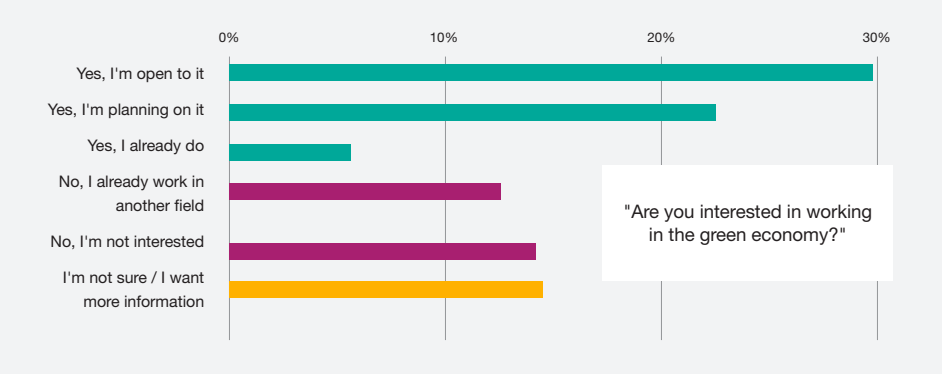
- The industry’s fast growth and competition for workers means there is room for career growth.
- Green jobs in construction trades are often well paying and unionized, and provide a good alternative to people without a college degree.
- On average, energy efficiency jobs pay about $2 per hour more than the national average hourly wage, and clean energy production jobs pay about $5 more.[71]
- More than 50% of the annual projected job openings in clean energy occupations typically require no more than a high school diploma or equivalent.[72]

The green economy is broad, and has room for people with many skills and career backgrounds. Bronx and Brooklyn residents have diverse skill sets that green employers can tap into. (3.2)

Most people, including those who are currently underrepresented in green careers, are interested in working in the green economy. (3.3)

- As shown in Chart 13, over half of RABA survey respondents said they were interested, open to, or already working in the green economy.
- RABA survey respondents from communities that have received less benefits and attention from NYSERDA are more likely to want to work in the green economy.
- Low income people and renters were more likely to choose the “yes” or “unsure” options.
- Black, Hispanic, and Asian respondents were generally open to working in a wider array of green economy sectors, including the more technical and labor intensive sectors.
- RABA Survey respondents indicated interest in higher paying jobs that offer the potential to learn, earn more money, and help their communities and the environment.

Chart 13. Interest in Working in the Green Economy



Green industries are expanding rapidly in the region. (3.4)

- The green economy is growing faster than the overall economy in NYS.[73]
- Major government policies and legislation, such as the IRA, NYC's Local Law 97, and the State's forthcoming Cap and Invest program, are supercharging the green economy.
- Offshore wind, specifically Empire 1, is projected to bring over 1000 union jobs to Brooklyn.[74] Solar and building decarbonization are also growing quickly throughout the city.
- Employers are flexible about certifications, skills, experience due to high demand for workers.

Non Green Economy/Clean Energy Small Businesses want to be engaged thoroughly. (3.5)

- Some property owners and business owners have interest in solar panels but they don't know where to begin and haven't been able to get far in learning how to move forward.
- Some businesses have been engaged by utility companies in the past but not consistently.
- There needs to be language support for small business engagement. For example, Pitkin Avenue BID, located in Brownsville, Brooklyn, has a large population of small business owner that speak Chinese, Korean, and Spanish.

VI. Recommendations

This chapter represents recommendations for both NYSERDA and the Bronx/Brooklyn Hub to pursue in response to RABA findings.

The recommendations are organized on a timeline:

A. Short term: recommendations for the coming year, through mid-2025.

B. Medium term: recommendations for the remainder of this Hub contract, through mid-2026.

C. Long term: recommendations stretching beyond the end of this Hub contract.

A. Short Term

• Residential Program Adoption

Increase funding devoted to outreach and marketing for LMI programs, especially in DACs. (Implementers: NYSERDA)

Significantly increase monetary investment and staffing for multilingual outreach and translation services that are available for Hub organizations to utilize, not just for marketing but also for providing all Hub services. Utilize a trans-language approach, in which programs are provided entirely in other languages rather than being translated from English.[75] (Implementers: NYSERDA, Hub)

- In the Bronx and Brooklyn, Spanish, Russian, Chinese, Urdu, Arabic, and Haitian Kreyol are the most prominent languages.
- Language needs will vary by area for small business engagement but the need still exists
- NYC government translates all relevant materials into 11 languages.

Create a consumer-facing NY State Clean Energy Hubs website that offers centralized information about the types of programs and technologies available in the state and directs to individual Hubs' websites. Launch a marketing campaign to promote this website and the Hubs. When necessary, work with Hubs to create their own standalone websites. Ensure there is multilingual accessibility here. (Implementers: NYSERDA, Hub)

Ensure that energy advisors are provided the tools to offer helpful and timely assistance and stay on top of programs by investing in robust, continuous training, and simple client tracking tools. Create accountability structures through program design to ensure that customers receive timely responses and do not fall through the cracks. (Implementers: NYSERDA, Hub)

Co-brand the Hub with the existing, trusted CBOs that are a part of it and emphasize their role in its activities and programs. (Implementers: Hub)

Continue to build a network of partners to amplify the Hub's reach: make connections between climate, housing, and workforce organizations. Cultivate a referral network in which clients are directed to other organizations to access wraparound services, and those organizations refer to the Hub for the services it provides. (Implementers: Hub)

Use a mix of outreach methods to reach different audiences. (Implementers: NYSERDA, Hub)

- While personal networks ranked the highest as an information source, social media, internet search, TV/Radio and Community events all ranked highly

Harness the power of word of mouth and cultivate trusted messengers. Document and highlight DAC community members' positive experiences with home upgrades and green jobs through events, building tours, etc. Compensate these community members for their help. (Implementer: NYSERDA, Hub)

- The RABA survey found that the top method people find their information is through personal networks.

Meet people at the events and locations they already visit (e.g. street fair or cultural event, religious services, schools, community centers, hair salons, parks, bodegas). (Implementers: NYSERDA, Hub)

- The Hub is already very adept at this and the RABA survey response is evident of this. NYSERDA should support these strategies.

Support the Hub in offering incentives to those who attend Hub events - free food, money, giveaways, games, child care, etc. (Implementers: NYSERDA, Hub)

- The Hub organizations already do this and have found this to be successful but more support and resources should be allocated.

Launch a campaign to combat misinformation and scams surrounding clean energy home upgrades. Work with the Hubs to identify and punish scammers and companies with bad business practices. (Implementers: NYSERDA, Hub)

Partner with culturally embedded CBOs to create communications materials that explain how programs work in easy to understand, graphical ways, like timelines, checklists, etc. (Implementers: NYSERDA, Hub)

Make program applications more accessible to people with limited tech access or knowledge. Create paper versions of online-only applications for people to take home to review if they request. Design forms that people can fill out on their phones and ensure there is multilingual accessibility here as well. Be able to assist people with a computer, scanner, and tech support at Hub organization offices. (Implementers: NYSERDA, Hub)

Conduct in person program intakes at Hub events. This is already a Hub strategy and proved successful in the RABA survey outreach. (Implementer: Hub)

Identify more physical spaces in each borough that are available for Hub programming. (Implementers: Hub)

• Home Energy Upgrades

Support Hubs in building relationships with local contractors. Vet and update lists of contractors working in certain programs/geographies more thoroughly and frequently to ensure that they are accurate. (Implementers: NYSERDA, Hub)

Support and train contractors on how to navigate rebate/incentive program processes, and about the opportunities of working in DACs. Focus on expanding the number of contractors working in Bronx and Brooklyn DACs. (Implementers: NYSERDA, Hub)

Utilize new revenue sources like the IRA and Cap & Invest to make incentives for home upgrades more generous, especially for LMI residents. Provide larger incentives, more grants, fewer loans, and increased income eligibility. (Implementers: NYSERDA)

Explore ways to make program applications more user friendly. Streamline and reduce paperwork burden wherever possible. Field test with Hub partners. Ensure multilingual accessibility. (Implementers: NYSERDA)

Work with Hubs to develop a strategy for assisting renters and helping them access programs available to them. Engage small landlords, helping them make upgrades while ensuring tenants also benefit. Create a toolkit and support for tenants organizing to get their landlord to make changes. Lead with smaller changes to build trust to work towards larger energy changes. (Implementers: NYSERDA, Hub)

• Workforce

Build relationships with major green workforce organizations and employers citywide to offer wider workforce options beyond our boroughs (Implementers: NYSERDA, Hub)

Identify, build awareness, and make referrals to existing certifications/ training/apprenticeship programs that meet employers needs. (Implementers: Hub)

Support the Hub in hosting green career fairs and career exploration workshops that incorporate certifications/training programs. (Implementers: NYSERDA, Hub)

B. Medium Term

• Home Energy Upgrades

Overhaul community solar. Expand it, improve its benefits, work out kinks with utilities applying credits, and automatically enroll and notify batches of LMI renters. (Implementers: NYSERDA, utilities)

Use 80% AMI to define low-income for all NYSERDA programs, including to define eligibility for the EmPower+ low income incentive, to reflect differences in cost of living across the state and match the federal IRA definition.[76] (Implementer: NYSERDA, utilities)

Identify ways to dramatically expand access to funding to cover necessary structural/health and safety repairs alongside home energy upgrades. (Implementers: NYSERDA) Potential Opportunities to do this include:

- Expand EmPower+ to cover these repairs or launch a new program eligible to anyone for EmPower+ to cover these needed repairs.
- Dramatically expand HPD's HomeFix to become a year-round and adequately funded program.
- AHC's RESTORE program could serve as a model. It offers up to $20,000 in grants for home repairs to elderly homeowners making less than 100% AMI. An expanded version could serve homeowners of all ages.

Create more programs allowing renters to benefit from the clean energy economy. Examples could include helping renters get induction stoves and energy efficient appliances, better engaging landlords and helping residents do the same. (Implementers: NYSERDA)

Address the problem of electrification increasing renters' utility costs by reforming utility rate structures or creating a new energy affordability program for renters living in electrified units. (Implementers: NYSERDA)

Explore ways to prequalify more residents to LMI programs: (Implementers: NYSERDA)

- Bring back and expand geo-eligiblity programs to cover residents of DACs.
- Prequalify applicants that are accepted to a particular income restricted program to additional income restricted programs.
- Coordinate with agencies administering low income benefits programs to prequalify and notify recipients.

Increase transparency of pricing for home energy upgrades and how much customers can expect incentive programs to cover. (Implementers: NYSERDA)

Build in more quality checks and accountability for contractors to do good work into program design. (Implementers: NYSERDA)

Explore using community campaign funding to address specific localized problems. (Implementers: Hub)

- Offer free necessary structural/health and safety repairs in cases where these are necessary to enable efficiency upgrades.
- Take advantage of uniform building characteristics in particular areas to access economies of scale through bulk purchasing, standardization. Test this model in NYC's densely populated neighborhoods.
- Connect resilience and sustainability: provide special outreach, assistance, and funding to customers after natural disasters.

• Workforce

Work with Hubs to **launch a public awareness campaign to educate communities about what the green economy is, combat misconceptions, showcase the breadth of opportunities, highlight success stories, explain the importance of green jobs for the environment and economy, and demystify paths to entering these careers.** (Implementers: NYSERDA, Hub)

Work with clean energy employers and workforce development programs **to establish robust follow-up systems to track the hiring, retention, and advancement of priority populations**, as well as the career progression of participants in certification and training initiatives. (Implementer: NYSERDA)

Explore ways to **streamline the processes by which green economy businesses and contractors interact with NYSERDA.** Offer extra assistance with administrative burden to smaller/MWBE businesses without as much experience navigating government programs. (Implementers: NYSERDA)

Educate non-green economy businesses from underrepresented communities about how to get involved in the green economy, available certifications, and benefits of doing so.(Implementers: NYSERDA, Hub)

C. Long Term

• Outreach and Communication

In the next round of Hub contracts, **provide Hubs with significantly more funding to expand the number of energy advisors and community campaigns that are necessary to cover boroughs with millions of people.** (Implementers: NYSERDA)

Consider restructuring the Hubs within NYC (the current breakdown of boroughs is confusing) and/or encourage more coordination between NYC Hubs. For example, have monthly NYC Hub meetings rather than statewide Hub meetings where much of the focus ends up being on upstate NY, in a way that is not always very relevant to NYC hubs. While CBOs tend to have their own

catchment areas, organizations in NYC do know each other and facilitating this type of communication could improve effectiveness for everyone as it would encourage resource sharing in addressing problems that are common to all. (Implementers: NYSERDA)

• Home Energy Updates

Create more programs that center and integrate resilience in response to escalating climate threats. Examples include programs that integrate batteries and solar, moving equipment out of basements, and giving economic incentive to those who have gone through a natural disaster. (Implementers: NYSERDA)

• Workforce

Devote more resources to workforce development in the next iteration of the Hubs, and shift the focus of workforce development work more towards supporting workers, especially from underrepresented communities, as opposed to employers. (Implementers: NYSERDA)

Identify additional partners to offer wraparound services like a stipend, necessary tools for the job, transportation, child care, and food to facilitate participation in green jobs training programs. Many of the Hub organizations have departments that already do this work. Providing more resources to expand this to Hub work would be more efficient. (Implementers: NYSERDA, Hub)

Where needed, work with partners to develop additional certifications/training programs serving priority populations that will facilitate entry into the clean energy industry to fill gaps. (Implementers: NYSERDA)

Build relationships with and support unions/organizing in the green economy to ensure that green jobs continue to be good livable jobs. (Implementers: NYSERDA, Hub)

Conduct deeper research on the current and future green economy in NYC, such as sector specific analyses, to become an authority on green workforce issues. (Implementers: NYSERDA, Hub)

Bibliography

ALIGN. “ALIGN to NYC Council: Local Law 97 Will Create More than 40,000 Green Jobs, Help Expand Annual Retrofit Market to $20 Billion,” 2021. https://alignny.org/press/align-to-nyc-council-local-law-97-will-create-more-than-40000-green-jobs-help-expand-annual-retrofit-market-to-20-billion/.

Asian American Federation. “Profile of NYC’s Sri Lankan Americans,” 2019.

Benshoff, Laura. “A Low-Income Energy-Efficiency Program Gets $3.5B Boost, but Leaves out Many in Need,” May 13, 2022. https://www.npr.org/2022/05/13/1096114029/low-income-energy-efficient-weatherization-program-3-5b-needy.

CUNY NYSIEB. “Translanguaging Guides,” 2021. https://www.cuny-nysieb.org/translanguaging-resources/translanguaging-guides/.

Delaney, Jillian. “Despite Delays and Funding Shortfalls, Staten Island’s First Offshore Wind Operation Is Slated to Open in 2026.” *Silive.com*, March 7, 2024. https://www.silive.com/climate/2024/03/despite-delays-and-funding-shortfalls-staten-islands-first-offshore-wind-operation-is-slated-to-open-in-2026.html.

E2. “Clean Jobs New York 2023,” November 20, 2023. https://e2.org/reports/clean-jobs-new-york-2023/.

Gagnon, R., & Podapati, Y., "Published August 14, 2023. Community Hubs Dashboard.

Groom, Nichola. “Offshore Wind Company Will Retrain New York Power Plant Union for Clean Energy Jobs.” Reuters, June 26, 2023. https://www.reuters.com/business/energy/offshore-wind-company-will-retrain-ny-power-plant-union-clean-energy-jobs-2023-06-26/.

Kresowik, Mark. “New Electricity Rates Are Needed to Support Equitable Heat Pump Adoption.” *ACEEE* (blog), July 11, 2024. https://www.aceee.org/blog-post/2024/07/new-electricity-rates-are-needed-support-equitable-heat-pump-adoption.

Laguardia Community College. “Attentive Energy One and LaGuardia Community College Announce $16 Million Proposal for Queens Offshore Wind Training Hub and Network of Training Providers,” 2023. https://www.laguardia.edu/news/attentive-energy-one-and-laguardia-community-college-announce-16-million-proposal-for-queens-offshore-wind-training-hub-and-network-of-training-providers/.

Lombrozo, Tania. “Barriers For Women Today May Be Less Visible, But Not Less Real.” *NPR*, March 21, 2016. https://www.npr.org/sections/13.7/2016/03/21/471234948/barriers-for-women-today-may-be-less-visible-but-not-less-real.

MacPherson, Mary, Roxana Ayala, and Dan York. “Expanding Opportunity through Energy Efficiency Jobs: Strategies to Ensure a More Resilient, Diverse Workforce.” *ACEEE*, October 29, 2020. https://www.aceee.org/research-report/u2010.

Maldonado, Samantha. “Solar Customers Say Con Ed Still Not Crediting Them for Power Generated.” *The City*, August 29, 2023. https://www.thecity.nyc/2023/08/29/con-ed-nonpayment-credits-solar-customers/.

Misdary, Rosemary. “New York’s Solar Energy Incentives Exclude Low-Income Residents, Report Says.” *Gothamist*, April 14, 2024. https://gothamist.com/news/new-yorks-solar-energy-incentives-exclude-low-income-residents-report-says?utm_source=sfmc&utm_medium=nypr-email&utm_campaign=Newsletter+-+Early+Addition+-+20240415&utm_term=households+earning+less+than+$50,000&utm_id=323757&sfmc_id=78168612&utm_content=2024415&nypr_member=Unknown.

National Association of Home Builders. “Median Age of Housing Stock by State Varies by More Than 35 Years,” 2021. https://www.nahb.org/blog/2021/04/median-age-of-housing-stock-by-state-varies-by-more-than-35-years/.

Newman, Andy. “What We Know about the People Who Died in the Flooding.” *The New York Times*, September 2, 2021. https://www.nytimes.com/2021/09/02/nyregion/ida-new-york-city-deaths.html.

NYC DCP. “Language Access,” 2023. https://www.nyc.gov/site/planning/about/language-access.page.
———. “PLUTO 2023 v.2,” 2023. https://www.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page.

———. “Top Languages Spoken at Home, 2011-2015,” 2017.

NYC DOHMH. “Asthma.” Environment & Health Data Portal, 2022. https://a816-dohbesp.nyc.gov/IndicatorPublic/data-explorer/asthma/?id=2414#display=map.

———. “Interactive Heat Vulnerability Index.” Environment & Health Data Portal, 2022. https://a816-dohbesp.nyc.gov/IndicatorPublic/data-features/hvi/.

NYC EDC. “Green Economy Action Plan,” 2024. https://edc.nyc/green-economy-action-plan.

NYC MOCEJ. “New York City Stormwater Flood Maps.” 2022. https://experience.arcgis.com/experience/6f4cc60710dc433585790cd2b4b5dd0e.

NYC Regional Economic Development Council. “2022 New York City Annual Report,” 2022. https://regionalcouncils.ny.gov/new-york-city.

NYS DEC and NYSERDA. “New York Cap-and-Invest (NYCI) Pre-Proposal Stakeholder Outreach: Preliminary Scenario Analyses,” 2024.

NYS HCR. “Residential Emergency Services to Offer (Home) Repairs to the Elderly (RESTORE) Program Local Program Administrator (LPA) Manual,” 2022. https://hcr.ny.gov/restore-program.

NYSERDA. “2022 New York Clean Energy Industry Report,” 2022. https://www.nyserda.ny.gov/About/Publications/New-York-Clean-Energy-Industry-Report.

———. “2023 New York Clean Energy Industry Report,” 2023. https://www.nyserda.ny.gov/About/Publications/New-York-Clean-Energy-Industry-Report.

———. “Final Disadvantaged Communities (DAC),” 2023. https://data.ny.gov/Energy-Environment/Final-Disadvantaged-Communities-DAC-2023/2e6c-s6fp.

———. “New York Selected To Receive Nearly $250 Million By Environmental Protection Agency for Solar Projects Benefitting Low Income Residents,” April 22, 2024. https://www.nyserda.ny.gov/About/Newsroom/2024-Announcements/2024_04_22-Governor-Hochul-Announces-NY-Selected-to-Receive-250-Million-For-Solar.

