

Regional Assessment & Barriers Analysis

Manhattan

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Regional Clean
Energy Hub
Partnering Organization

Acknowledgements

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I. Executive Summary

The Manhattan 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 borough of Manhattan. The Manhattan Clean Energy Hub and this report are focused on clean energy upgrades in small (1-4 unit) homes and businesses, and expanding access to green jobs.

The report provides a baseline characterization of Manhattan’s demographic, economic, built environment, and civic landscape, as well as current clean energy program participation. It shows that Manhattan is 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.

Yet, the borough’s DACs are rich in community-based and non-profit organizations with a range of expertise in housing and workforce development and strong local networks. Using these findings, this report identifies strategies for the Manhattan Clean Energy Hub and NYSERDA to leverage local assets to overcome obstacles to a clean energy transition in Manhattan and expand equitable access to green jobs and retrofits of homes and businesses.

Key Takeaways

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

Sociodemographics

Manhattan is more racially and linguistically diverse than the rest of the State, but less than the City as a whole. Per 2021 5-Year ACS estimates, 47% of Manhattan’s residents are non-Hispanic white people, compared to 32% citywide. Manhattan is highly segregated; within Manhattan DACs, 71% of the population identifies as a race other than white, and median household income in DACs (\$50,353) is approximately 45% lower than the borough median.

Building and Sector Assessment

Manhattan is a densely-built region made up of mostly mixed-use neighborhoods; 43% of the borough’s housing units are in mixed use buildings, compared to 23% citywide, the vast majority of which are in buildings with 5 or more units. Small residential buildings (1-4 units) are clustered in a few neighborhoods. The building stock in Manhattan is older than it is in NYC as a whole. The majority of Manhattan households are renters. It is widely accepted that there is a housing crisis in New York City and in Manhattan; less than 1% of units renting below \$2,400 per month are available for rent.

Clean Energy Workforce

Manhattan is the economic center of New York City, home to 2.2 million jobs, more than half of the city’s total. Yet most Manhattan DAC residents have to commute out of the borough for work. Manhattan, like the city and the state, has a relatively small but fast-growing clean energy economy. The region is currently the center of the city’s green jobs; NYSERDA estimates that Manhattan has 65% of the entire city’s clean energy jobs, which have been steadily growing each year. More than half of the city’s green jobs are in the buildings trades. Many green jobs pay higher wages than other sectors, especially for people without a college degree, yet this sector is overrepresented by white workers.

Baseline Assessment of Clean Energy Program Participaton

NYSERDA spending in Manhattan is proportionate to the size of Manhattan's population relative to the state's. However, Manhattan receives less residential and multifamily program funding; it gets 12.0% of NYC's residential program funding, though it has 25.8% of the City's total residential units. Total NYSERDA residential and multifamily funding and projects in Manhattan are meeting the CLCPA target of 40% going to DACs, though spending is uneven across census tracts in DACs.

• Barriers

Based on the assessment of Manhattan's regional characteristics, we identify barriers to participation in the clean energy economy across four categories identified by NYSERDA: Physical and Economic Structures and Conditions; Financial and Knowledge Resources and Capacity; Perspectives and Information; and Programmatic Design and Implementation.

Physical and Economic Structures and Conditions

Barriers to clean energy home upgrades in Manhattan and its DACs include: the borough's aging and historic building stock, where upgrades are complex and costly, especially for LMI homeowners; most residents are renters and many owner-occupiers live in cooperative apartments, both of which present challenges to program eligibility and decision-making. Barriers to expanding access to green jobs include limited formal education and the need for basic jobs skills training among DAC residents. Across all programs, unequal internet access can present a barrier to engagement and participation.

Financial and Knowledge Resources and Capacity

Barriers to clean energy home upgrades in Manhattan and its DACs include: high housing and energy cost burden across renters and homeowners, especially for residents of color; high costs of construction in the region; lack of financing options that meet the need of affordable housing owners and LMI residents; high-turnover among property managers amidst complex and lengthy projects; and a dearth of expertise and capacity for retrofits in the affordable small homes market. The high cost of living also poses barriers to expanding access to green jobs for LMI jobseekers, who may be juggling multiple jobs and childcare, and face other financial barriers to participation in workforce training programs.