———. “New York State Releases Draft Disadvantaged Communities Criteria to Advance Climate Justice,” 2022. https://www.nyserda.ny.gov/About/Newsroom/2022-Announcements/2022-03-09-New-York-State-Releases-Draft-Disadvantaged-Communities-Criteria.

Office of Budget Policy and Analysis. “New Yorkers in Need: The Housing Insecurity Crisis,” 2024. https://www.osc.ny.gov/reports/new-yorkers-need-housing-insecurity-crisis.

Ostapiuk, Joseph. “See inside College of Staten Island’s Push to Prep Students to Meet off-Shore Wind Challenges.” Silive.Com, October 1, 2023. https://www.silive.com/news/2023/10/see-inside-college-of-staten-islands-push-to-prep-students-to-meet-off-shore-wind-challenges.html.

Pratt Center For Community Development. “How NYSERDA’s EmPower+ Shortchanges Low Income Residents,” 2023. https://prattcenter.net/our_work/Empower+_shortchanges_new_yorkers.

———. “RABA Resident Survey,” 2023.

RABA External Organization Interviews, 2024 2023.

RABA Focus Groups, 2023.

RABA Internal Organization Interviews, 2023.

Simon, Matt. “The Next Heat Pump Frontier? NYC Apartment Windows.” *Wired*, March 29, 2024. https://www.wired.com/story/the-next-heat-pump-frontier-nyc-apartment-windows/#:~:text=One%20of%20the%20hurdles%20for,electricity%2C%20their%20bills%20may%20increase.

St. John, Jeff. “EPA’s New $20B ‘Green Bank’ Will Benefit Disadvantaged Communities Most.” *Canary Media*, April 4, 2024. https://www.canarymedia.com/articles/climatetech-finance/epas-new-20b-green-bank-will-benefit-disadvantaged-communities-most?utm_campaign=canary&utm_medium=email&_hsenc=p2ANqtz--ZLd1tcfBdiMBqEikyZ7PlzChQ75wIlucXaWnkZpvlYue1C1CYMwr6Hg_9XOajEwAkYuE6zshTpwQBouPuigwedTAulQ&_hsmi=301317597.

The White House. “The Inflation Reduction Act Delivers Affordable Clean Energy for New York,” 2022. https://www.whitehouse.gov/wp-content/uploads/2022/08/New-York.pdf.

University of Washington. “Self Sufficiency Standard: 2023 New York State Dataset,” 2023. https://selfsufficiencystandard.org/new-york/.

University of Buffalo. “Clean Energy Workforce Assessment for Western New York,” 2019. https://regional-institute.buffalo.edu/work/clean-energy-workforce-assessment-for-wny/.

U.S. Census Bureau. “2017-2021 American Community Survey 5-Year Estimates,” 2021. socialexplorer.com.

———. “2023 New York City Housing and Vacancy Survey: Selected Initial Findings,” 2024. https://rentguidelinesboard.cityofnewyork.us/research/nyc-housing-vacancy-survey/.

———. “LEHD Origin-Destination Employment Statistics (2002-2019) [Computer File].” OnTheMap, 2023. https://onthemap.ces.census.gov.

US DOE. “LEAD Tool,” 2023. https://www.energy.gov/scep/slsc/lead-tool.

Weller, Christian E. “African Americans Face Systematic Obstacles to Getting Good Jobs.” Center for American Progress, December 5, 2019. https://www.americanprogress.org/article/african-americans-face-systematic-obstacles-getting-good-jobs/.

Notes

1. U.S. Census Bureau, “American Community Survey 5-Year Estimates,” 2022, socialexplorer.com
2. NYSERDA, “Final Disadvantaged Communities (DAC),” 2023, https://data.ny.gov/Energy-Environment/Final-Disadvantaged-Communities-DAC-2023/2e6c-s6fp.
3. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
4. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
5. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
6. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
7. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
8. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
9. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
10. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
11. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
12. University of Washington’s Self Sufficiency Standard (SSS) measures the income families need to meet an adequate standard of living around the country.
13. The SSS for Brooklyn is broken out into 2 sections - Northwest Brooklyn, which includes neighborhoods such as Williamsburg and Greenpoint, and the rest of Brooklyn excluding Northwest Brooklyn. There are a few DACs in Northwest Brooklyn.
14. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
15. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
16. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
17. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
18. U.S. Census Bureau, “LEHD Origin-Destination Employment Statistics (2002-2019) [Computer File],” OnTheMap, 2023, https://onthemap.ces.census.gov.
19. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
20. NYC DCP, “PLUTO 2023 v.2,” 2023, https://www.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page.
21. NYC DCP, “PLUTO.”
22. NYC DCP, “PLUTO.”
23. NYC DCP, “PLUTO.”
24. NYC DCP, “PLUTO.”
25. NYC DCP, “PLUTO.”
26. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
27. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
28. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
29. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
30. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
31. Office of Budget Policy and Analysis, “New Yorkers in Need: The Housing Insecurity Crisis,” 2024, https://www.osc.ny.gov/reports/new-yorkers-needhousing-insecurity-crisis.
32. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
33. NYSERDA Clean Energy Industry Report, 2023.
34. NYSERDA Clean Energy Industry Report Fact Sheet, 2023.
35. New York City Economic Development Corporation, “Green Economy Action Plan,” March 2024, p. 21
36. New York City Economic Development Corporation, “Green Economy Action Plan,” March 2024, p. 23
37. NYSERDA, “New York Clean Energy Industry Report 2023,” p.9
38. https://www.empirewind.com/2024/06/10/groundbreaking-at-south-brooklyn-marine-terminal-to-transform-port-into-nyc-offshore-wind-hub/
39. NYSERDA NY Clean Energy Industry Report, 2022.
40. NYSERDA, “New York Clean Energy Industry Report 2023,” p.30
41. Clean Energy Workforce Assessment for Western NY 2019, University of Buffalo.
42. New York City Economic Development Corporation, “Green Economy Action Plan,” March 2024, p. 50
43. Clean Energy Workforce Assessment for Western NY 2019, University of Buffalo.
44. https://www.govtech.com/education/higher-ed/cuny-to-use-4m-in-city-funding-for-green-workforce-programs
45. IRA New York State Fact Sheet, White House
46. ALIGN Testimony to City Council, 2021
47. NYSERDA Cap and Invest Preliminary Analysis Webinar, 2024 (slides 23, 51)
48. NYSERDA Data Visualization Tool
49. According to the draft RABAs for the Manhattan and Queens/Staten Island Hubs, Manhattan receives $23 per person, Queens $24 per person and Staten Island $83 per person. The large discrepancy between Staten Island and the other boroughs can be explained by the predominance of single-family housing stock in that borough which have been able to benefit from specific NYSERDA programs
50. Gagnon, R., & Podapati, Y., "Community Hubs Dashboard."

51. Gagnon, R., & Podapati, Y., "Community Hubs Dashboard."
52. Gagnon, R., & Podapati, Y., "Community Hubs Dashboard."
53. 45 responses indicated they lived in another borough. These responses were not included in the analysis.
54. The Bronx/Brooklyn RABA Survey
55. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
56. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
57. Language Access - DCP
58. Median Age of Housing Stock by State Varies by More Than 35 Years / Building Ages and Rents in New York
59. NYC DCP PLUTO, 2023
60. A low-income energy-efficiency program gets $3.5B boost, but leaves out many in need
61. Pratt Center EmPower+ Report
62. Pratt Center EmPower+ Report
63. U.S. Census Bureau, “2022 ACS 5-Year Estimates.”
64. The Bronx/Brooklyn RABA Survey
65. The Bronx/Brooklyn RABA Survey
66. NYSERDA, “New York Clean Energy Industry Report 2022
67. African Americans Face Systematic Obstacles to Getting Good Jobs / Barriers For Women Today May Be Less Visible, But Not Less Real
68. New York Selected To Receive Nearly $250 Million By Environmental Protection Agency for Solar Projects Benefitting Low Income Residents - NYSERDA
69. EPA’s new $20B ‘green bank’ will benefit disadvantaged communities most, Canary Media
70. The Next Heat Pump Frontier? NYC Apartment Windows, WIRED
71. Expanding Opportunity Through Energy Efficiency Jobs, ACEEE
72. Clean Energy Workforce Assessment for Western NY 2019, University of Buffalo

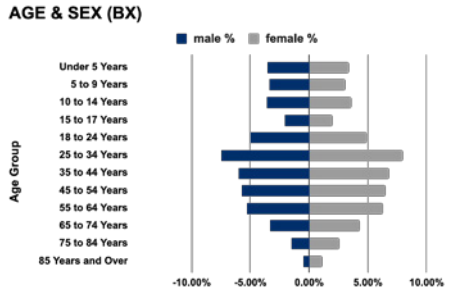
Appendices

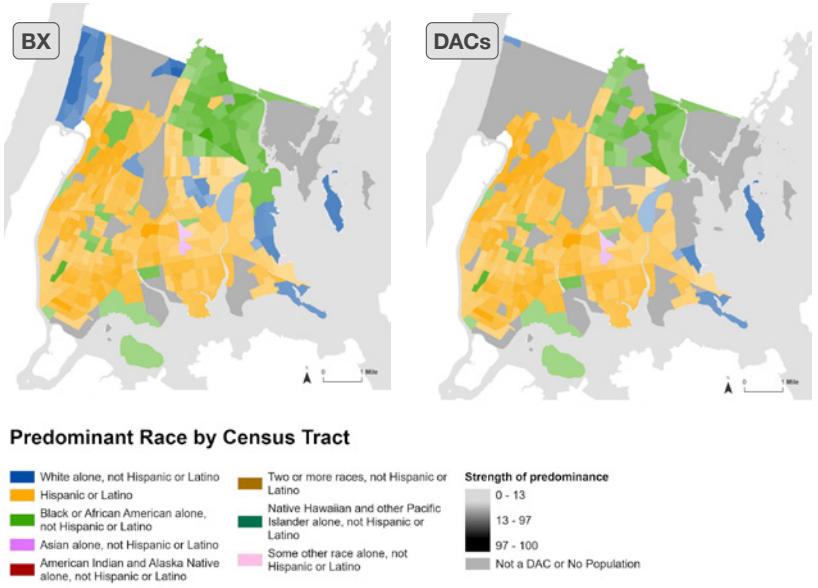
Appendix A
Complete Sociodemographic Data

THE BRONX: OVERVIEW

TOTAL POPULATION [1]
1,443,229

TOTAL POPULATION DAC [1,2]
1,291,164 ***(89% of total pop.)***





[1] ACS 5-Year Estimates, 2022
[2] NYSERDA Final Disadvantaged Communities, 2023

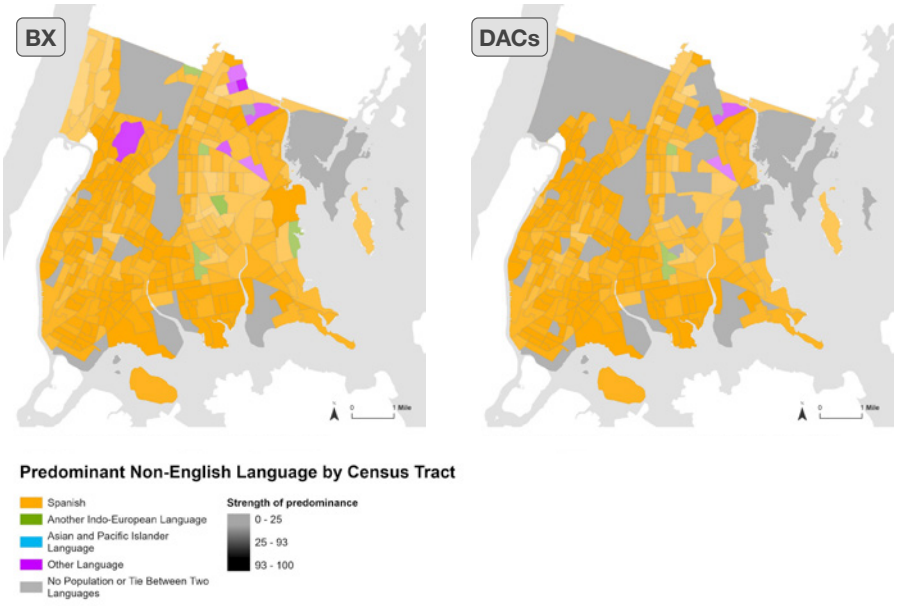
RACE & ETHNICITY

Race	DACs	Bronx	NYC	NYS
White Alone	15.2%	17.9%	37.5%	58.8%
Black or African American Alone	34.7%	34.1%	23.1%	15.1%
American Indian and Alaska Native Alone	1.0%	1.0%	0.6%	0.5%
Asian Alone	3.7%	3.9%	14.5%	8.8%
Native Hawaiian and Other Pacific Islander Alone	0.1%	0.1%	0.1%	0.1%
Some Other Race Alone	34.1%	32.0%	15.4%	9.4%
Two or More Races	11.1%	11.0%	8.9%	7.4%

Ethnicity	DACs	Bronx	NYC	NYS
Hispanic or Latino	**59.6%**	**56.4%**	**29.0%**	**19.5%**
White Alone	*9.6%*	*9.3%*	*6.3%*	*4.9%*
Black or African American Alone	*6.2%*	*5.7%*	*2.1%*	*1.2%*
American Indian and Alaska Native Alone	*0.8%*	*0.8%*	*0.4%*	*0.3%*
Asian Alone	*0.1%*	*0.2%*	*0.1%*	*0.1%*
Native Hawaiian and Other Pacific Islander Alone	*0.1%*	*0.1%*	*0.0%*	*0.0%*
Some Other Race Alone	*33.3%*	*31.1%*	*14.2%*	*8.6%*
Two or More Races	*9.5%*	*9.2%*	*5.8%*	*4.4%*
Not Hispanic or Latino	**40.5%**	**43.6%**	**71.0%**	**80.5%**
White Alone	*5.6%*	*8.6%*	*31.2%*	*53.8%*
Black or African American Alone	*28.5%*	*28.3%*	*21.0%*	*13.8%*
American Indian and Alaska Native Alone	*0.2%*	*0.2%*	*0.2%*	*0.2%*
Asian Alone	*3.5%*	*3.8%*	*14.4%*	*8.8%*
Native Hawaiian and Other Pacific Islander Alone	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Some Other Race Alone	*0.9%*	*0.9%*	*1.1%*	*0.8%*
Two or More Races	*1.6%*	*1.8%*	*3.1%*	*3.1%*

LANGUAGE [1]

Language Spoken at Home (Population 5+)	**DACs**	**Bronx**	**NYC**	**NYS**
Speak Only English	**39.6%**	**42.0%**	**52.2%**	**69.4%**
Spanish	**49.8%**	**46.8%**	**23.3%**	**14.8%**
French, Haitian, Or Cajun	**1.6%**	**1.6%**	**2.3%**	**1.5%**
German Or Other West Germanic Languages	**0.1%**	**0.1%**	**1.6%**	**1.4%**
Russian, Polish, Or Other Slavic Languages	**0.3%**	**0.4%**	**3.5%**	**2.1%**
Other Indo-European Languages	**2.9%**	**3.2%**	**5.5%**	**3.9%**
Korean	**0.1%**	**0.1%**	**0.8%**	**0.5%**
Chinese (Incl. Mandarin, Cantonese)	**0.3%**	**0.4%**	**6.2%**	**3.2%**
Vietnamese	**0.2%**	**0.2%**	**0.1%**	**0.1%**
Tagalog (Incl. Filipino)	**0.3%**	**0.4%**	**0.6%**	**0.4%**
Other Asian And Pacific Island Languages	**0.2%**	**0.3%**	**1.1%**	**0.9%**
Arabic	**0.6%**	**0.5%**	**1.0%**	**0.6%**
Other And Unspecified Languages	**4.1%**	**4.1%**	**1.9%**	**1.2%**



LANGUAGE [1]

Top non-English languages in DACs *(~10,000 speakers above age 5)*:

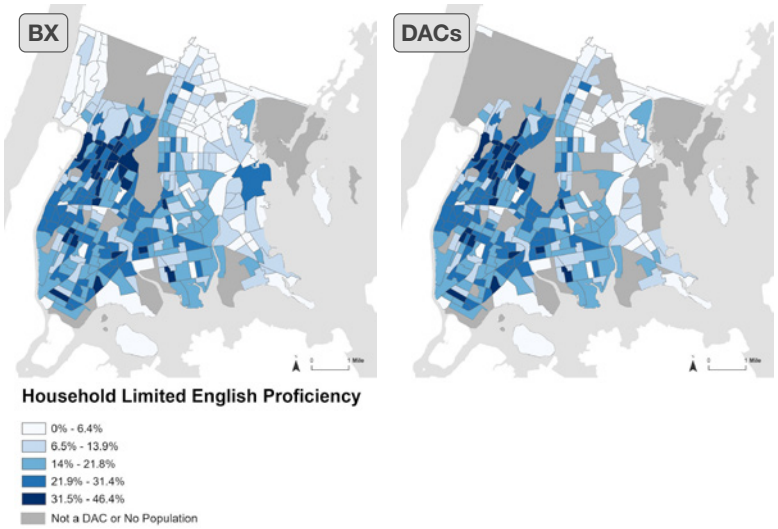
1. **Spanish**: *597,676 speakers*
2. **French, Haitian, or Cajun**: *19,562 speakers*
3. **Other Indo-European Languages**: *34,607 speakers*
4. **Other and Unspecified Languages**: *49,377 speakers*

Over 30% of *all* of NYC's Spanish speakers live in Bronx DACs

Language Spoken at Home: Total Number of Speakers (Population 5+)	**DACs**	**Bronx**	**NYC**	**NYS**
Speak Only English	474,970	564,124	4,226,352	13,097,954
Spanish	597,676	628,625	1,890,388	2,784,045
French, Haitian, Or Cajun	19,562	21,619	188,399	281,762
German Or Other West Germanic Languages	819	1,345	125,818	261,221
Russian, Polish, Or Other Slavic Languages	3,070	5,195	284,035	388,155
Other Indo-European Languages	34,607	43,550	444,576	742,066
Korean	1,061	1,727	61,968	91,429
Chinese (Incl. Mandarin, Cantonese)	4,086	5,440	497,973	602,162
Vietnamese	2,010	2,619	10,530	22,091
Tagalog (Incl. Filipino)	3,815	4,689	49,675	78,814
Other Asian And Pacific Island Languages	2,551	3,320	89,405	177,857
Arabic	6,629	6,915	77,158	117,917
Other And Unspecified Languages	49,377	54,671	155,723	227,034

HOUSEHOLD ENGLISH PROFICIENCY [1]

Household Language and English Proficiency by Household (% of Total HH)					
Household Language	**English Proficiency**	**DACs**	**Bronx**	**NYC**	**NYS**
English Only	N/A	34.6%	37.1%	50.4%	68.2%
Spanish	Limited English Speaking Household	**17.0%**	**15.5%**	**6.5%**	**3.6%**
	Not A Limited English Speaking Household	37.5%	35.8%	17.2%	11.3%
Other Indo-European Languages	Limited English Speaking Household	**1.3%**	**1.4%**	**3.5%**	**2.0%**
	Not A Limited English Speaking Household	3.7%	4.2%	10.4%	7.7%
Asian And Pacific Island Languages	Limited English Speaking Household	**0.3%**	**0.4%**	**3.4%**	**1.8%**
	Not A Limited English Speaking Household	1.0%	1.1%	5.6%	3.6%
Other Languages	Limited English Speaking Household	**0.8%**	**0.8%**	**0.4%**	**0.3%**
	Not A Limited English Speaking Household	3.8%	3.8%	2.5%	1.6%
All Languages	*Limited English Speaking Household*	***19.4%***	***18.1%***	***13.8%***	***7.7%***



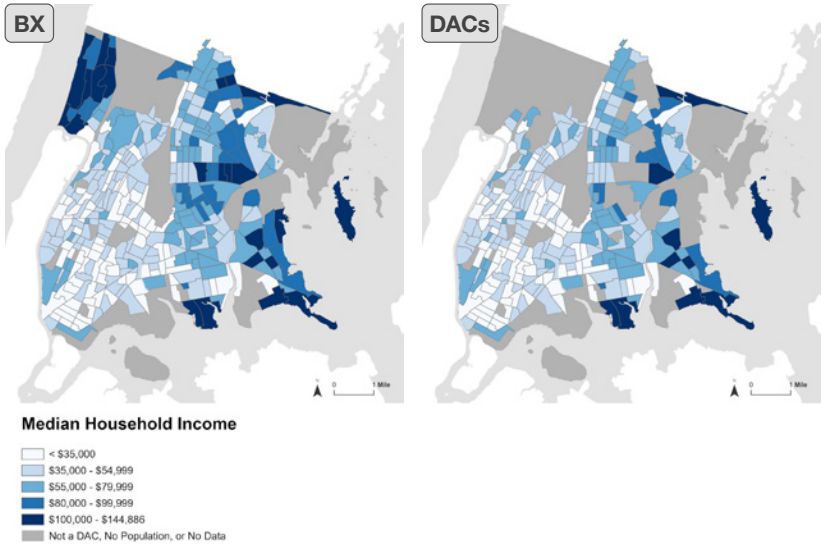
LABOR FORCE: PARTICIPATION [1]

Labor Force	DACs	Bronx	NYC	NYS
In Labor Force	58.3%	58.4%	63.2%	62.9%
In Armed Forces	0.1%	0.1%	0.1%	0.2%
Civilian	58.2%	58.3%	63.2%	62.8%
Employed	51.4%	51.8%	58.4%	58.8%
Unemployed	6.8%	6.5%	4.8%	3.9%
Not in Labor Force	41.7%	41.6%	36.8%	37.1%

Labor Participation Rate *by Race or Ethnicity*				
Race or Ethnicity		**Bronx**	**NYC**	**NYS**
Race	White alone	52.7%	64.9%	62.7%
	Black or African American alone	59.7%	60.2%	61.0%
	American Indian and Alaska Native alone	56.7%	64.8%	62.0%
	Asian alone	61.1%	64.4%	64.3%
	Native Hawaiian and Other Pacific Islander alone	77.6%	65.3%	64.2%
	Some other race alone	58.9%	61.5%	63.3%
	Two or more races	61.3%	64.7%	66.4%
Ethnicity	Hispanic or Latino origin (of any race)	59.4%	61.9%	64.3%
	White alone, not Hispanic or Latino	50.5%	65.6%	62.6%
Overall Labor Participation Rate		*58.4%*	*63.2%*	*62.9%*

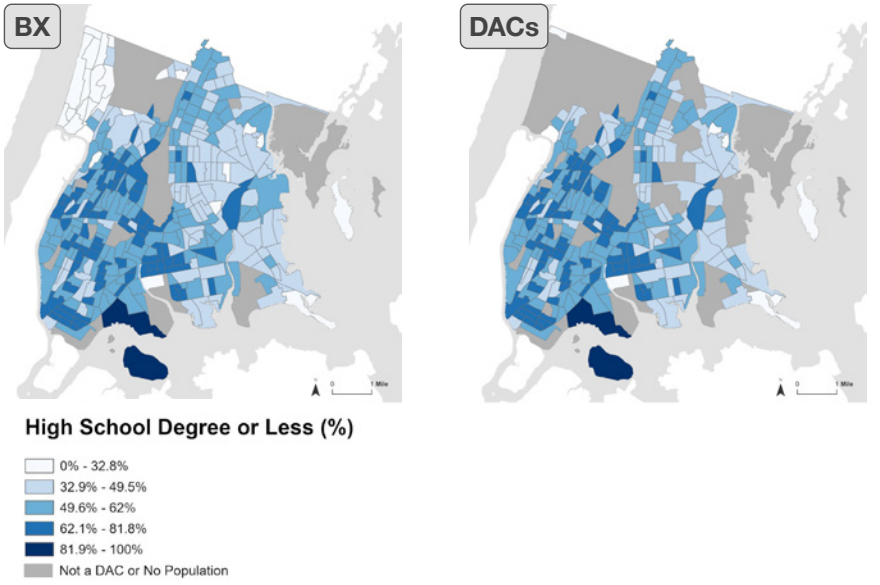
MEDIAN HOUSEHOLD INCOME [1]

Median Household Income *by Race or Ethnicity*					
Race or Ethnicity		**DACs**	**Bronx**	**NYC**	**NYS**
Race	White Alone Householder	$45,017	$55,583	$102,992	$90,866
	Black or African American Alone Householder	$45,483	$47,762	$58,011	$58,805
	American Indian and Alaska Native Alone Householder	$44,825	$46,568	$59,928	$59,483
	Asian Alone Householder	$66,115	$70,275	$84,031	$91,254
	Native Hawaiian and Other Pacific Islander Alone Householder	$35,426	$35,433	$59,792	$57,817
	Some Other Race Alone Householder	$38,557	$39,923	$50,448	$55,421
	Two or More Races Householder	$47,725	$49,348	$70,068	$74,254
Ethnicity	Hispanic or Latino Householder	$39,858	$41,220	$53,670	$61,135
	White Alone Householder, Not Hispanic or Latino	$61,092	$75,289	$110,890	$92,218
Overall MHI		*$43,799*	*$47,036*	*$76,607*	*$81,386*



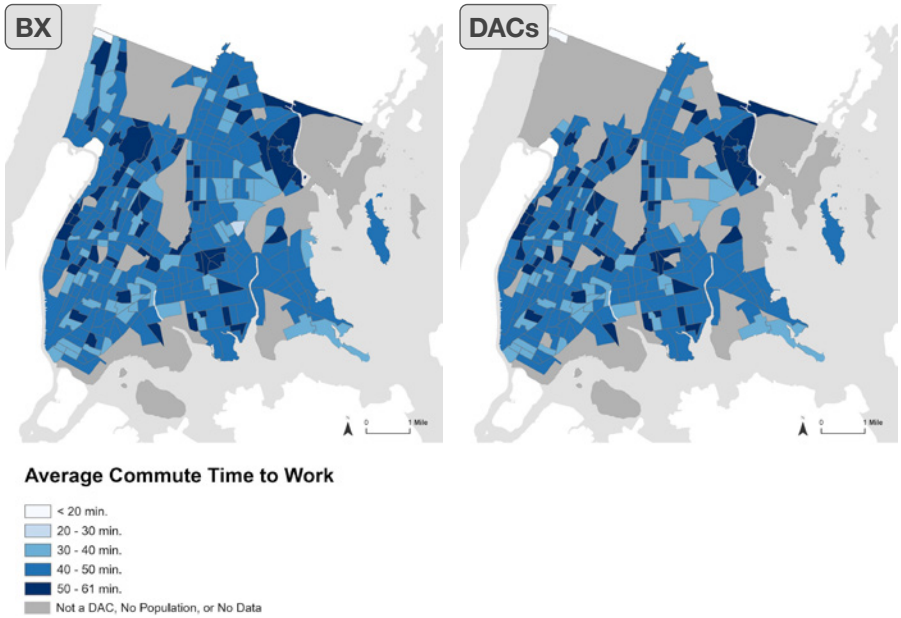
EDUCATIONAL ATTAINMENT [1]

Educational Attainment Level (Ages 25+)	**DACs**	**Bronx**	**NYC**	**NYS**
Less than High School	27.2%	25.5%	16.7%	12.4%
High School Graduate or More (Includes Equivalency)	72.8%	74.5%	83.3%	87.6%
Some College or More	43.8%	46.3%	60.0%	62.7%
Bachelor's Degree or More	18.5%	21.2%	40.2%	38.8%
Master's Degree or More	6.1%	7.7%	17.0%	17.2%
Professional School Degree or More	1.1%	1.7%	5.0%	4.8%
Doctorate Degree	0.4%	0.6%	1.7%	1.7%



COMMUTE TIME [1]

Travel Time to Work (for workers 16+)	DACs	Bronx	NYC	NYS
< 5 min.	1.4%	1.4%	1.2%	2.5%
5 - 14 min.	7.2%	7.3%	8.1%	17.5%
15 - 29 min.	17.4%	17.8%	21.0%	29.6%
30 - 44 min.	23.0%	22.8%	27.0%	22.0%
45 - 59 min.	16.8%	16.8%	16.2%	10.9%
60 - 89 min.	24.6%	24.3%	19.0%	11.9%
90+ min.	9.6%	9.6%	7.5%	5.6%
Average Commute Time	45 min.	45 min.	41 min.	33 min.



MEANS OF TRANSPORT TO WORK [1]

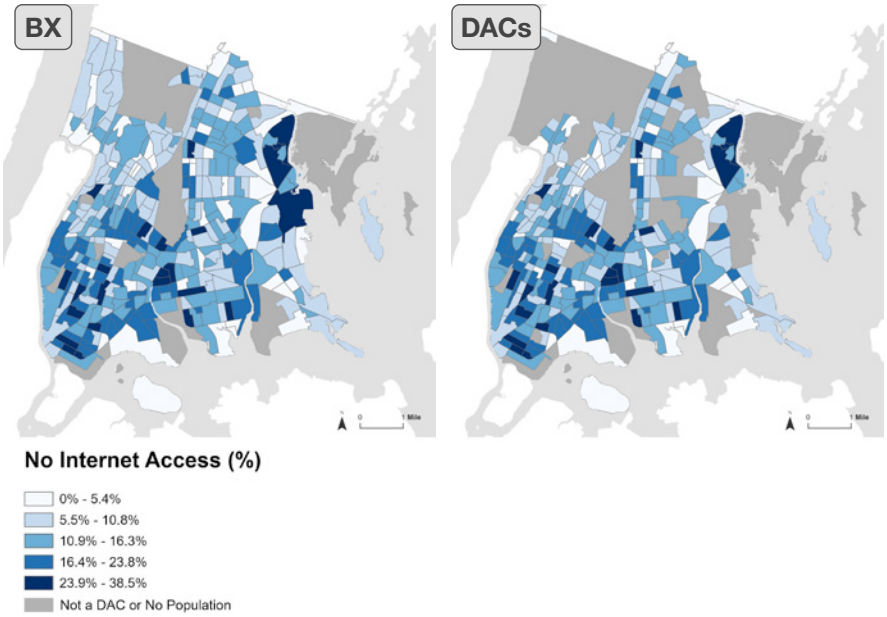
Means of Transport to Work (for workers 16+)	DACs	Bronx	NYC	NYS
Car, Truck, or Van	26.2%	28.1%	26.6%	56.9%
Drove Alone	*22.1%*	*23.7%*	*22.2%*	*50.5%*
Carpooled	*4.1%*	*4.4%*	*4.3%*	*6.3%*
Public Transportation (Includes Taxicab)	58.4%	56.3%	48.5%	24.1%
Motorcycle	0.0%	0.0%	0.1%	0.1%
Bicycle	0.5%	0.5%	1.5%	0.8%
Walked	7.6%	7.4%	9.4%	5.7%
Other Means	1.0%	1.0%	1.0%	0.9%
Worked At Home	6.3%	6.8%	13.1%	11.6%

VEHICLE ACCESS [1]

Vehicle Access by Household (Occupied)	DACs	Bronx	NYC	NYS
No Vehicle Available	63.4%	60.2%	54.7%	29.0%
1 Vehicle Available	27.6%	29.5%	32.0%	33.1%
2 Vehicles Available	7.2%	8.1%	10.2%	25.8%
3 Vehicles Available	1.4%	1.7%	2.4%	8.5%
4 Vehicles Available	0.4%	0.4%	0.6%	2.7%
5 or More Vehicles Available	0.1%	0.1%	0.2%	1.1%

INTERNET ACCESS [1]

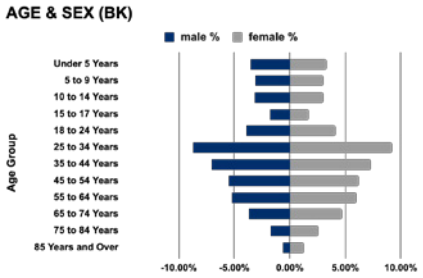
Internet Access by Household	DACs	Bronx	NYC	NYS
With An Internet Subscription	83.3%	83.8%	87.6%	88.4%
Dial-Up Alone	*0.1%*	*0.1%*	*0.1%*	*0.2%*
Broadband (such As Cable, Fiber Optic, or DSL)	*63.6%*	*64.5%*	*73.5%*	*75.6%*
Satellite Internet Service	*4.0%*	*4.0%*	*4.0%*	*4.1%*
Other Service	*2.0%*	*1.9%*	*0.9%*	*0.8%*
Internet Access Without A Subscription	2.9%	2.9%	2.1%	2.3%
No Internet Access	13.8%	13.3%	10.3%	9.4%

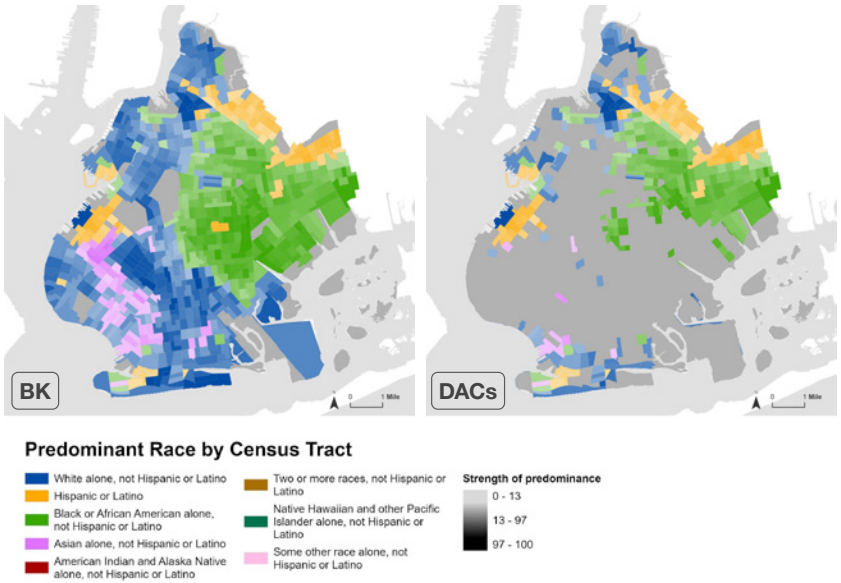


BROOKLYN: OVERVIEW

TOTAL POPULATION [1]
2,679,620

TOTAL POPULATION DAC [1,2]
1,222,191 ***(46% total pop.)***





RACE & ETHNICITY

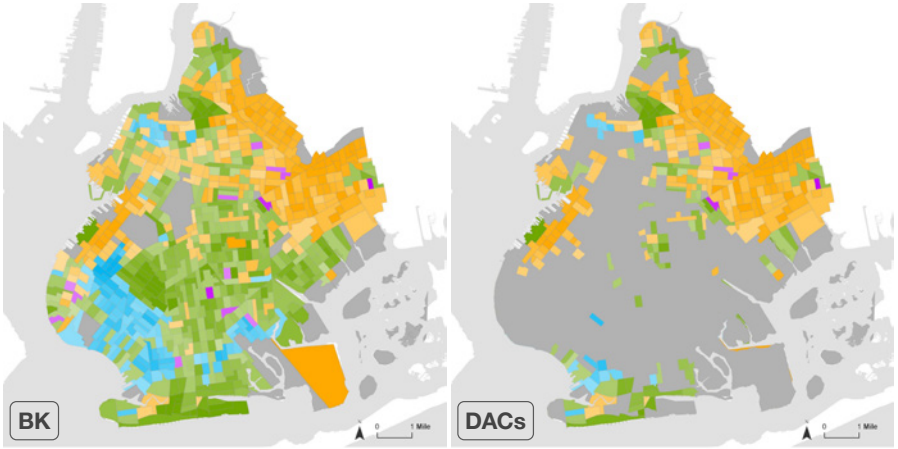
Race	DACs	Brooklyn	NYC	NYS
White Alone	**30.0%**	**40.4%**	**37.5%**	**58.8%**
Black or African American Alone	**39.3%**	**30.0%**	**23.1%**	**15.1%**
American Indian and Alaska Native Alone	**0.7%**	**0.5%**	**0.6%**	**0.5%**
Asian Alone	**7.5%**	**12.0%**	**14.5%**	**8.8%**
Native Hawaiian and Other Pacific Islander Alone	**0.1%**	**0.1%**	**0.1%**	**0.1%**
Some Other Race Alone	**14.0%**	**9.8%**	**15.4%**	**9.4%**
Two or More Races	**8.4%**	**7.3%**	**8.9%**	**7.4%**

Ethnicity	DACs	Brooklyn	NYC	NYS
Hispanic or Latino	**27.2%**	**18.9%**	**29.0%**	**19.5%**
White Alone	*6.0%*	*4.3%*	*6.3%*	*4.9%*
Black or African American Alone	*2.7%*	*1.7%*	*2.1%*	*1.2%*
American Indian and Alaska Native Alone	*0.5%*	*0.4%*	*0.4%*	*0.3%*
Asian Alone	*0.1%*	*0.1%*	*0.1%*	*0.1%*
Native Hawaiian and Other Pacific Islander Alone	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Some Other Race Alone	*13.2%*	*8.9%*	*14.2%*	*8.6%*
Two or More Races	*4.7%*	*3.5%*	*5.8%*	*4.4%*
Not Hispanic or Latino	**72.8%**	**81.1%**	**71.0%**	**80.5%**
White Alone	*24.1%*	*36.1%*	*31.2%*	*53.8%*
Black or African American Alone	*36.6%*	*28.3%*	*21.0%*	*13.8%*
American Indian and Alaska Native Alone	*0.1%*	*0.1%*	*0.2%*	*0.2%*
Asian Alone	*7.5%*	*11.9%*	*14.4%*	*8.8%*
Native Hawaiian and Other Pacific Islander Alone	*0.1%*	*0.0%*	*0.0%*	*0.0%*
Some Other Race Alone	*0.8%*	*0.8%*	*1.1%*	*0.8%*
Two or More Races	*3.6%*	*3.8%*	*3.1%*	*3.1%*

[1] ACS 5-Year Estimates, 2022
[2] NYSERDA Final Disadvantaged Communities, 2023

LANGUAGE [1]

Language Spoken at Home (Population 5+)	**DACs**	**Brooklyn**	**NYC**	**NYS**
Speak Only English	**57.4%**	**55.8%**	**52.2%**	**69.4%**
Spanish	**21.6%**	**14.6%**	**23.3%**	**14.8%**
French, Haitian, Or Cajun	**2.9%**	**3.5%**	**2.3%**	**1.5%**
German Or Other West Germanic Languages	**4.1%**	**4.2%**	**1.6%**	**1.4%**
Russian, Polish, Or Other Slavic Languages	**3.8%**	**6.2%**	**3.5%**	**2.1%**
Other Indo-European Languages	**2.8%**	**3.9%**	**5.5%**	**3.9%**
Korean	**0.2%**	**0.2%**	**0.8%**	**0.5%**
Chinese (Incl. Mandarin, Cantonese)	**3.8%**	**7.0%**	**6.2%**	**3.2%**
Vietnamese	**0.1%**	**0.1%**	**0.1%**	**0.1%**
Tagalog (Incl. Filipino)	**0.1%**	**0.2%**	**0.6%**	**0.4%**
Other Asian And Pacific Island Languages	**0.7%**	**0.9%**	**1.1%**	**0.9%**
Arabic	**0.8%**	**1.3%**	**1.0%**	**0.6%**
Other And Unspecified Languages	**1.6%**	**2.0%**	**1.9%**	**1.2%**



LANGUAGE [1]