Perspectives and Information

Barriers to clean energy home upgrades and green jobs in Manhattan and its DACs include: lack of awareness of programs; negative perceptions of program complexity or eligibility constraints; distrust of utility companies; and the need for regulations to incentivize upgrades.

Programmatic Design and Implementation

Barriers to clean energy home upgrades include the range of programs and lack of clarity about how to navigate their complex requirements, split incentives for landlords and tenants, and restrictive and exclusionary eligibility requirements. Across programs, lack of language access is a barrier.

• Opportunities

Opportunities to address these barriers include partnering with the borough's robust nonprofit and civic infrastructure, such as community-based non-profit organizations focused on low-income housing and workforce development, who can leverage existing relationships with local communities to improve program outreach and help navigate program improvements.

• Recommendations

The report identifies a range of short-term, mid-term, and long-term strategies that NYSERDA and Hub partners can engage to address current barriers to participation in the clean energy economy across Manhattan and its DACs. These include revising and investing in program messaging, eligibility, and financial incentives tailored to the needs of LMI tenants and homeowners in DACs; making and advocating for policy changes related to program income eligibility and energy costs; and investing in and empowering Hub organizations to deepen community partnerships and outreach across languages.

II. Baseline Regional Characterization

A. Baseline Regional Sociodemographics

Manhattan is a densely populated and diverse but highly unequal and segregated part of New York City and State. This section summarizes baseline sociodemographic characteristics for the region in terms of race and ethnicity, languages spoken, income, and labor and education. Data analyses and visualizations on these topics can be found in Appendix B.

• Disadvantaged Communities

Nearly 45% of Manhattan’s population lives in Disadvantaged Communities (DACs), as defined by NYSEEDA (as compared to 36% of the population statewide, and in line with 49% of the citywide population).¹ In Manhattan, DACs are concentrated in three main areas: Harlem/Upper Manhattan (Morningside Heights, Hamilton Heights, Washington Heights, Inwood); Hell’s Kitchen, Hudson Yards, Chelsea, parts of Midtown/the Garment District; and the Lower East Side/Chinatown, each with their own distinct characteristics, discussed throughout this section of the RABA.

• Racial and Ethnic Diversity and Segregation

Manhattan is more racially and linguistically diverse than the rest of the State, but less than the City as a whole. Per 2021 5-Year ACS estimates, 47% of Manhattan’s residents are non-Hispanic white people, compared to 32% citywide. (See Fig. 1 for the region’s population by race and ethnicity.) Manhattan is highly racially segregated. As shown in Figure 2, which shows predominant race by census tract, most of Manhattan’s neighborhoods are predominantly white, except in some DACs.

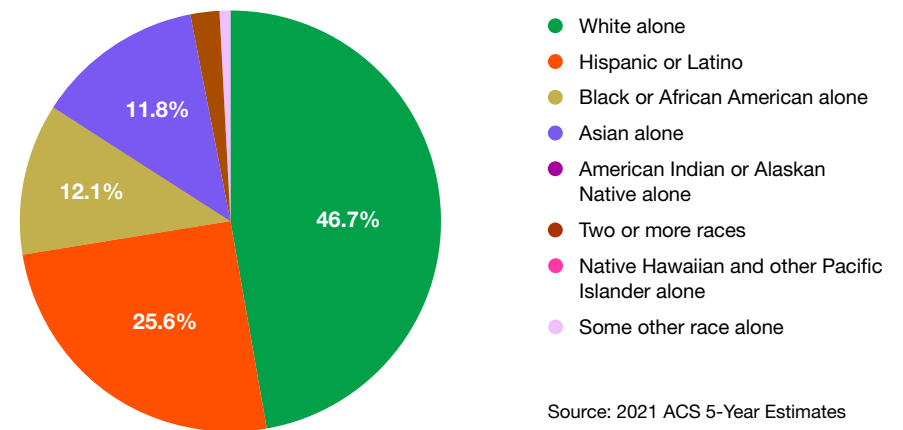
Within Manhattan DACs, 71% of the population identifies as a race other than white. Black residents make up 26% of the population in DACs compared to 14% of Manhattan as a whole. In DACs, roughly 34% of the population is non-white Hispanic, compared to 19% borough-wide and 21% citywide. Asians represent a similar portion of the population in DACs as borough-wide (11% and