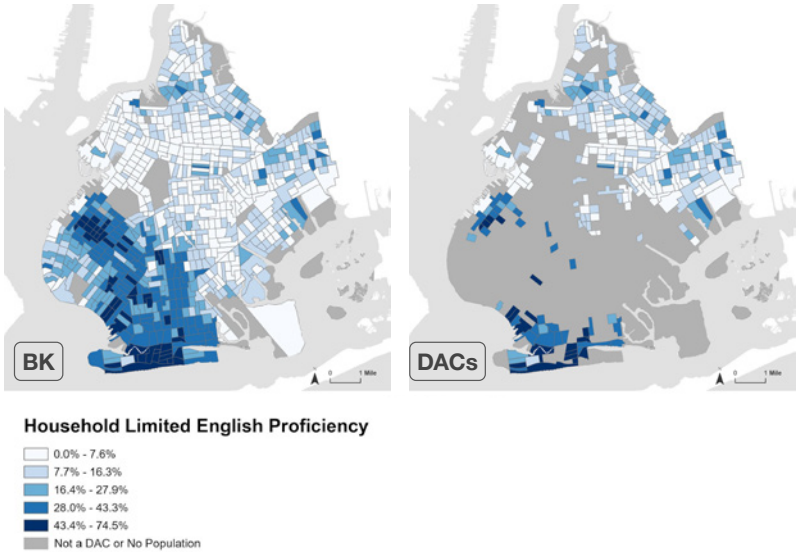
Top non-English languages in DACs *(~10,000 speakers above age 5)*:

1. **Spanish**: *246,383 speakers*
2. **German or West Germanic Languages**: *47,130 speakers*
3. **Russian, Polish, or Other Slavic Languages**: *43,702 speakers*
4. **Chinese (Incl. Mandarin, Cantonese)**: *43,568 speakers*
5. **French, Haitian, or Cajun**: *33,241 speakers*
6. **Other Indo-European Languages**: *31,710 speakers*
7. **Other and Unspecified Languages**: *18,329 speakers*

Language Spoken at Home: Total Number of Speakers (Population 5+)	**DACs**	**Brooklyn**	**NYC**	**NYS**
Speak Only English	654,040	1,393,047	4,226,352	13,097,954
Spanish	246,383	364,523	1,890,388	2,784,045
French, Haitian, Or Cajun	33,241	86,983	188,399	281,762
German Or Other West Germanic Languages	47,130	105,757	125,818	261,221
Russian, Polish, Or Other Slavic Languages	43,702	154,651	284,035	388,155
Other Indo-European Languages	31,710	97,866	444,576	742,066
Korean	2,764	6,011	61,968	91,429
Chinese (Incl. Mandarin, Cantonese)	43,568	175,423	497,973	602,162
Vietnamese	718	2,978	10,530	22,091
Tagalog (Incl. Filipino)	1,580	5,339	49,675	78,814
Other Asian And Pacific Island Languages	7,840	23,558	89,405	177,857
Arabic	8,566	31,632	77,158	117,917
Other And Unspecified Languages	18,329	48,726	155,723	227,034

HOUSEHOLD ENGLISH PROFICIENCY [1]

Household Language and English Proficiency by Household (% of Total HH)					
Household Language	**English Proficiency**	**DACs**	**Brooklyn**	**NYC**	**NYS**
English Only	N/A	54.6%	53.5%	50.4%	68.2%
Spanish	Limited English Speaking Household	**6.2%**	**3.9%**	**6.5%**	**3.6%**
	Not A Limited English Speaking Household	16.9%	11.8%	17.2%	11.3%
Other Indo-European Languages	Limited English Speaking Household	**4.8%**	**6.4%**	**3.5%**	**2.0%**
	Not A Limited English Speaking Household	9.8%	12.8%	10.4%	7.7%
Asian And Pacific Island Languages	Limited English Speaking Household	**2.0%**	**3.0%**	**3.4%**	**1.8%**
	Not A Limited English Speaking Household	3.2%	5.0%	5.6%	3.6%
Other Languages	Limited English Speaking Household	**0.4%**	**0.6%**	**0.4%**	**0.3%**
	Not A Limited English Speaking Household	2.2%	2.8%	2.5%	1.6%
All Languages	*Limited English Speaking Household*	***13.4%***	***13.9%***	***13.8%***	***7.7%***



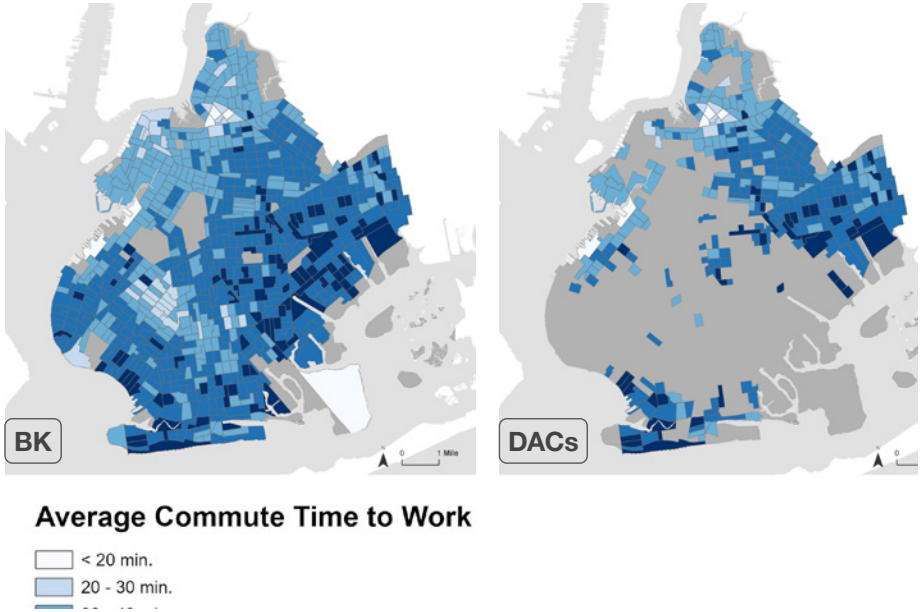
LABOR FORCE: PARTICIPATION [1]

Labor Force	**DACs**	**Brooklyn**	**NYC**	**NYS**
In Labor Force	61.8%	63.7%	63.2%	62.9%
In Armed Forces	0.0%	0.1%	0.1%	0.2%
Civilian	61.7%	63.7%	63.2%	62.8%
Employed	56.4%	59.0%	58.4%	58.8%
Unemployed	5.3%	4.6%	4.8%	3.9%
Not in Labor Force	38.3%	36.3%	36.8%	37.1%

Labor Participation Rate *by Race or Ethnicity*				
Race or Ethnicity		**Brooklyn**	**NYC**	**NYS**
Race	White alone	66.4%	64.9%	62.7%
	Black or African American alone	59.9%	60.2%	61.0%
	American Indian and Alaska Native alone	64.9%	64.8%	62.0%
	Asian alone	64.4%	64.4%	64.3%
	Native Hawaiian and Other Pacific Islander alone	58.5%	65.3%	64.2%
	Some other race alone	61.8%	61.5%	63.3%
	Two or more races	66.3%	64.7%	66.4%
Ethnicity	Hispanic or Latino origin (of any race)	61.9%	61.9%	64.3%
	White alone, not Hispanic or Latino	67.0%	65.6%	62.6%
Overall Labor Participation Rate		*63.7%*	*63.2%*	*62.9%*

COMMUTE TIME [1]

Travel Time to Work (for workers 16+)	DACs	Brooklyn	NYC	NYS
< 5 min.	1.2%	1.2%	1.2%	2.5%
5 - 14 min.	6.9%	7.1%	8.1%	17.5%
15 - 29 min.	15.8%	17.2%	21.0%	29.6%
30 - 44 min.	29.6%	27.7%	27.0%	22.0%
45 - 59 min.	19.7%	19.1%	16.2%	10.9%
60 - 89 min.	19.7%	20.7%	19.0%	11.9%
90+ min.	7.1%	7.0%	7.5%	5.6%
Average Commute Time	43 min.	43 min.	41 min.	33 min.



MEANS OF TRANSPORT TO WORK [1]

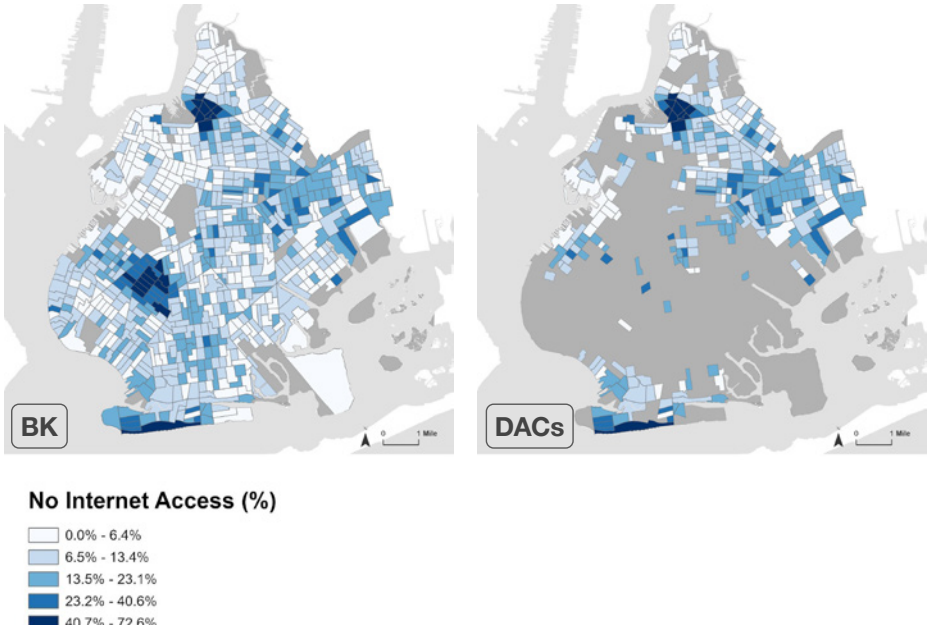
Means of Transport to Work (for workers 16+)	DACs	Brooklyn	NYC	NYS
Car, Truck, or Van	19.6%	22.1%	26.6%	56.9%
Drove Alone	*16.3%*	*18.2%*	*22.2%*	*50.5%*
Carpooled	*3.3%*	*4.0%*	*4.3%*	*6.3%*
Public Transportation (Includes Taxicab)	55.6%	51.6%	48.5%	24.1%
Motorcycle	0.1%	0.1%	0.1%	0.1%
Bicycle	2.4%	2.1%	1.5%	0.8%
Walked	8.5%	8.5%	9.4%	5.7%
Other Means	1.0%	1.0%	1.0%	0.9%
Worked At Home	12.9%	14.6%	13.1%	11.6%

VEHICLE ACCESS [1]

Vehicle Access by Household (Occupied)	DACs	Brooklyn	NYC	NYS
No Vehicle Available	63.7%	55.3%	54.7%	29.0%
1 Vehicle Available	29.9%	35.1%	32.0%	33.1%
2 Vehicles Available	5.2%	7.7%	10.2%	25.8%
3 Vehicles Available	0.9%	1.4%	2.4%	8.5%
4 Vehicles Available	0.2%	0.3%	0.6%	2.7%
5 or More Vehicles Available	0.1%	0.1%	0.2%	1.1%

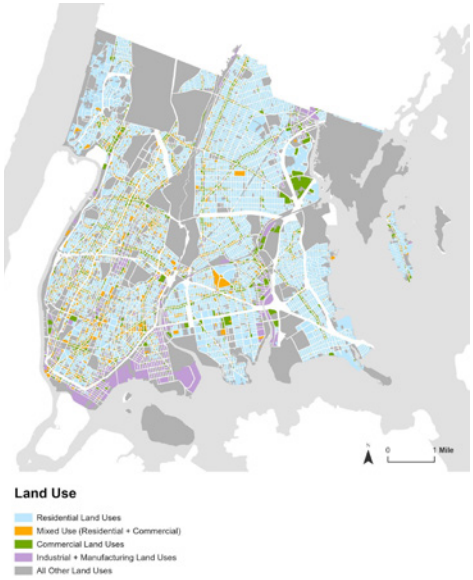
INTERNET ACCESS [1]

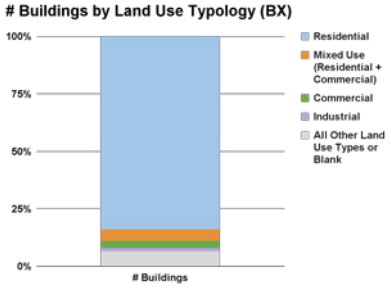
Internet Access by Household	DACs	Brooklyn	NYC	NYS
With An Internet Subscription	83.5%	86.4%	87.6%	88.4%
Dial-Up Alone	*0.1%*	*0.1%*	*0.1%*	*0.2%*
Broadband (such As Cable, Fiber Optic, or DSL)	*69.4%*	*73.7%*	*73.5%*	*75.6%*
Satellite Internet Service	*5.5%*	*4.7%*	*4.0%*	*4.1%*
Other Service	*0.9%*	*0.8%*	*0.9%*	*0.8%*
Internet Access Without A Subscription	2.3%	2.0%	2.1%	2.3%
No Internet Access	14.2%	11.7%	10.3%	9.4%

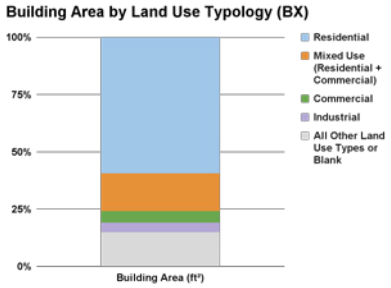


Appendix B
Complete Buildings & Land Use Data

LAND USE (BX): Overall Land Use Typologies

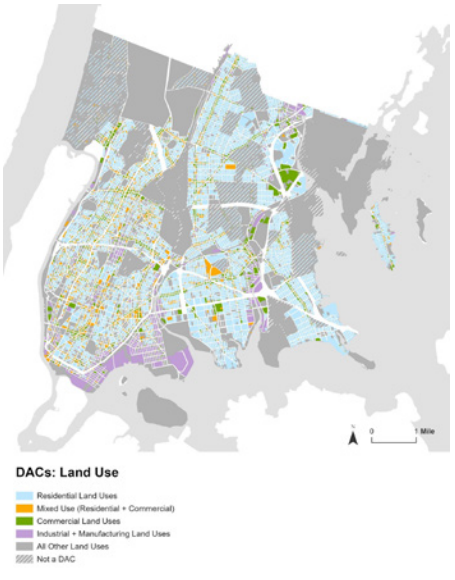


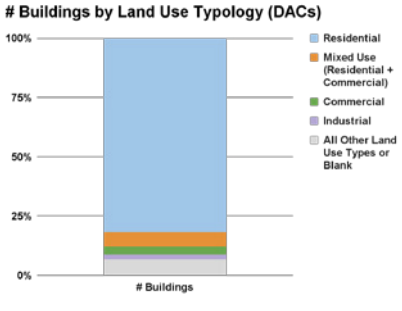


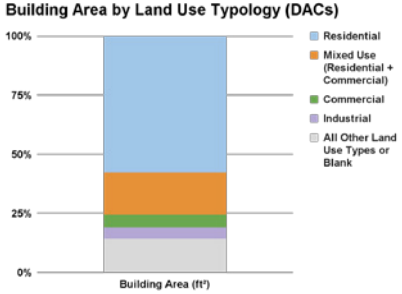


Buildings by Land Use (BX)	# Buildings	% of Total Buildings
Residential*	88,250	84.0%
1-4 Units	77,273	73.5%
5+ Units	10,934	10.4%
0 Units or Blank	*43*	*0.0%*
Commercial*	3,213	3.1%
Small (>25,000 ft²)	2,871	2.7%
Large (<25,000 ft²)	262	0.2%
0 Commercial sq. ft. or Blank	*80*	*0.1%*
Mixed Use (residential + commercial)*	5,327	5.1%
1-4 Units (residential)	2,438	2.3%
5+ Units (residential)	2,634	2.5%
0 Units or Blank	*255*	*0.2%*
Industrial	1,519	1.4%
All Other Land Use Types or Blank	6,774	6.4%
Total	***105,083***	--

LAND USE (DACs): Overall Land Use Typologies

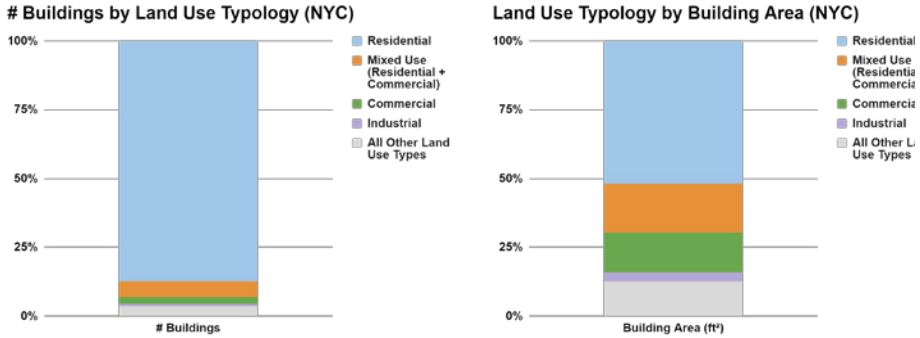






Buildings by Land Use (DACs)	# Buildings	% of Total Buildings
Residential*	67,695	81.8%
1-4 Units	57,364	69.3%
5+ Units	10,298	12.4%
0 Units or Blank	*33*	*0.0%*
Commercial*	2,869	3.5%
Small (>25,000 ft²)	2,547	3.1%
Large (<25,000 ft²)	254	0.3%
0 Commercial sq. ft. or Blank	*68*	*0.1%*
Mixed Use (residential + commercial)*	4,897	5.9%
1-4 Units (residential)	2,142	2.6%
5+ Units (residential)	2,508	3.0%
0 Units or Blank	*247*	*0.3%*
Industrial	1,503	1.8%
All Other Land Use Types or Blank	5,757	7.0%
Total	***82,721***	--

LAND USE (NYC): Overall Land Use Typologies



Buildings by Land Use (NYC)	# Buildings	% of Total Buildings
Residential*	948,999	87.2%
1-4 Unit	859,708	79.0%
5+ Units	89,079	8.2%
0 Units or Blank	*212*	0.0%
Commercial*	23,841	2.2%
Small (>25,000 ft²)	19,214	1.8%
Large (<25,000 ft²)	3,799	0.3%
0 Commercial sq. ft. or Blank	*828*	0.1%
Mixed Use (residential + commercial)*	64,753	5.9%
1-4 Unit (residential)	39,481	3.6%
5+ Units (residential)	22,440	2.1%
0 Units or Blank	*2,832*	0.3%
Industrial	11,778	1.1%
All Other Land Use Types	38,918	3.6%
Total	***1,088,289***	--

LAND USE: Residential Land Use Typologies by # of Residential Units

Bronx

Residential Land Use Typology	# Total Residential Units in BX	% Total Residential Units in BX
1-4 Units	**126,169**	**21.8%**
"Residential" LU	121,954	21.0%
"Mixed Use" LU	4,007	0.7%
Other LU	*208*	*0.0%*
5+ Units	**453,367**	**78.2%**
"Residential" LU	332,186	57.3%
"Mixed Use" LU	115,062	19.9%
Other LU	*6,119*	*1.1%*
Total Residential Units	***579,536***	--

NYC

Residential Land Use Typology	# Total Residential Units in NYC	% Total Residential Units in NYC
1-4 Units	**1,184,132**	**32.2%**
"Residential" LU	1108061	30.1%
"Mixed Use" LU	73083	2.0%
Other LU	*2988*	*0.1%*
5+ Units	**2,491,332**	**67.8%**
"Residential" LU	1,676,891	45.6%
"Mixed Use" LU	781,977	21.3%
Other LU	*32,464*	*0.9%*
Total Residential Units	***3,675,464***	--