12%, respectively), but the only Manhattan census tracts where a plurality of the population is Asian are located in the Lower East Side/Chinatown DAC. The Harlem/Upper Manhattan DAC is predominantly Black or Hispanic/Latino, the Midtown West DAC is predominantly White, and the Lower East Side/Chinatown DAC is predominantly Hispanic/Latino and Asian.

• Languages Spoken

Most Manhattan residents are proficient in English, both in and outside of DACs. Per 2021 ACS 5-Year data, most Manhattan households (62%) speak only English at home. In DACs, slightly more than half of households speak languages other than or in addition to English at home. Among households in Manhattan DACs, 15.7% have limited English proficiency; in some DAC census tracts, over half of households have limited English proficiency. The top three non-English languages spoken in DACs are Spanish, Chinese (including Mandarin and Cantonese), and French/Haitian/Cajun.²

Figure 1. Race and Ethnicity in Manhattan (Source: 2021 ACS 5-Year Estimates)



Source: 2021 ACS 5-Year Estimates

Figure 2. Predominant Race by Census Tract, with DAC Boundaries

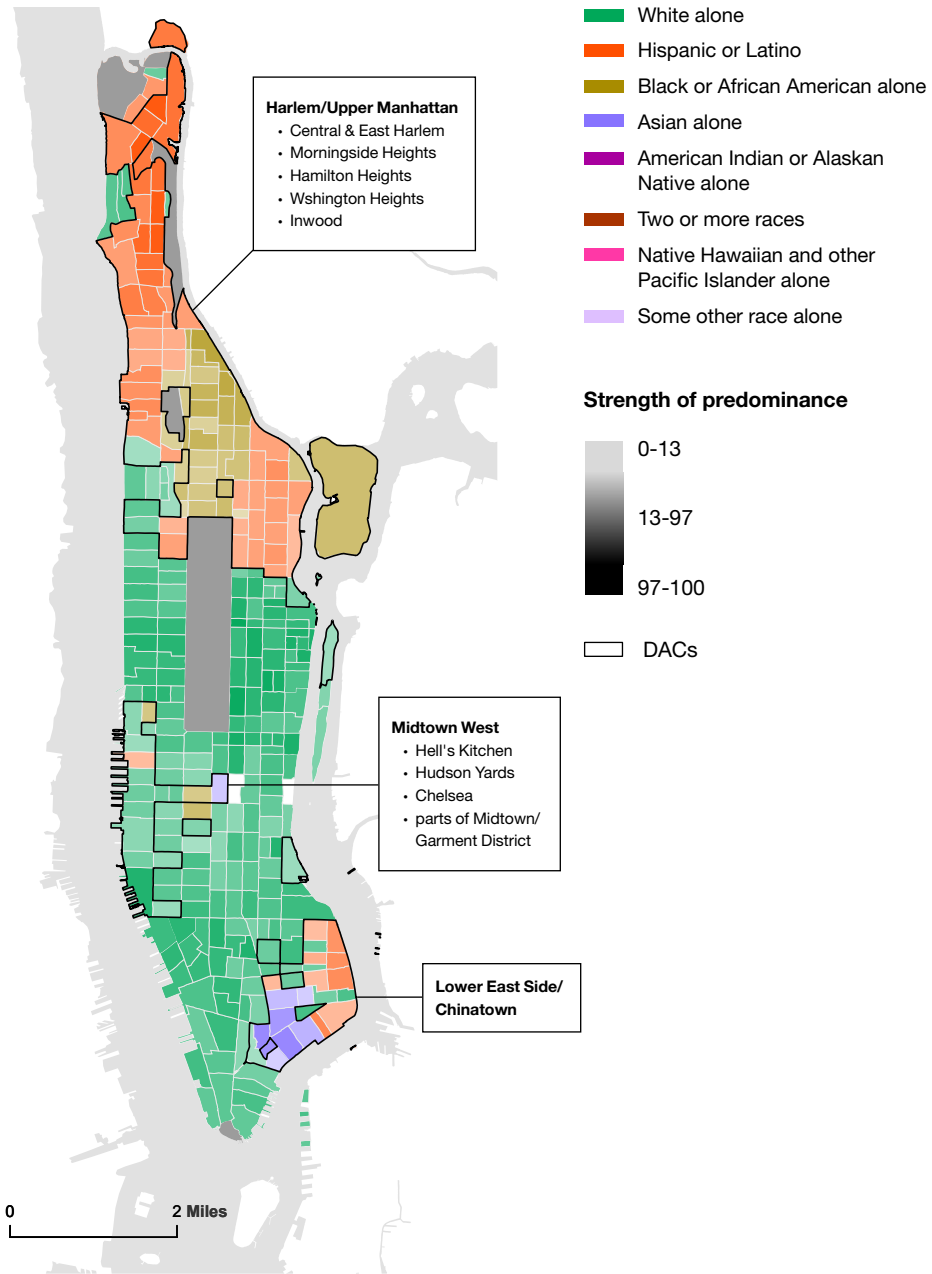
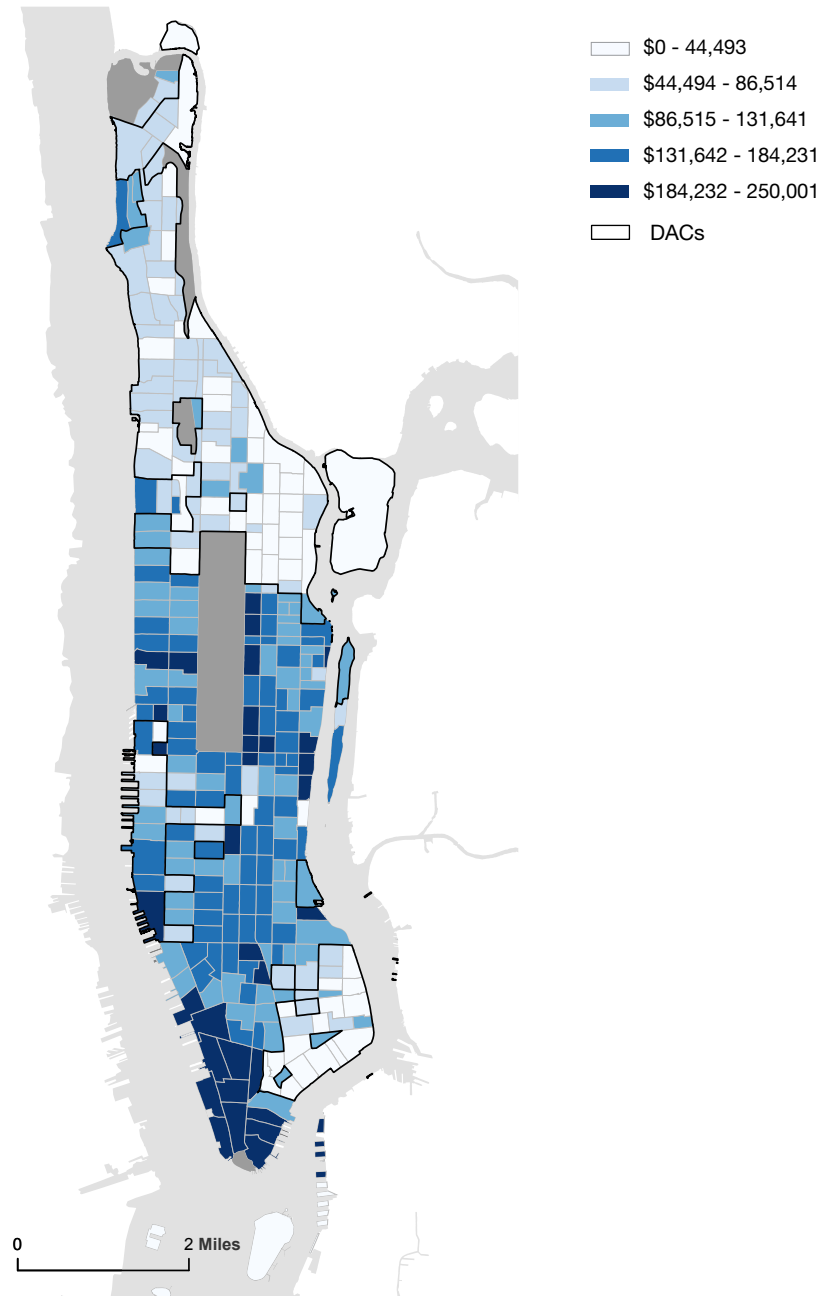


Figure 3. Median Household Income by Census Tract, with DAC Boundaries



Source: 2021 ACS 5-Year Estimates

- **Income**

Manhattan has profound and racialized income inequality. Manhattan's median annual household income is \$93,956, compared to \$70,663 citywide (2021 ACS 5-Year Estimates). Median household income in DACs (\$50,353) is approximately 45% lower than the borough median. (See Fig. 3 for a map of median household income by census tract).

Data on income by race suggests that for Black populations, income disparities are more correlated with race than geography. The Manhattan median household income for Black households is \$42,341, less than one-third of the median household income for non-Hispanic white Manhattanites (\$136,386). In Manhattan DACs, where median incomes are lower for all racial and ethnic groups, the median income for a Black household is still roughly 38% of the median income for non-Hispanic whites. Among white and non-Black POC, however, income is more correlated with geography. Asian households see the greatest disparity in incomes by geography; the median income for Asians in DACs is less than half of the median Asian household income borough-wide. Non-Hispanic white household income is 32.4% higher boroughwide than in DACs, and Black income is 8.5% higher boroughwide than in DACs.

- **Workforce: Jobs and Commutes**

Manhattan is the economic center of New York City, home to 2.2 million jobs, more than half of the city's total (U.S. Census Bureau, 2021). The vast majority (80%) of those jobs are held by workers commuting from outside the borough. Among Manhattan residents, two-thirds work in the borough and one-third commute elsewhere. Within DACs however, just one-fifth of residents both live and work within the borough, and the majority commutes outside the borough. The main job destinations for DAC residents are Brooklyn, Queens, and the Bronx. DAC residents have longer average commute times (38 minutes) than the population of Manhattan as a whole (32 minutes).

New York City commuters take public transportation to work at double the rate that the State does overall. This is true in Manhattan and even more so in DACs, in which 60% of commuters take public transit. Among DAC residents, 14.1% walk to work, which is less than in the borough as a whole (18.9%) but more than citywide (9.5%) and statewide (5.8%). Manhattan sees a higher percentage of its residents work from home (17%) than citywide (10.7%), but this is less common in Manhattan DACs (12.7%). A small percentage of commuters based in Manhattan and its DACs

(2.3% in both) commute to work by bicycle, at a slightly higher rate than citywide (1.4%) and statewide (0.7%) (ACS 5-Year Estimates, 2021).

- **Workforce: Labor Participation, Unemployment, and Educational Attainment**

Manhattan residents have highly unequal labor participation, unemployment, and educational attainment rates. In both Manhattan and DACs, the population skews slightly towards the 25-34 year old age group as compared to the rest of the City and State. This would indicate that a larger proportion of the population is likely to be in the labor force, but this is not reflected in DACs' labor participation rates. Manhattan DACs have a lower labor participation rate than the City and State, while Manhattan as a whole has a higher labor participation rate. Manhattan also has a larger disparity in labor participation rates by race and ethnicity than the rest of the City and State, both in and outside of DACs. The lowest labor participation rates are among the Black population and Hispanic and Latino populations.