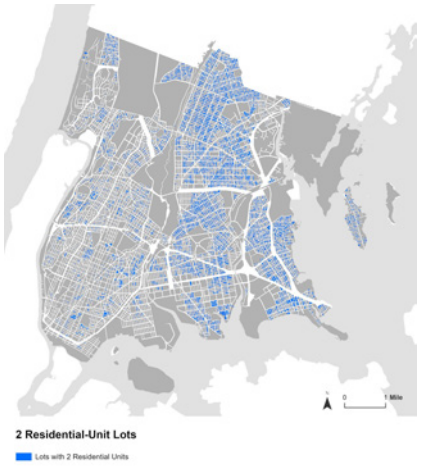
DACs

Residential Land Use Typology	# Total Residential Units in DACs	% Total Residential Units in DACs	% Total Residential Units in BX
1-4 Units	**98,642**	**19.0%**	**17.0%**
"Residential" LU	94,876	18.2%	16.4%
"Mixed Use" LU	3,580	0.7%	0.6%
Other LU	*186*	*0.0%*	*0.0%*
5+ Units	**421,532**	**81.0%**	**72.7%**
"Residential" LU	305,547	58.7%	52.7%
"Mixed Use" LU	110,553	21.3%	19.1%
Other LU	*5,432*	*1.0%*	*0.9%*
Total Residential Units	***520,174***	--	***89.8%***

LAND USE: Residential Land Use Typologies by # of Residential Units

__76%__ of all buildings are part of a lot that has 1-4 residential units

LAND USE: Residential Land Use Typologies by # of Residential Units



LAND USE: Residential Land Use Typologies by # of Residential Units

3 Residential-Unit Lots

Lots with 3 Residential Units

3 Residential-Unit Lots

Lots with 3 Residential Units
Not a DAC

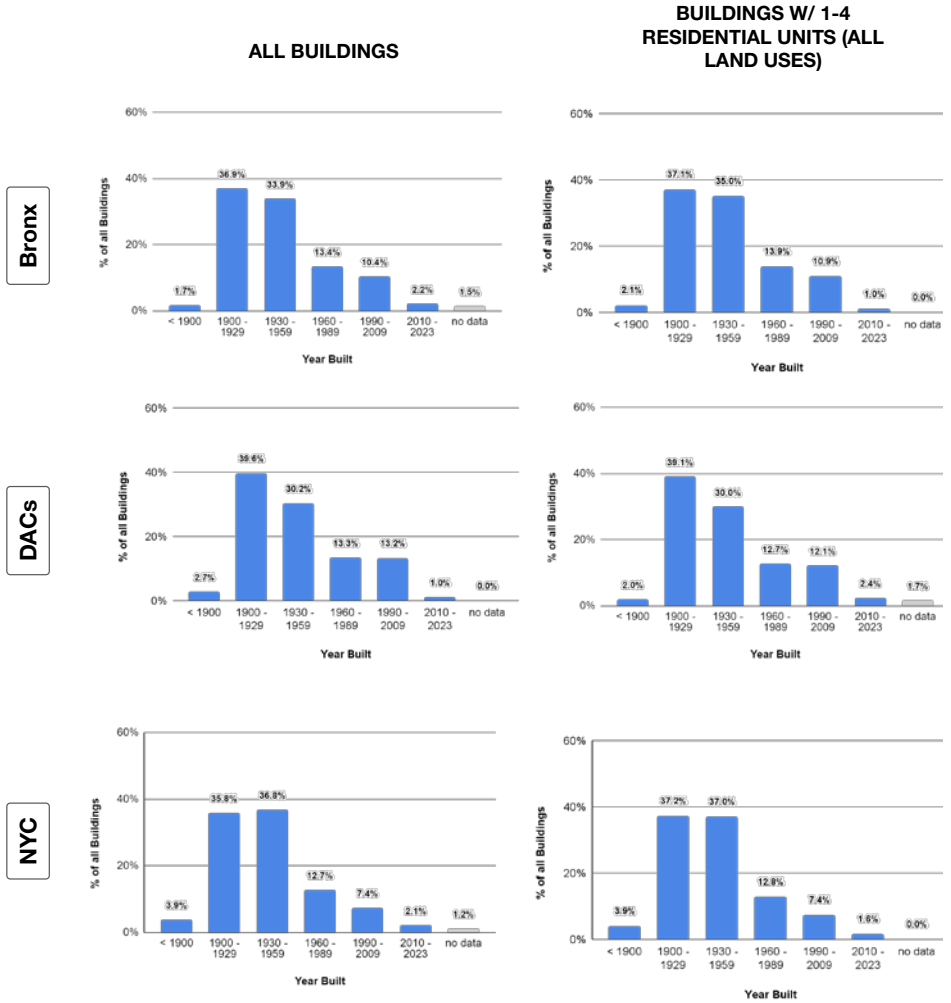
4 Residential-Unit Lots

Lots with 4 Residential Units

4 Residential-Unit Lots

Lots with 4 Residential Units
Not a DAC

YEAR BUILT



RESIDENTIAL LAND USE: Occupancy, Vacancy, Tenure

Housing Tenure, Occupancy/Vacancy Rates				
	DACs	**BX**	**NYC**	**NYS**
Occupancy Rate	96.0%	95.9%	90.7%	89.5%
Owner-Occupied	**15.3%**	**19.1%**	**29.9%**	**48.6%**
Units in a 1-4-Unit Building	**10.9%**	**12.9%**	**19.7%**	**41.8%**
Units in a 5+-Unit Building	4.3%	6.1%	10.1%	5.5%
Units in a Mobile Home/Boat/RV/etc.	*0.1%*	*0.1%*	*0.1%*	*1.3%*
Renter-Occupied	80.7%	76.8%	60.8%	40.9%
Units in a 1-4-Unit Building	13.1%	13.4%	15.1%	15.0%
Units in a 5+-Unit Building	67.5%	63.2%	45.6%	25.5%
Units in a Mobile Home/Boat/RV/etc.	*0.2%*	*0.2%*	*0.1%*	*0.4%*
Vacancy Rate	4.0%	4.1%	9.3%	10.5%
For Rent	1.7%	1.6%	2.3%	1.7%
For Sale	0.2%	0.2%	0.5%	0.6%
Other Vacant	2.1%	2.3%	6.5%	7.0%

"VACANCY RATES"	DACs	BX	NYC	NYS
"Available Housing Vacancy Rate":	1.90%	1.86%	2.99%	2.47%
"For Sale" + "For Rent":	1.86%	1.83%	2.83%	2.29%

RESIDENTIAL LAND USE: House Heating Fuel by Tenure

Owner-Occupied

House Heating Fuel for Owner-Occupied Households *(as a %age of Total Owner-Occupied Households)*	**DACs**	**Bronx**	**NYC**	**NYS**
Utility Gas	63.1%	64.2%	73.7%	60.8%
Bottled, Tank, Or Lp Gas	3.4%	3.4%	2.9%	5.8%
Electricity	9.6%	8.9%	8.5%	7.5%
Fuel Oil, Kerosene, Etc.	19.2%	19.9%	12.3%	21.7%
Coal Or Coke	0.1%	0.0%	0.0%	0.3%
Wood	0.1%	0.1%	0.1%	2.4%
Solar Energy	0.3%	0.2%	0.1%	0.1%
Other Fuel	1.4%	1.2%	1.2%	0.9%
No Fuel Used	2.8%	2.2%	1.2%	0.5%

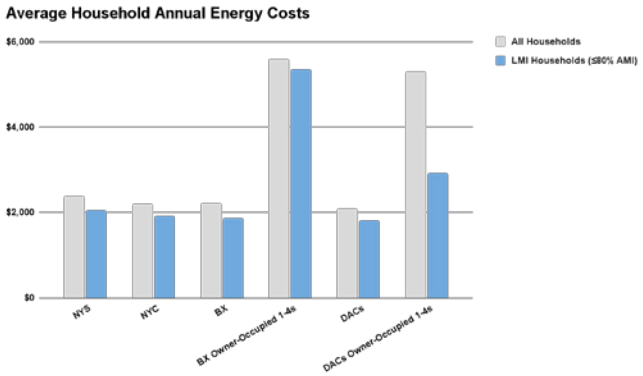
Renter-Occupied

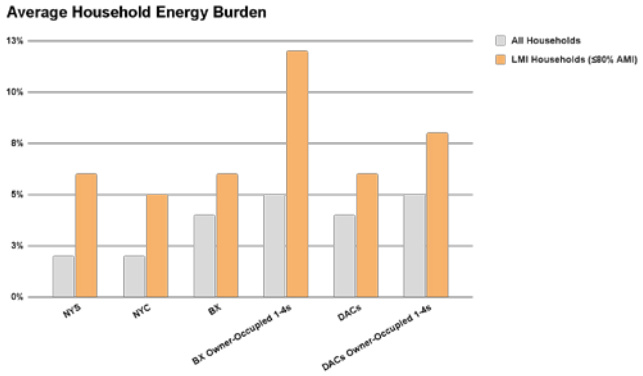
House Heating Fuel for Renter-Occupied Households *(as a %age of Total Renter-Occupied Households)*	**DACs**	**Bronx**	**NYC**	**NYS**
Utility Gas	45.9%	46.6%	60.9%	57.9%
Bottled, Tank, Or Lp Gas	2.2%	2.3%	2.4%	3.2%
Electricity	15.4%	15.2%	17.1%	20.9%
Fuel Oil, Kerosene, etc.	29.6%	29.3%	14.3%	13.5%
Coal Or Coke	0.1%	0.1%	0.1%	0.1%
Wood	0.0%	0.0%	0.0%	0.2%
Solar Energy	0.1%	0.1%	0.1%	0.1%
Other Fuel	1.6%	1.5%	1.8%	1.6%
No Fuel Used	5.1%	4.9%	3.4%	2.6%

ENERGY COST & BURDEN

	Annual Energy Cost		Energy Burden	
	All	LMI	All	LMI
NYS	$2,391	$2,041	2%	6%
NYC	$2,201	$1,928	2%	5%
BX	$2,224	$1,871	4%	6%
BX Owner-Occupied 1-4s	$5,591	$5,356	5%	12%
DACs	$2,088	$1,805	4%	6%
DACs Owner-Occupied 1-4s	$5,305	$2,909	5%	8%

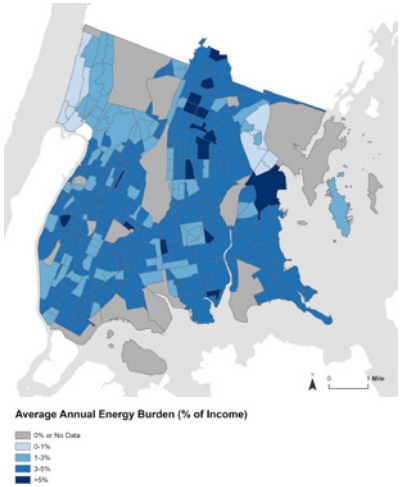
DOE LEAD Tool, 2018. https://www.energy.gov/scep/slsc/lead-tool

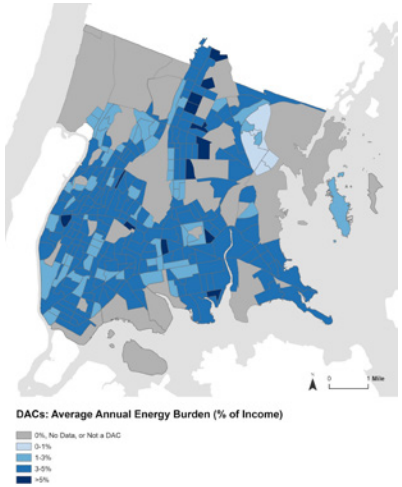




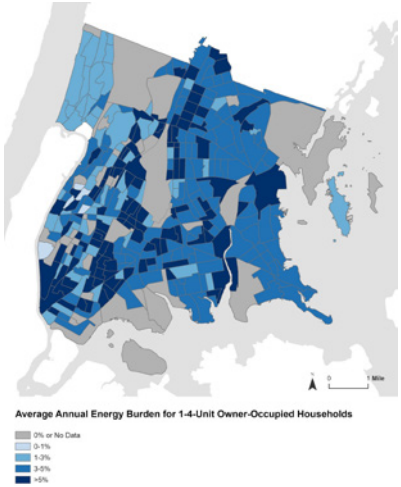
ENERGY COST & BURDEN

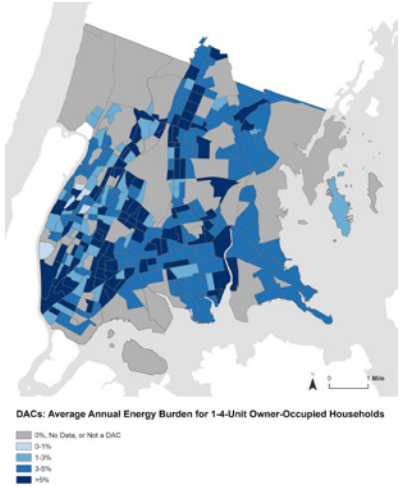
All Households



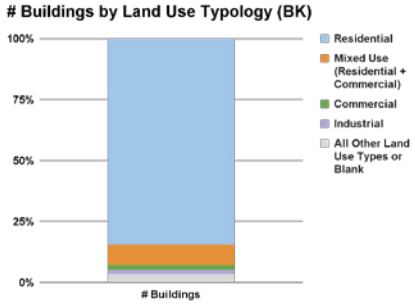


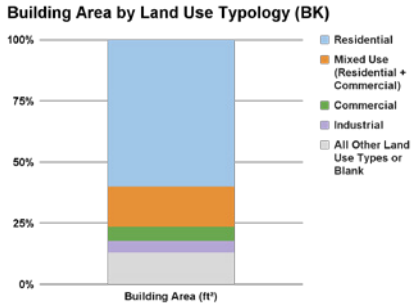
1-4-Unit Owner-Occupied Households





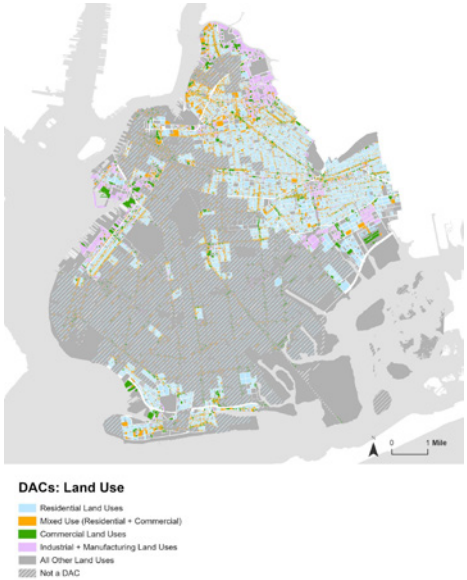
LAND USE (BK): Overall Land Use Typologies

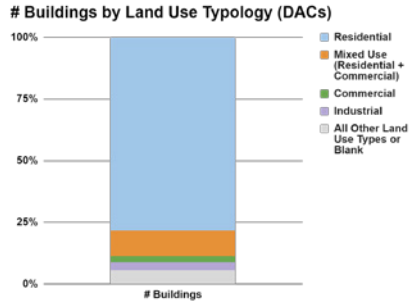


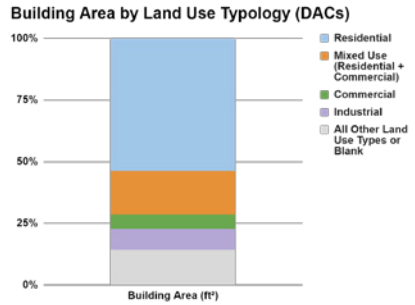


Buildings by Land Use (BK)	# Buildings	% of Total Buildings
Residential*	281,461	84.6%
1-4 Units	253,941	76.3%
5+ Units	27,473	8.3%
0 Units or Blank	*47*	*0.0%*
Commercial*	6,321	1.9%
Small (>25,000 ft²)	5,536	1.7%
Large (<25,000 ft²)	617	0.2%
0 Commercial sq. ft. or Blank	*168*	*0.1%*
Mixed Use (residential + commercial)*	27,937	8.4%
1-4 Units (residential)	19,870	6.0%
5+ Units (residential)	6,844	2.1%
0 Units or Blank	*1,223*	*0.4%*
Industrial	4,928	1.5%
All Other Land Use Types or Blank	12,121	3.6%
Total	***332,768***	--

LAND USE (DACs): Overall Land Use Typologies

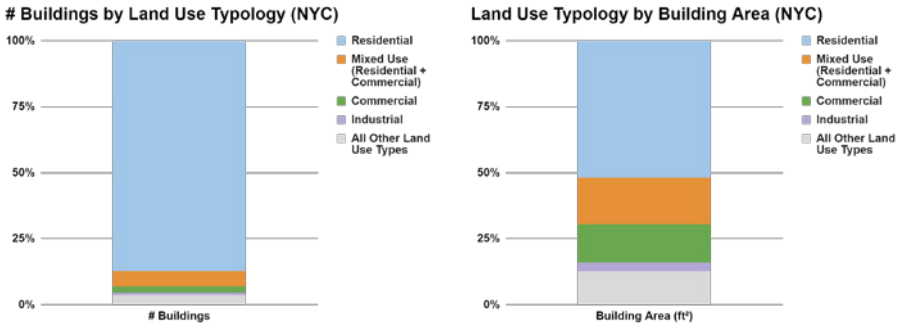






Buildings by Land Use (DACs)	# Buildings	% of Total Buildings
Residential*	89,333	78.3%
1-4 Units	74,557	65.3%
5+ Units	14,764	12.9%
0 Units or Blank	*12*	*0.0%*
Commercial*	2,693	2.4%
Small (>25,000 ft²)	2,267	2.0%
Large (<25,000 ft²)	309	0.3%
0 Commercial sq. ft. or Blank	*117*	*0.1%*
Mixed Use (residential + commercial)*	11,855	10.4%
1-4 Units (residential)	7,863	6.9%
5+ Units (residential)	3,456	3.0%
0 Units or Blank	*536*	*0.5%*
Industrial	3,850	3.4%
All Other Land Use Types or Blank	6,419	5.6%
Total	***114,150***	--

LAND USE (NYC): Overall Land Use Typologies



Buildings by Land Use (NYC)	# Buildings	% of Total Buildings
Residential*	948,999	87.2%
1-4 Unit	859,708	79.0%
5+ Units	89,079	8.2%
0 Units or Blank	*212*	0.0%
Commercial*	23,841	2.2%
Small (>25,000 ft²)	19,214	1.8%
Large (<25,000 ft²)	3,799	0.3%
0 Commercial sq. ft. or Blank	*828*	0.1%
Mixed Use (residential + commercial)*	64,753	5.9%
1-4 Unit (residential)	39,481	3.6%
5+ Units (residential)	22,440	2.1%
0 Units or Blank	*2,832*	0.3%
Industrial	11,778	1.1%
All Other Land Use Types	38,918	3.6%
Total	***1,088,289***	--

LAND USE: Residential Land Use Typologies by # of Residential Units

Brooklyn

Residential Land Use Typology	# Total Residential Units in BK	% Total Residential Units in BK
1-4 Units	**438,492**	**40.2%**
"Residential" LU	398,983	36.6%
"Mixed Use" LU	38,467	3.5%
Other LU	*1,042*	*0.1%*
5+ Units	**651,416**	**59.8%**
"Residential" LU	480,689	44.1%
"Mixed Use" LU	162,909	14.9%
Other LU	*7,818*	*0.7%*
Total Residential Units	***1,089,908***	--

NYC

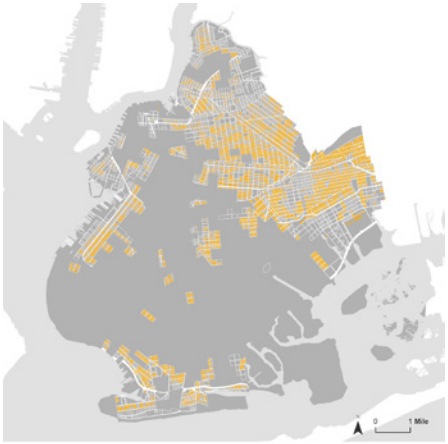
Residential Land Use Typology	# Total Residential Units in NYC	% Total Residential Units in NYC
1-4 Units	**1,184,132**	**32.2%**
"Residential" LU	1108061	30.1%
"Mixed Use" LU	73083	2.0%
Other LU	*2988*	*0.1%*
5+ Units	**2,491,332**	**67.8%**
"Residential" LU	1,676,891	45.6%
"Mixed Use" LU	781,977	21.3%
Other LU	*32,464*	*0.9%*
Total Residential Units	***3,675,464***	--