The overall unemployment rate is higher in DACs than in Manhattan. However, the unemployment rate among the Black and American Indian/Alaska Native populations remains the same within DACs and borough-wide (a trend maintained at the City and State level as well), suggesting that disadvantages by race in the employment sector are independent of geography. Hispanic/Latino, Two or More Races, and Some Other Race categories also have high unemployment rates in both DACs and the borough as a whole. Overall, Manhattan has higher levels of educational attainment than the City and State, but DACs have lower levels of educational attainment than the rest of the borough. The percentage of the population in Manhattan DACs with a bachelor's degree or higher (39.6%) is remarkably lower than Manhattan as a whole (62.6%), but is on par with the City and State averages.^{4,5}

- **Internet Access**

In Manhattan's DACs, 15% of households do not have access to the internet, compared to 8.8% borough-wide and 10.5% statewide. This disparity is particularly stark in Chinatown and East Harlem, where nearly 50% of households are without internet access in some census tracts. These areas correspond with some of the highest levels of limited English proficiency in the borough, with the predominant languages being Asian and Pacific Islander languages and Spanish, respectively.

B. Buildings and Sector Assessment

• Land Use

Manhattan is a densely-built region made up of mostly mixed-use neighborhoods with diverse building typologies and uses.

In New York City, properties (identified by tax lots) are each assigned one land use category such as residential, commercial, industrial, or mixed-use. Mixed-use refers to buildings that have both residential and commercial uses, typically with ground floor businesses and housing units above, and are a defining feature of Manhattan's landscape. Two main commercial areas/central business districts exist in Midtown and in Lower Manhattan, with residential and mixed uses making up the majority of the rest of the borough.

Manhattan has the highest proportion of mixed-use buildings in the city compared to other boroughs, with nearly 30% of buildings classified as mixed use by the Department of City Planning. Of all of Manhattan's housing units, 43% are in mixed use buildings, compared to 23% of housing units citywide. Mixed use buildings vary greatly in size, from containing as few as 1-4 housing units, to containing over 50 housing units in high-rise buildings; however, the vast majority (98.3%) of housing units in mixed-use buildings are in buildings with 5 or more units. In both Manhattan and DACs, half of all buildings are categorized as residential only (not including mixed use), compared to the citywide rate of 87%. Lots with 1-4 residential units, whether they be categorized as residential or mixed use, make up just over one-fifth of both Manhattan's total land use, and one-third of all residential uses.⁶

Properties with 1-4 residential units are clustered in clearly defined areas in Manhattan: in DACs, these are Marble Hill, Harlem, and Chinatown. In Chinatown and East Harlem, many of these 1-4-unit lots are mixed use. In non-DAC areas, 1-4 unit lots are found concentrated in the Upper East Side, the Upper West Side, and the West Village/Greenwich Village/Chelsea neighborhoods.

The total commercial square footage of all commercial uses in Manhattan (including that in mixed use buildings) comes to 32% of Manhattan's total building area. The majority of that square footage comes from commercial and mixed-use lots that are considered "large" with over 25,000 square feet⁸ of commercial space: large commercial spaces make up 28% of Manhattan's total building area.