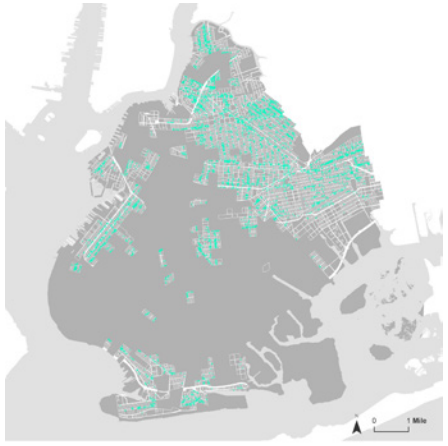
DACs

Residential Land Use Typology	# Total Residential Units in DACs	% Total Residential Units in DACs	% Total Residential Units in BK
1-4 Units	**163,527**	**32.8%**	**15.0%**
"Residential" LU	146,872	29.5%	13.5%
"Mixed Use" LU	16,178	3.2%	1.5%
Other LU	*477*	*0.1%*	*0.0%*
5+ Units	**335,184**	**67.2%**	**30.8%**
"Residential" LU	243,616	48.8%	22.4%
"Mixed Use" LU	86,318	17.3%	7.9%
Other LU	*5,250*	*1.1%*	*0.5%*
Total Residential Units	***498,711***	--	***45.8%***

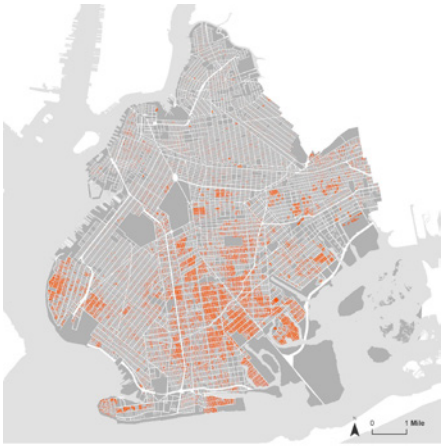
LAND USE: Residential Land Use Typologies by # of Residential Units

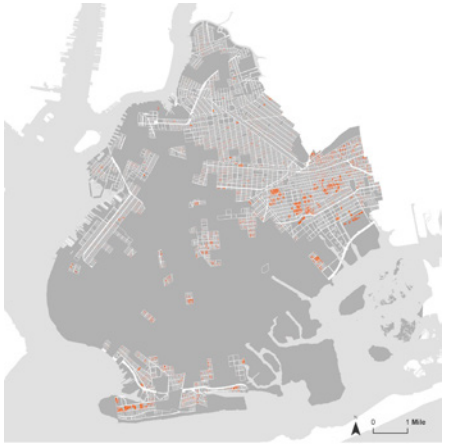
82.5% *of all buildings are part of a lot that has 1-4 residential units*

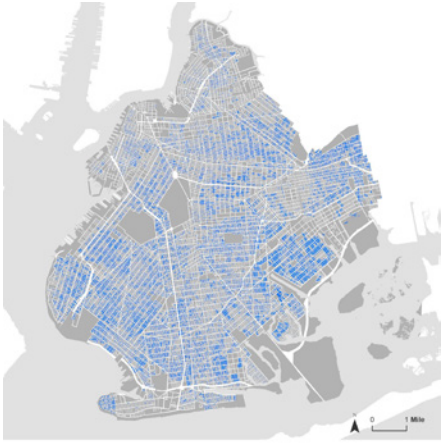


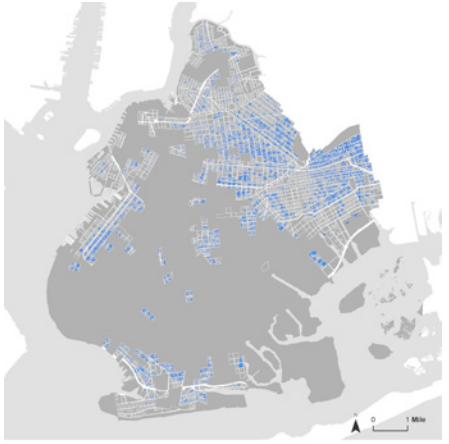


LAND USE: Residential Land Use Typologies by # of Residential Units

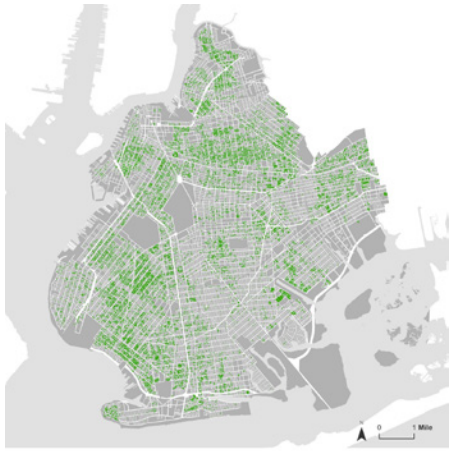


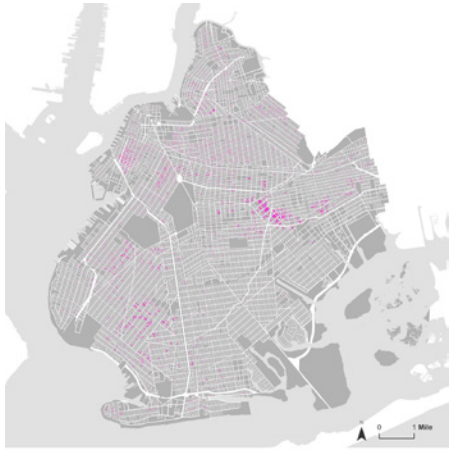


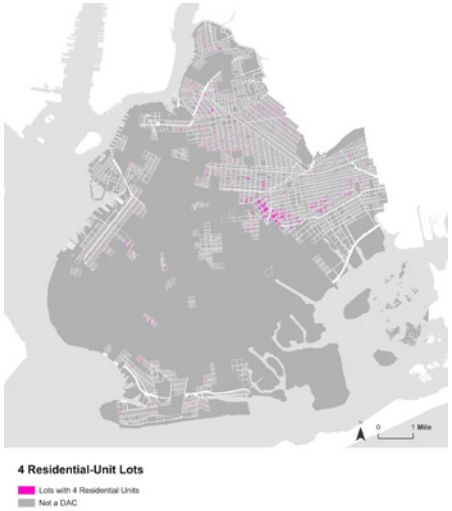




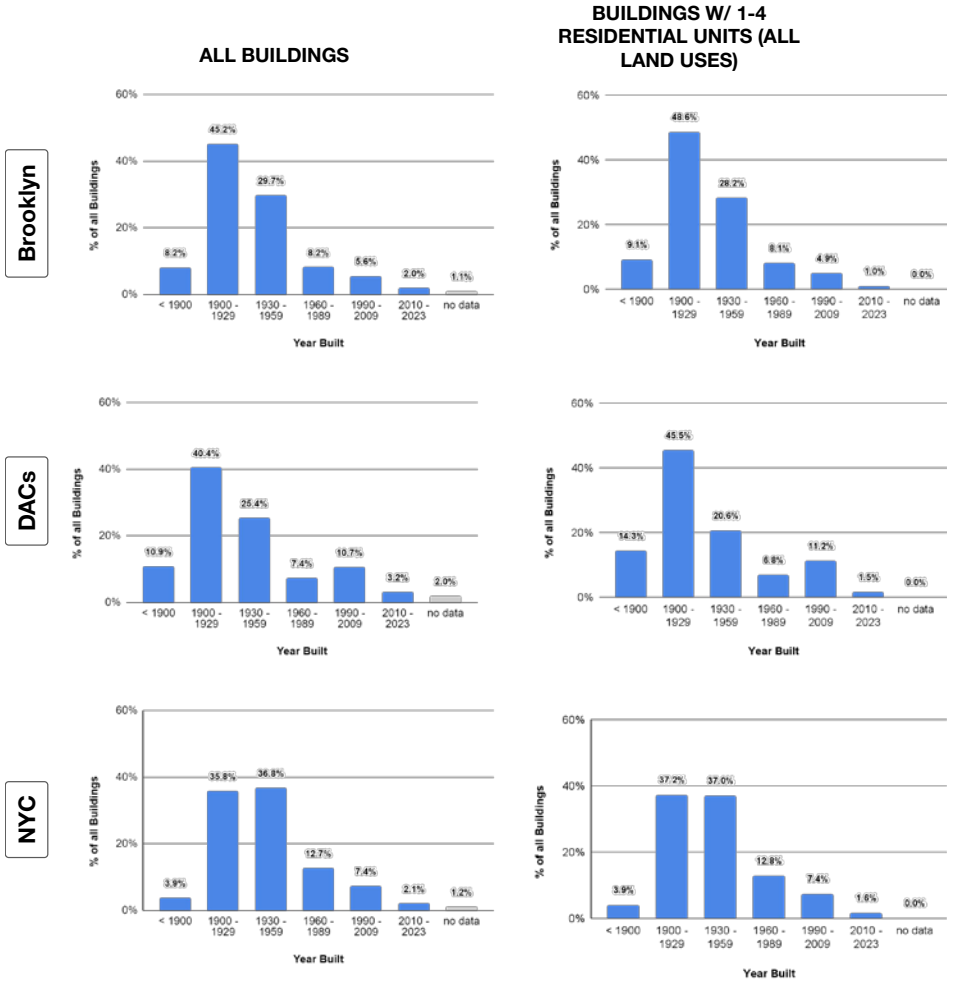
LAND USE: Residential Land Use Typologies by # of Residential Units







YEAR BUILT



RESIDENTIAL LAND USE: Occupancy, Vacancy, Tenure

Housing Tenure, Occupancy/Vacancy Rates				
	DACs	**BK**	**NYC**	**NYS**
Occupancy Rate	92.9%	92.4%	90.7%	89.5%
Owner-Occupied	**18.8%**	**28.0%**	**29.9%**	**48.6%**
Units in a 1-4-Unit Building	**14.7%**	**20.9%**	**19.7%**	**41.8%**
Units in a 5+-Unit Building	4.1%	7.1%	10.1%	5.5%
Units in a Mobile Home/Boat/RV/etc.	*0.1%*	*0.1%*	*0.1%*	*1.3%*
Renter-Occupied	74.2%	64.4%	60.8%	40.9%
Units in a 1-4-Unit Building	21.7%	20.8%	15.1%	15.0%
Units in a 5+-Unit Building	52.4%	43.5%	45.6%	25.5%
Units in a Mobile Home/Boat/RV/etc.	*0.1%*	*0.1%*	*0.1%*	*0.4%*
Vacancy Rate	7.1%	7.6%	9.3%	10.5%
For Rent	2.3%	2.0%	2.3%	1.7%
For Sale	0.3%	0.4%	0.5%	0.6%
Other Vacant	4.5%	5.2%	6.5%	7.0%

"VACANCY RATES"	DACs	BK	NYC	NYS
"Available Housing Vacancy Rate":	2.64%	2.55%	2.99%	2.47%
"For Sale" + "For Rent":	2.54%	2.44%	2.83%	2.29%

RESIDENTIAL LAND USE: House Heating Fuel by Tenure

Owner-Occupied

House Heating Fuel for Owner-Occupied Households *(as a %age of Total Owner-Occupied Households)*	**DACs**	**Brooklyn**	**NYC**	**NYS**
Utility Gas	80.9%	81.1%	73.7%	60.8%
Bottled, Tank, Or Lp Gas	2.9%	2.9%	2.9%	5.8%
Electricity	7.6%	6.9%	8.5%	7.5%
Fuel Oil, Kerosene, Etc.	6.9%	7.4%	12.3%	21.7%
Coal Or Coke	0.1%	0.0%	0.0%	0.3%
Wood	0.0%	0.1%	0.1%	2.4%
Solar Energy	0.1%	0.1%	0.1%	0.1%
Other Fuel	0.6%	0.6%	1.2%	0.9%
No Fuel Used	0.8%	0.8%	1.2%	0.5%

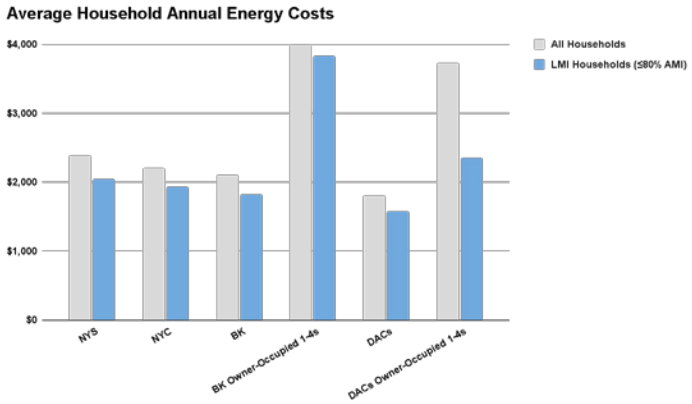
Renter-Occupied

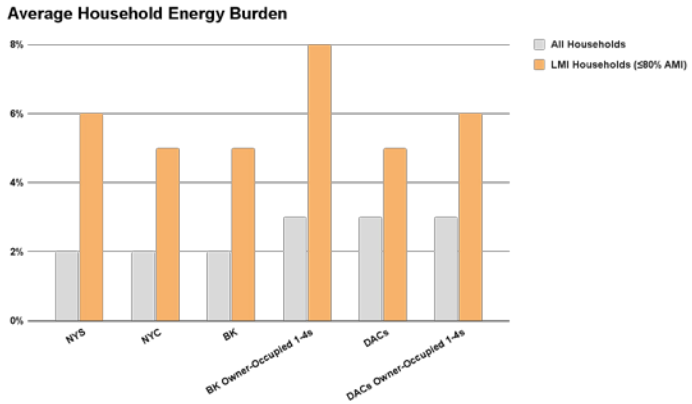
House Heating Fuel for Renter-Occupied Households *(as a %age of Total Renter-Occupied Households)*	**DACs**	**Brooklyn**	**NYC**	**NYS**
Utility Gas	71.3%	71.7%	60.9%	57.9%
Bottled, Tank, Or Lp Gas	2.6%	2.8%	2.4%	3.2%
Electricity	14.6%	13.1%	17.1%	20.9%
Fuel Oil, Kerosene, etc.	6.6%	7.6%	14.3%	13.5%
Coal Or Coke	0.0%	0.0%	0.1%	0.1%
Wood	0.0%	0.0%	0.0%	0.2%
Solar Energy	0.0%	0.1%	0.1%	0.1%
Other Fuel	1.4%	1.6%	1.8%	1.6%
No Fuel Used	3.3%	3.0%	3.4%	2.6%

ENERGY COST & BURDEN

	Annual Energy Cost		Energy Burden	
	All	LMI	All	LMI
NYS	$2,391	$2,041	2%	6%
NYC	$2,201	$1,928	2%	5%
BK	$2,099	$1,823	2%	5%
BK Owner-Occupied 1-4s	$3,989	$3,822	3%	8%
DACs	$1,808	$1,577	3%	5%
DACs Owner-Occupied 1-4s	$3,731	$2,350	3%	6%

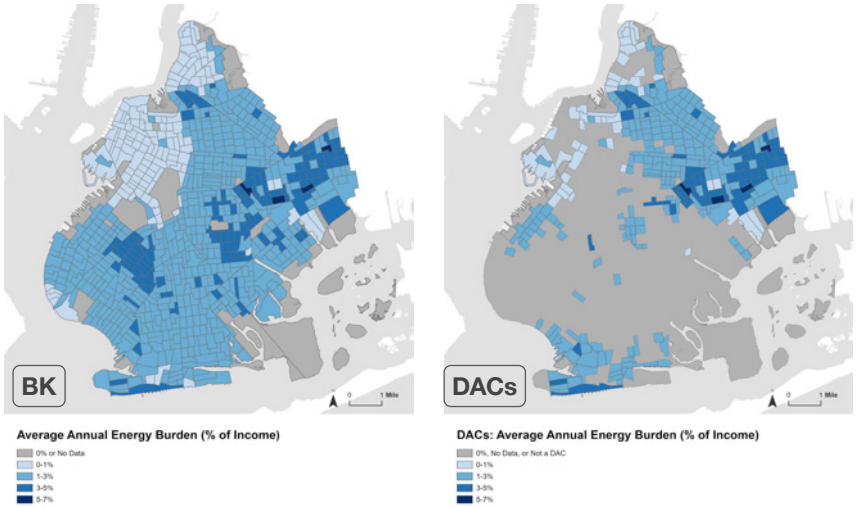
DOE LEAD Tool, 2018. https://www.energy.gov/scep/slsc/lead-tool



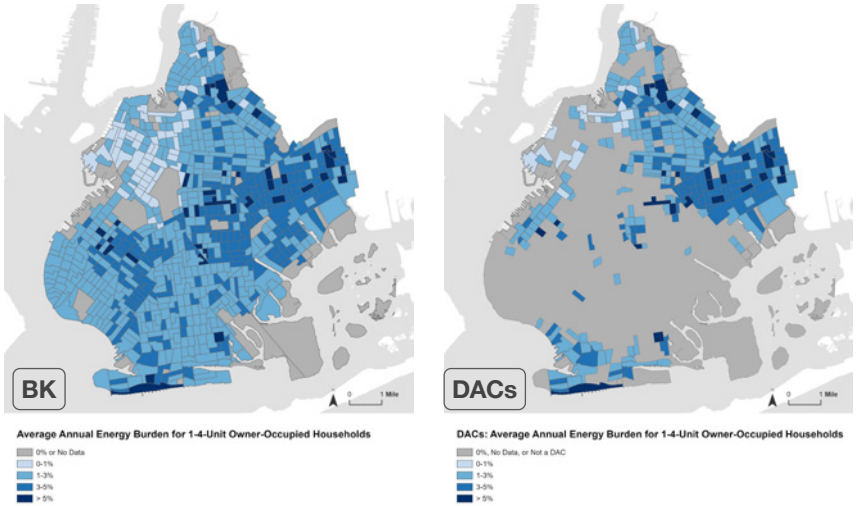


ENERGY COST & BURDEN

All Households



1-4-Unit Owner-Occupied Households



Appendix C
Full Potential Partners

The below spreadsheet is a small excerpt of Appendix C. The full partners list is hosted online and is available for Hub partners' use. Email Pratt Center at info@prattcenter.net if you'd like access to this Appendix.

	A	B	C	D	E	F	G	H
1	**Entry type**	**Name**	**Website**	**Geography**	**Sector**	**Focus area (1)**	**Focus area (2)**	**Focus area (3)**
29	Organization	Brooklyn Defenders	https://bds.org/home	Brooklyn	Nonprofit	Social servic		
30	Organization	Erasmus Neighborhood Federation	https://www.erasmusfederation.net/	Brooklyn	Nonprofit	Social servic		
31	Organization	Grow Brooklyn	https://growbrooklyn.org/	Brooklyn	Nonprofit			
32	Organization	Food and Water Watch	https://www.foodandwaterwatch.org/	NYC	Nonprofit			
33	Organization	Mothers out Front	https://www.mothersoutfront.org/team/n	NYC	Nonprofit			
34	Organization	South Bronx Unite	https://www.southbronxunite.org/	The Bronx	Nonprofit	Sustinability/i	Civic associa	
35	Organization	ACE NY	https://www.aceny.org/	NYC	Nonprofit			
36	Organization	Spring Street Climate Fund	https://www.springstreetclimate.org/	NYC				
37	Organization	YMCA		NYC				
38	Organization	Sunset Park Redevelopment Committee	https://www.sprcinc.org/about/	Brooklyn	Nonprofit	Sustinability/i	Contractor	Green emplo
39	Organization	Sixth Street Youth	http://www.sixthstreetcenter.org/ssyp.ht	NYC	Nonprofit	Sustinability/i		
40	Organization	CUNY	cuny.edu	NYC	Government	Community ir	Workforce de	
41	Organization	The Point CDC	https://www.thepoint.org/	NYC	Government	Workforce de	Sustinability/i	
42	Organization	Urban Knights LLC		Brooklyn				
43	Organization	Bronx Overall Economic Development Corporation	https://www.bxedc.org/	The Bronx				
44	Organization	South Bronx Economic Development Corporation	https://www.sobro.org/	The Bronx				
45	Organization	Central Brooklyn Economic Development Corporation	https://cbedc.org/	Brooklyn				
46	Organization	NYC DOE schools	schools.nyc.gov	NYC	Government	Community ir		
47	Organization	Muslim American Society	masnewyork.org	NYC	Nonprofit	Community ir	Congregatior	Cultural/immi
48	Network	Green Faith	greenfaith.org	NYC	Nonprofit	Congregatior	Sustinability/i	
49	Organization	Catholic Charities	catholiccharitiesny.org	NYC	Nonprofit	Social servic	Cultural/immi	
50	Organization	Neighborhood Restore	neighborhoodrestore.org	NYC	Nonprofit	Housing	Contractor	
51	Category	Food pantries	Various	NYC	Nonprofit	Social servic		
52	Organization	NYC EDC	edc.nyc	NYC	Government	Business inte	Workforce de	Sustinability/i
53	Category	BIDs	nyc.gov/site/sbs/neighborhoods/bid-dire	NYC	Nonprofit	Business inte		
54	Network	NYC Employment and Training Coalition	nycetc.org	NYC	Nonprofit	Workforce de	Sustinability/i	

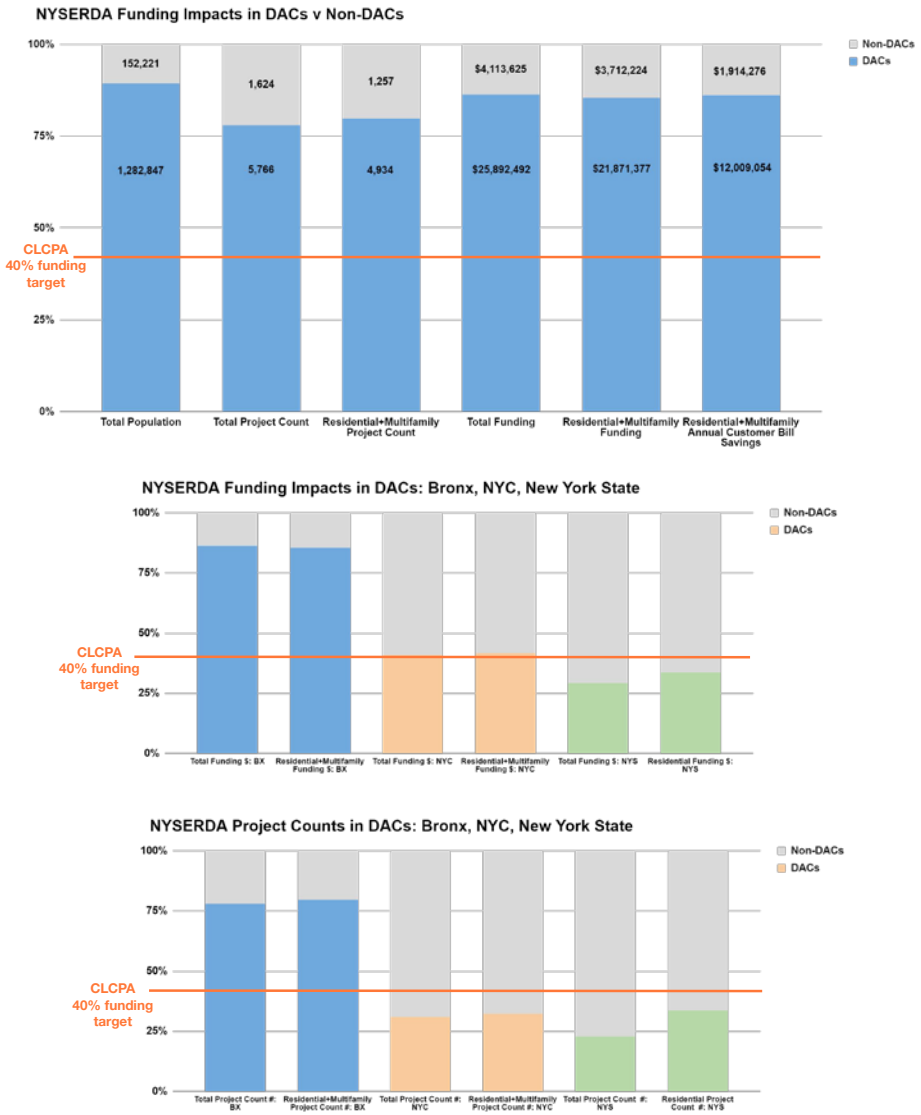
Appendix D
Regional Clean Energy Programs

The below spreadsheet is a small excerpt of Appendix D. The full partners list is hosted online and is available for Hub partners' use. Email Pratt Center at info@prattcenter.net if you'd like access to this Appendix.

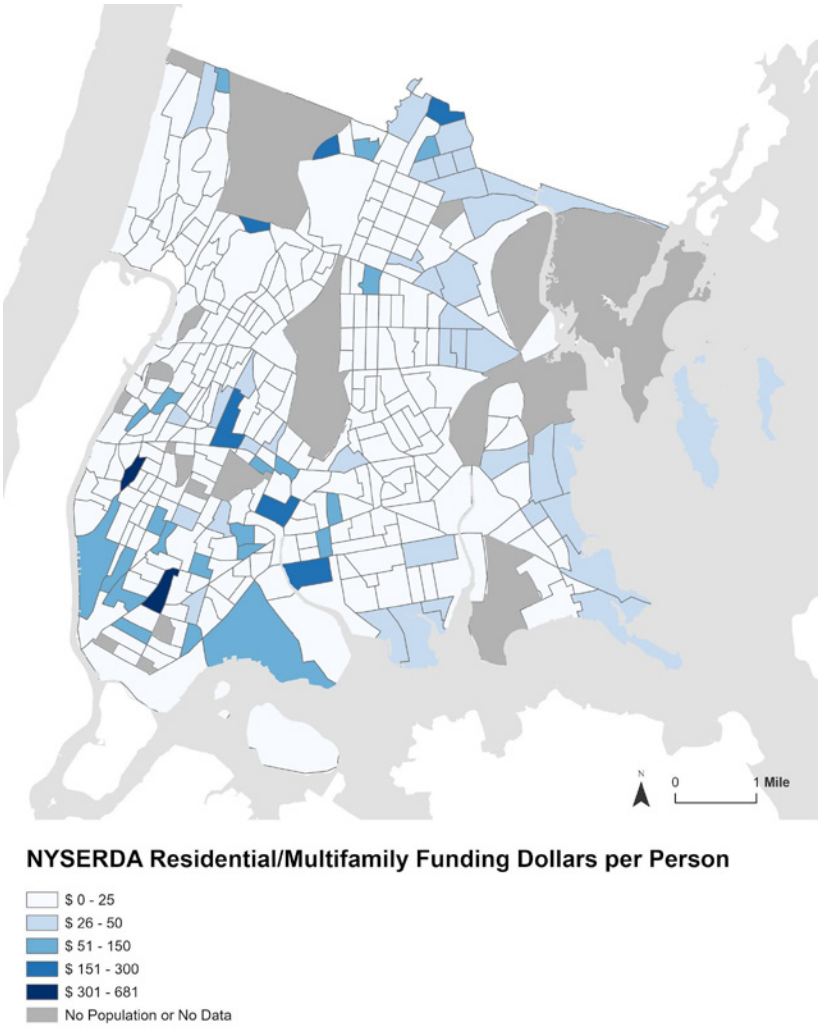
	A	B	C	D	E	F	G
1	**Program Name**	**Geographic service area**	**Location**	**Eligibility criteria/target populations**	**Brief description**	**Organization(s)**	**Source/website**
2	NYC CoolRoofs	Citywide	Remote	Anyone	10 to 11 weeks of full-time, paid work experience installing energy saving reflective rooftops at a starting wage of $16 per hour Opportunity to earn credentials in the construction sector, including 4-Hour Flagger, 4-Hour Scaffold User, Fireguard, CPR/First Aid, and Construction Site Safety Training (SST) certification at no cost.	NYC Department of Small Business Services (SBS) ; Workforce1 Industrial & Transportation Career Center ; the Mayor's Office of Climate and Environmental Justice ; HOPE Program.	
3	Civilian Climate Corps	Citywide	Brooklyn/ Remote	Formerly incarcerated, BIPOC and women preferred	Paid 3 month foundational training plus two months of building trade: construction/carpentry, low voltage electrical, plumbing , HVAC , building energy efficiency auditing	BLOCPower ; Mayor's Office of Criminal Justice	
4	Green Maintenance for Buildings Training Program	Citywide	Brooklyn	Anyone	Free full-time 9-week training program designed to provide entry-level skills necessary to work as a janitor, custodian, or porter in residential and commercial buildings.	CUNY ; CityTech	
5	SolarOne Green Workforce Program	Citywide	Queens/NYC metro area	Minorities encouraged/ preferred	4-6 weeks training in energy efficiency, renewable energy, green construction, and green building operations and maintenance.	SolarOne ; Mayor's Office for Economic Opportunity	
6	NYCHA Clean Energy Academy	Citywide	Cross-borough NYCHA complexes	NYCHA residents	16-week (280 hour) course where NYCHA residents develop the skills to install solar panels, transform heating and cooling systems, install and maintain heat pumps and learn various construction duties. Stipend provided.	NYCHA ; Public Housing Community Fund ; Laguardia Community College Funders include NYSERDA	
7	Intervine	Citywide	Bronx		10 week paid program provides foundational training for green infrastructure projects.	The HOPE Program	
8	SSBx	Citywide	Bronx		14 week classroom-based and hands-on green jobs training program. Throughout the training, our students green the local community through hands-on projects such as tree surveys, water quality testing and shoreline restoration.	The HOPE Program ; Sustainable South Bronx	
9	Green and Clean HVAC	Citywide	Bronx		12 week program on installation and maintenance of efficient heating and cooling equipment	The HOPE Program	
10	GCF Service Corps	Citywide	Cross-borough NYCHA complexes	18-24 year old NYCHA residents with GED/high school diploma	Americorps Program for NYCHA young adults. "Service initiatives respond to needs in public housing communities: cultivating and distributing fresh produce, building sustainable green infrastructure... Initiatives also include visits and service with environmental partner organizations. Classroom training includes eco-literacy and applied environmental education." Corps Members receive site safety and the OSHA-40 certification.	Green City Force	https://greencityforce.org/service-corps/
11	Willdan Clean Energy Academy	Citywide	Remote		Free courses in things like HVAC, lighting, building envelope, heating systems, EVs that offer certifications. Works to fill skill gaps identified by employer partners.	NYSERDA, Willdan, ConEd, Soulful Synergy, NYIT, others	https://www.cleanenergyacademy.org/
12	CUNY Building Performance Lab	Citywide	Mostly remote, various in person locations	facility managers, building operators, and energy professionals, CUNY students	Offers courses to building professionals to help buildings become more energy efficient and sustainable. NY Center for Energy and Carbon Management Training (E-CMT): comprehensive education in building performance and operations. Offers pathways to various professional certifications. Couples academic instruction with real-world internships through the WAP sub-grantee network.	CUNY, NYS HCR	
	RETI Center Sollar		Red Hook,				

Appendix E
NYSERDA Equity Analysis Charts

NYSERDA FUNDING DOLLARS

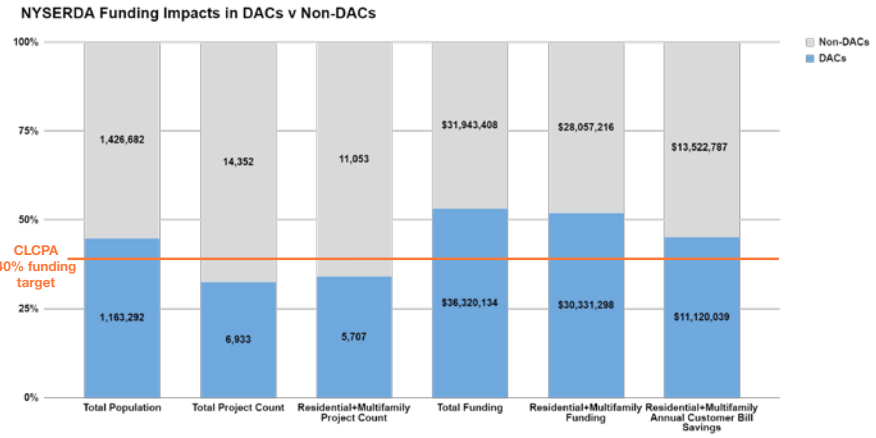


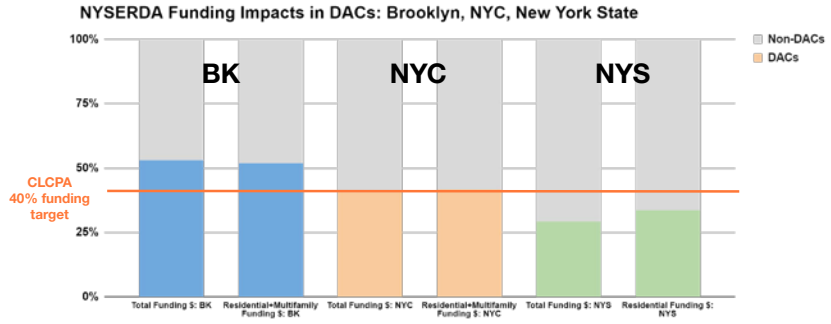
NYSERDA FUNDING DOLLARS

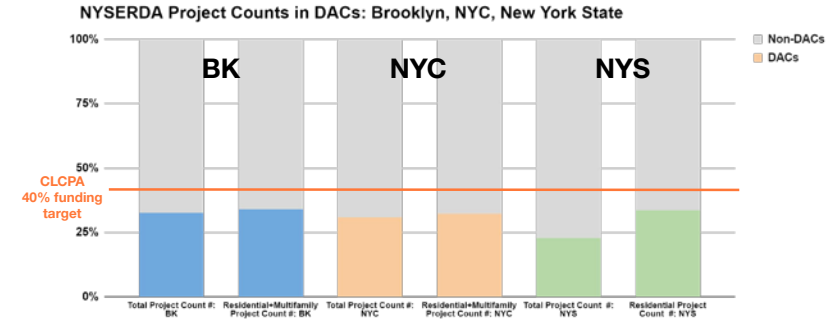


Appendix E
NYSERDA Equity Analysis Charts

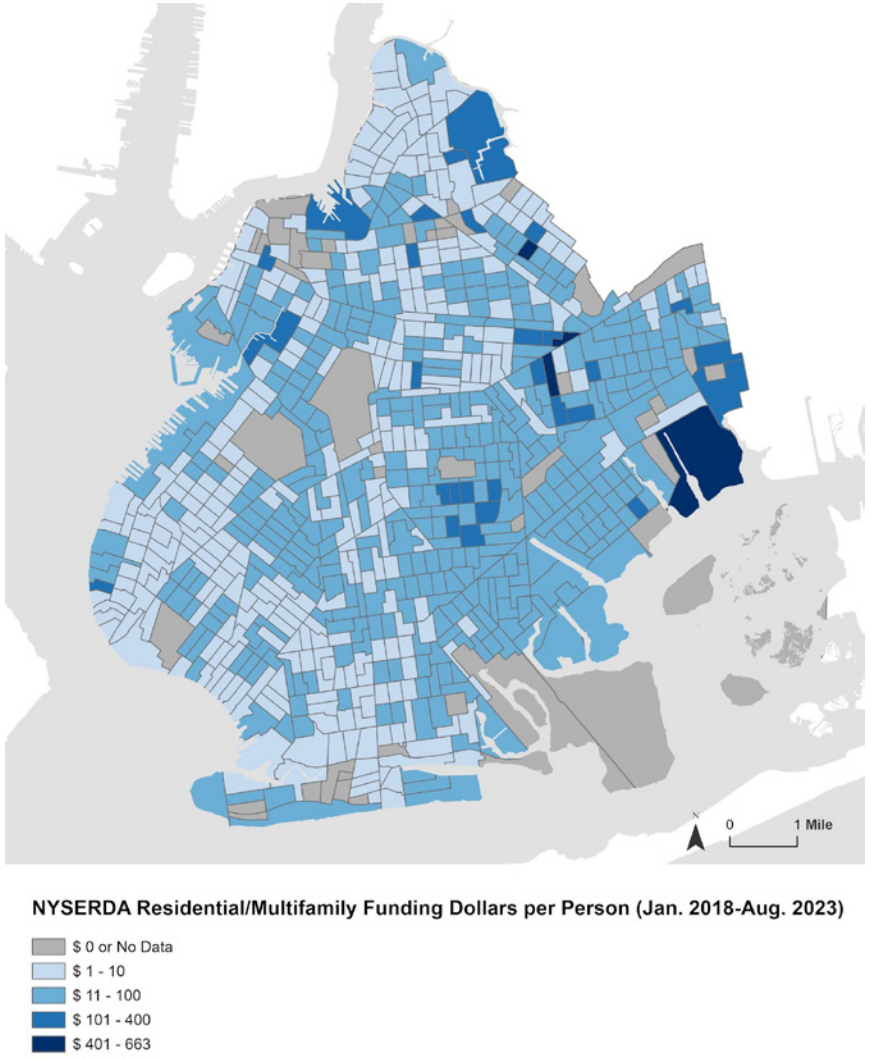
NYSERDA FUNDING DOLLARS







NYSERDA FUNDING DOLLARS

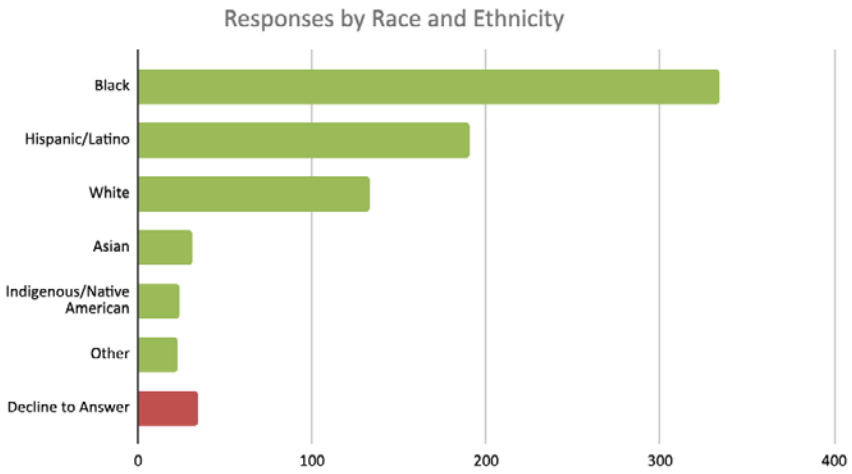


Appendix F
Public Engagement Interviews & Focus Groups

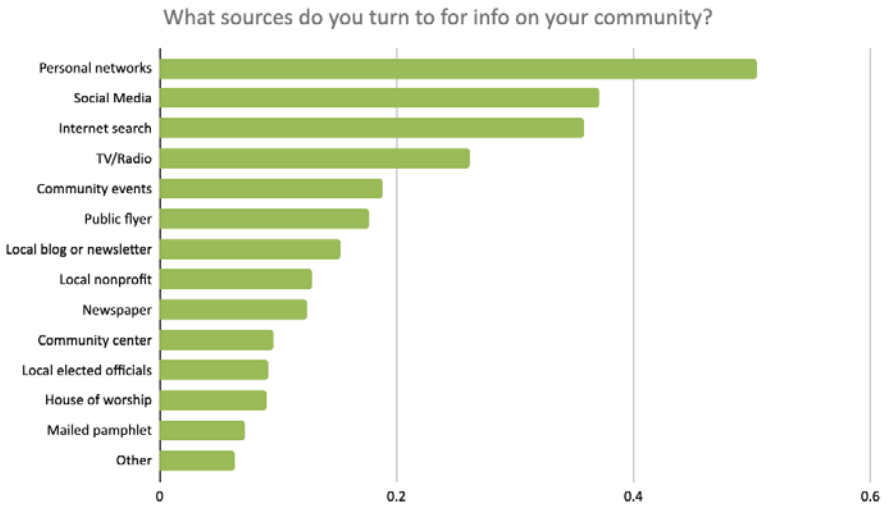
RABA Interview Organizations				
Organization	Borough	Description	Participants	Date
AEA	NYC	Provides a variety of programming and direct services to residents, businesses, and landlords around sustainability, resilience, and clean energy upgrades. AEA also has a weatherization agenc. AEA also provides workforce development training in the green economy.	Pedro Barry, Tania Hidalgo, John Ahrens, Luis Guillermo Garcia, Diane Gonzalez	2/8/2024
Solar One	NYC	Offers workforce development training programs in clean energy, solar panel technical assistance, sustainability and resiliency education for students K-12 and their teachers, coordinator for Clean Energy Communities Program (NYSERDA) and steward of Stuyvesant Cove Park in Lower Manhattan.	Max Levitzke, Rachel Fleischer, Gretchen Bradley, Shakira Hart, Patience Otun, Anika Wistar-Jones	2/27/24
NHS Brooklyn	Brooklyn	Provides services for first-time homebuyers, foreclosure prevention and intervention, insurance education, issues grants and loans for home rehabilitation, mortgage counseling. They also provide services to landlords and tenants with housing location assistance, mediation, and other resources	Angella Davidson	2/28/24
Bronx NHS	Bronx	Provides services for first-time homebuyers and foreclosure prevention.They also provide services to landlords and tenants with housing location assistance, mediation, and other resources. They also provide tax filing services for individuals	Sheril Hall	2/28/24
Center for New York City Neighborhoods (CNYCN)	NYC	Promote and protect affordable homeownership, specifically for Black & Brown homeowners in New York City. They also do work on a state level with homeowner and mortgage assistance. They also manage HomeFIX 2.0, a City-funded program that provides home improvement services. They also are a Community Development Fund Institution (CDFI), entering into lending specifically for green retrofits.	Robert McCool, Jessica Castro, Jennifer Leisure, Rabyaah Althaibani	2/26/24
Bronxworks	Bronx	Provides various social services such as literacy, and RAD/PACT services (NYCHA), workforce development programs, tax services and financial counseling, and summer youth employment (one of the largest summer youth employers in NYC)	Marie Edwards	2/23/24
CAMBA	NYC	Provides social services to all ages, emergency services (migrant assistance, food distribution), legal services, and develops various types of housing	Michelle Humphrey White, Melisa Clarke	2/13/24