Table 1. Manhattan Buildings by Land Use Category

Land Use (MN)	# of Buildings	% of Total Buildings
Residential	22,301	48.8%
1-4 Unit⁷	6,958	15.2%
5+ Units	15,325	33.5%
0 Units or Blank	18	0.0%
Commercial*	4,990	10.9%
Small (>25,000 ft ²)	2,571	5.6%
Large (<25,000 ft ²)	2,093	4.6%
0 Commercial sq. ft. or Blank	326	0.7%
Mixed use (residential + commercial)*	13,590	29.7%
1-4 Unit (residential)	2,760	6.0%
5+ Units (residential)	10,105	22.1%
0 Units or Blank	725	1.6%
Industrial	233	0.5%
All Other Land Use Types	4,622	10.1%
<i>Total</i>	45,736	--

• Building Age

The building stock in Manhattan is older than it is in NYC as a whole. The majority of buildings in both Manhattan and in DACs were built before 1930 (74% for both), compared to 40% of buildings citywide. Buildings with 1-4 residential units in DACs skew older, with 89% built before 1930.⁹

Relatedly, Manhattan also has many Historic Preservation Districts and landmarked sites, which come with more stringent regulations on building alterations. These regulations may require review and approval by the Landmarks Preservation Commission for renovation and retrofit projects, and place limitations on cutting through exterior walls, obscuring or altering historic elements (from decorative

features to types of windows), or other alterations (such as installing heat pump equipment outside of the building) that make improvements such as HVAC upgrades and weatherization more complex. The construction of older buildings, such as the use of masonry walls, makes insulation and other retrofits extremely challenging.¹⁰ Further, buildings that are on the State or National Historic Registry are exempt from energy codes.¹¹ Manhattan has a total of 82 historic districts, and 49% of its 1-4-unit lots are landmarked either singularly or as part of a historic district. In DACs, this percentage is smaller but still significant (31%), with a total of 1,200 landmarked 1-4-unit lots. New York City has worked to revise policy to make it easier to retrofit historic buildings, but challenges remain.¹²

• Housing Market and Tenure

It is widely accepted that there is a housing crisis in New York City and in Manhattan.¹³ Vacancy rates, or the percentage of housing units that are vacant and available on the market to rent at any given time, are at historic lows.¹⁴ The most recent NYC Housing and Vacancy Survey (NYCHVS) findings for 2023 show that the citywide vacancy rate is a mere 1.4%, the lowest in decades. Among lower-cost units, vacancy rates are even lower, at less than 1% for units renting below \$2,400 per month.¹⁵ Data from the 2023 NYCHVS is not yet available at the borough-level, but according to 2021 ACS data, the vacancy rate in DACs (4.2%) is lower than in Manhattan as a whole (4.9%). The 2021 Manhattan vacancy rate was higher than the Citywide and Statewide vacancy rates (3.0% and 2.6%, respectively),¹⁶ but this reflects the higher vacancy rates seen in New York City in the immediate aftermath of the COVID-19 pandemic, which more recent NYCHVS data indicate was temporary.

The majority of Manhattan households are renters. This majority is even greater in DACs, where 80% of housing units are renter-occupied, compared to 63% across the entire borough. According to 2021 ACS data, only 1.9% of housing units in Manhattan (and 1.4% in DACs) are owner-occupied in 1-4-unit buildings, compared to nearly 20% in NYC and over 40% Statewide. Within DACs, owner-occupied housing units in a 1-4-unit building are concentrated in Central Harlem and Marble Hill.

City- and state-wide, there is a huge disparity in homeownership rates among BIPOC groups compared to white households; while rates of ownership are much lower in Manhattan overall, this trend still holds. One-third of non-Hispanic white householders in Manhattan live in owner-occupied housing, while just 11% of Black householders and 8% of Hispanic/Latino householders are homeowners, with even lower rates in DACs. Over half of homeowners in Manhattan are over the age of 55.

• Energy Use and Burden

In New York City as a whole, utility gas is the most commonly used form of home heating fuel for owner-occupied households, at 74% of households (as compared to 61% statewide). In Manhattan, however, just under 50% of owner-occupied households in both Manhattan and DACs use utility gas. About 23% use fuel oil, and approximately one-fifth heat their homes with electricity.

Manhattan owner-occupied 1-4-unit households have the highest annual energy costs, and these costs are even higher in DACs than they are in the borough as a whole. This suggests inefficiencies in heating smaller buildings, potentially influenced by these buildings' older average age. The largest energy burdens are felt by 1-4 unit owner-occupied LMI households, and this figure is even higher for homes located in DACs. Energy bills are costing Manhattan's LMI homeowners in 1-4 unit buildings 9% to 10% of their annual income, while statewide the average energy burden is only 2% of annual income.