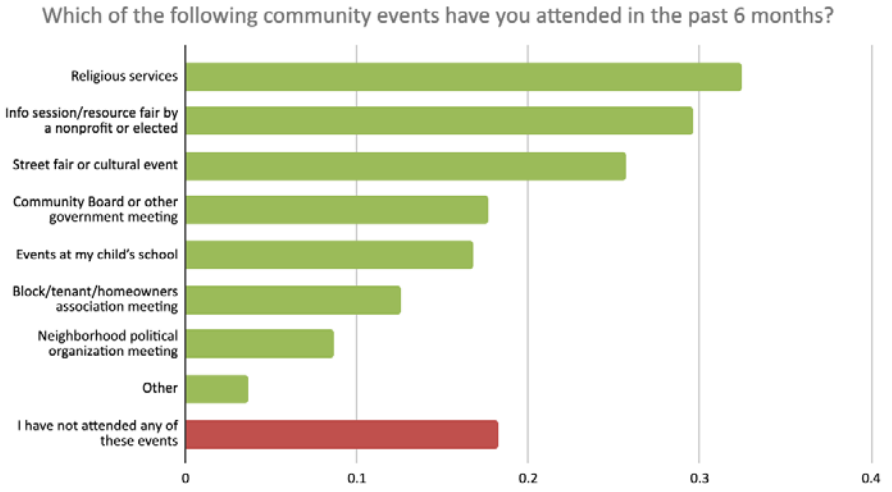
Focus Group	Description	Date	Corresponding Hub Team Organizations	# of Participants
Small Businesses	We wanted to learn from small businesses what challenges and opportunities exist to engage them on clean energy and the green economy. 212 Print is a print shop located in Brownsville Brooklyn. Pitkin Avenue BID is a Business Improvement District which services Tierra Mack is the Executive Director of Pitkin Avenue BID, which services businesses across 14 blocks in Brownsville, Brooklyn.	6/6/24	AEA	2

Appendix G
Full Survey Results



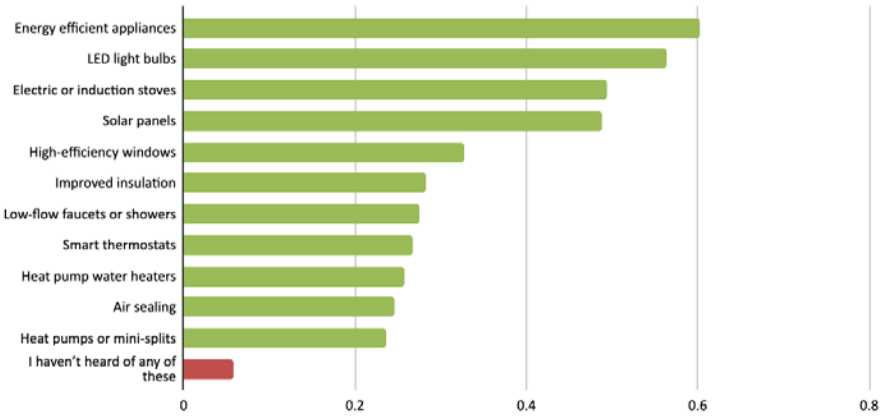
Information Sources



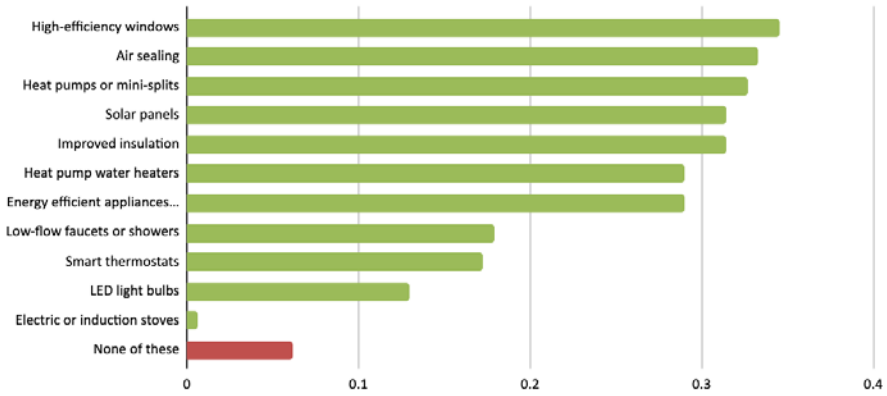


Home Energy Upgrades

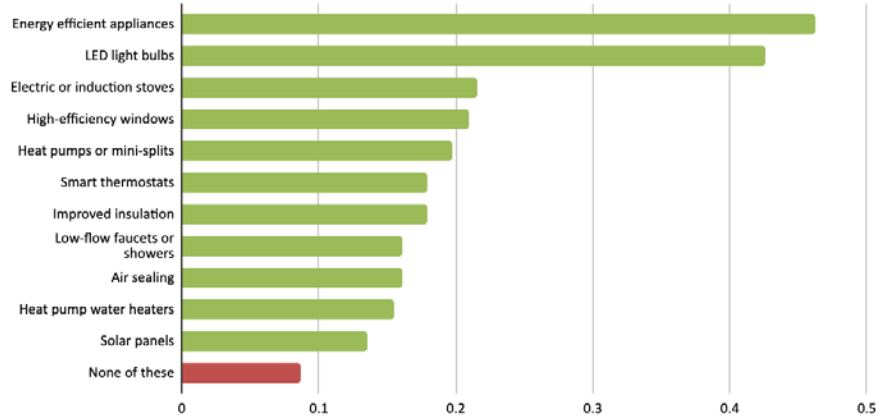
Which of the following clean energy upgrades have you heard of?



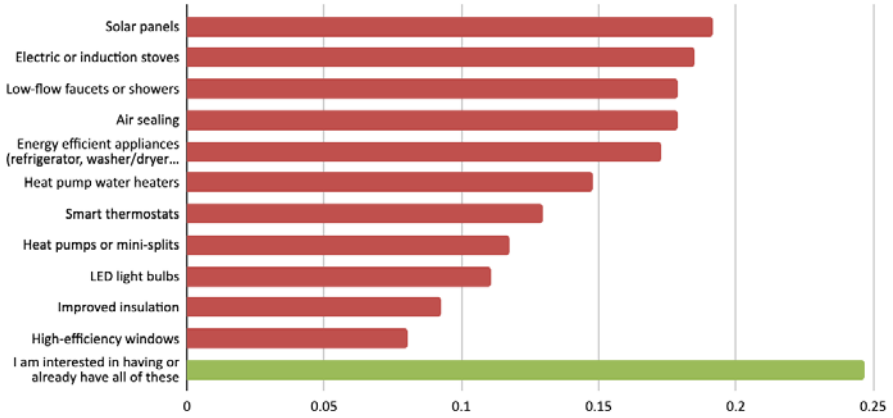
Which of the following clean energy upgrades do you want, but not know how to access/afford?

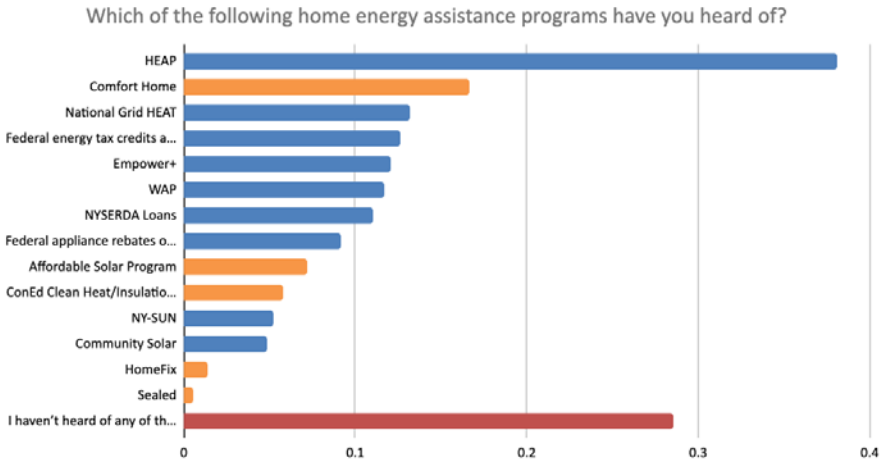


Which of the following clean energy upgrades do you already have or plan to have?

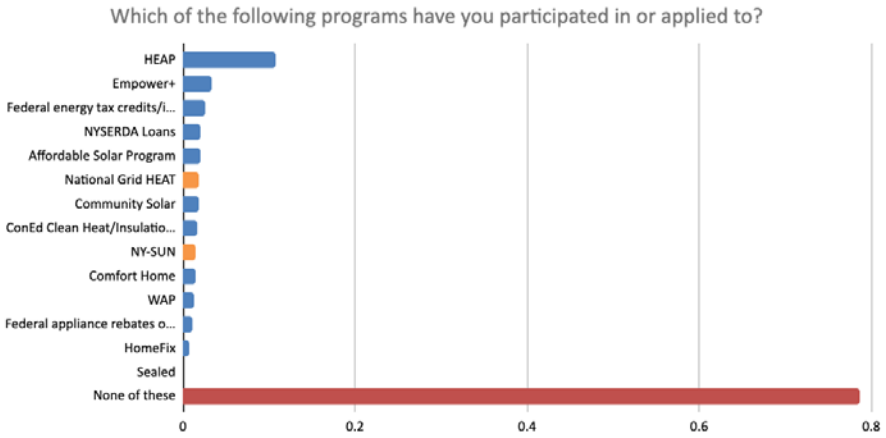


Which of the following clean energy upgrades are you not interested in having?





*Bars in orange only asked to homeowners

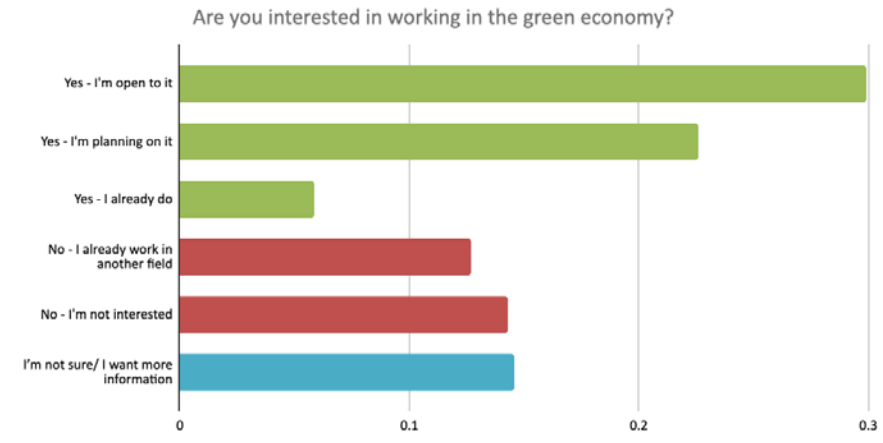


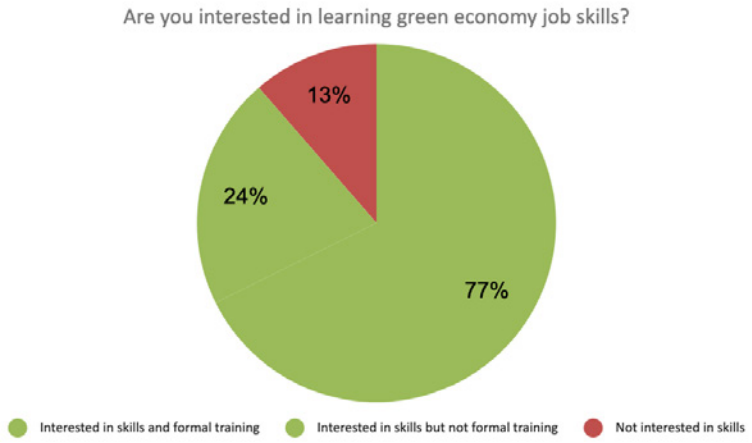
*Bars in orange only asked to homeowners

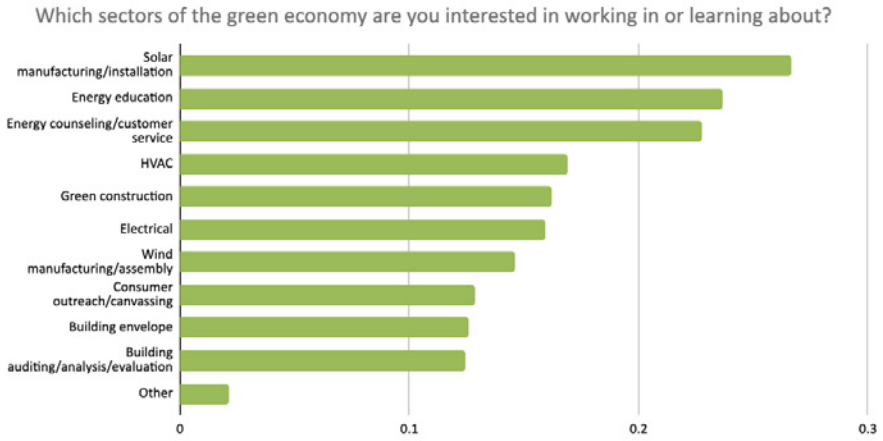
How much would this motivate you to make a clean energy upgrade? (Scale of 1-5)	**Average**
Lowering my utility bills	4.3
Making the temperature in my home more comfortable	4.2
Making needed home repairs like a roof replacement or mold/lead abatement as part of the upgrade	4.0
Protecting my home from damage from natural disasters and avoid power outages	4.1
Improving indoor air quality in my home	4.1
Fighting climate change/improving the environment	3.9
Addressing tenant complaints about their apartment being too cold/hot	3.8

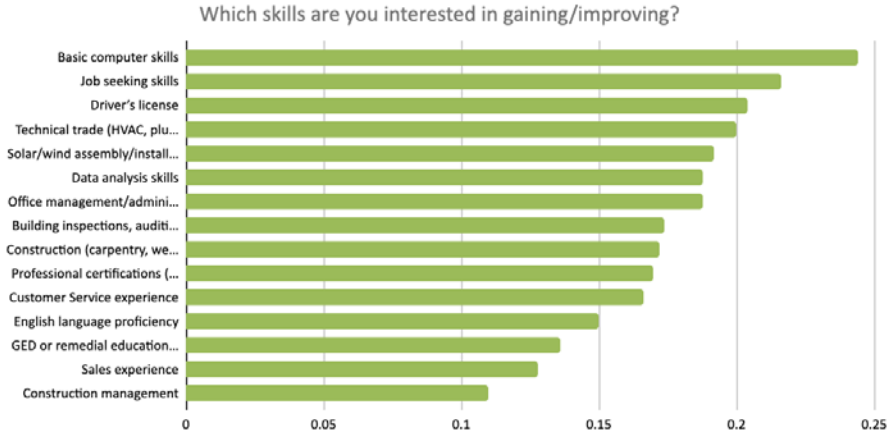
How big of an obstacle would these be to making a home energy upgrade? (Scale of 1-5)	**Average**
I cannot make the upgrades I'm interested in on my own as a renter. (ONLY RENTERS)	4.1
I don't know what kinds of upgrades, technologies, and programs exist and what it is possible for me to do as a renter	3.6
Other home repairs or upgrades are a bigger priority for me (ONLY HOMEOWNERS)	3.3
I don't know what kinds of upgrades, technologies, and programs exist and what it is possible for me to do	3.2
I can't afford the upfront cost of the upgrades I'm interested in	3.9
The process of receiving upgrades (getting permission from landlord, how to access incentive programs, etc.) is complicated. (ONLY RENTERS)	3.8
The process of receiving upgrades (how to find a contractor, how to access incentive programs, etc.) is complicated. (ONLY HOMEOWNERS)	3.6
I don't want people coming into my home to install upgrades.	2.4

Workforce


Are you interested in working in the green economy?
Yes - I'm open to it
Yes - I'm planning on it
Yes - I already do
No - I already work in another field
No - I'm not interested
I'm not sure/ I want more information
0
0.1
0.2
0.3


Are you interested in learning green economy job skills?
13%
24%
77%
Interested in skills and formal training
Interested in skills but not formal training
Not interested in skills


Which sectors of the green economy are you interested in working in or learning about?
Solar manufacturing/installation
Energy education
Energy counseling/customer service
HVAC
Green construction
Electrical
Wind manufacturing/assembly
Consumer outreach/canvassing
Building envelope
Building auditing/analysis/evaluation
Other
0
0.1
0.2
0.3


Which skills are you interested in gaining/improving?
Basic computer skills
Job seeking skills
Driver's license
Technical trade (HVAC, plu...
Solar/wind assembly/install...
Data analysis skills
Office management/admini...
Building inspections, auditi...
Construction (carpentry, we...
Professional certifications (...
Customer Service experience
English language proficiency
GED or remedial education...
Sales experience
Construction management
0
0.05
0.1
0.15
0.2
0.25

How much would the following encourage/enable you to participate in a green jobs training program? (Scale of 1-5)	Average
Payment for participation	4.4
Free childcare during the program	3.7
Online option (no in-person requirement)	4.2
Possibility of earning better wages and benefits	4.6
Learning new skills	4.6
Doing work that helps my community and the environment	4.4
Hearing positive experiences from people who completed the program	4.3
Someone I trust recommending the program to me	4.4

How big of an obstacle would this be for you to participate in a green jobs training program? (Scale of 1-5)	Average
Work schedule / Taking time off work	2.8
The need for childcare or other caretaking responsibilities while in a training program	2.2
I don't know how to find a green job training program	3.0
I'm worried I don't have the right skills	2.6
Travel time to get to/from a training program	2.4