Table 2. Annual household energy costs and burden for all households and LMI households

	Annual Energy Cost		Energy Burden	
	All	LMI	All	LMI
NYS	\$2,391	\$2,014	2%	6%
NYC	\$2,201	\$1,928	2%	5%
Manhattan	\$1,434	\$1,151	1%	5%
Owner-Occupied 1-4s	\$4,784	\$4,154	2%	9%
DACs	\$1,261	\$1,085	2%	4%
Owner-Occupied 1-4s	\$5,127	\$3,617	3%	10%

Source: U.S. Department of Energy's Energy Burden tool, 2018

C. Regional Clean Energy Workforce

Manhattan, like the city and the state, has a relatively small but fast-growing clean energy economy. The region is currently the center of the city's green jobs; NYSERDA estimates that Manhattan had 47,907 clean energy jobs in 2022,¹⁷ or 65% of the entire city's clean energy jobs. As government and industry define this emerging sector, differing research and data on the clean energy workforce produce different estimates of the size of the workforce. Overall, however, the data shares similar findings related to the growth of the buildings, transportation, and consulting sectors. Data at the borough-level is very limited, so this section relies primarily on citywide reports.

The City of New York estimates that the city had 133,000 "green economy" jobs across 21 sectors in 2021, representing 3% of all jobs citywide and \$16 billion in earnings.¹⁸ 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.¹⁹ 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 subsectors.²⁰ 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 2022.²¹

Many jobs in the green economy pay higher wages than other large sectors in New York City, especially among jobs accessible to people without a college degree.²² Jobs in the building trades in particular tend to be unionized and offer relatively high wages for people with less formal education: many building trades jobs that do not require a college degree have average salaries above \$73,000 and into six-figures.²³ Some buildings trades jobs that are expected to see growth, such as electricians, roofers, solar installers, maintenance/repair workers, and construction workers see slightly lower median annual salaries (\$53,300-\$52,500). 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.²⁴ Many of these jobs do not require significant new skills training or education specific to green technologies or policies.

Today's green economy workforce is predominantly white, with white workers overrepresented in green sectors as compared to the overall workforce, and

disproportionately working 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 underrepresented in the green economy, particularly in the building, design, and engineering trades, where less than 2% of jobs are held by women. This is consistent with statewide clean energy workforce demographic disparities as well.²⁵

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.²⁶ 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.²⁷ (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 2030,²⁸ and Green Economy Network's projection of 90,000 new green jobs between 2021 and 2030.²⁹) Much of this growth is projected to be driven by Local Law 97, which establishes building decarbonization regulations, and creates new demands for robust technical assistance, policy and compliance, and building trades. Other policies driving clean energy job growth include New York's Climate Leadership and Community Protection Act (CLCPA), the federal Infrastructure Investment and Jobs Act, and the federal Inflation Reduction Act, as well as other local laws and policy targets for decarbonization and sustainability.³⁰

D. Regional Partners

Manhattan and New York City are home to a range of institutions that will be important partners in Clean Energy Hub Program implementation. This section provides an overview of the many types of organizations that create a wide variety of opportunities for the Hubs to leverage as potential partners in Manhattan.

Civic institutions and community centers

A range of community and civic institutions provide Manhattan residents with public space to gather, access information, and attend events, including public libraries, senior centers, New York City Housing Authority community centers, Parks Department recreation centers, and public parks. These spaces and the agencies and organizations that manage them are important partners for Hub outreach.

Social Services and Community-Based Organizations

Manhattan has a robust social services and nonprofit sector across the borough, including many organizations with decades-long histories in the neighborhoods they serve. Manhattan and its DACs are home to many settlement houses, which are neighborhood-based providers of services including job training and counseling, early childhood services, senior services, housing counseling, legal services, benefits counseling, ESL education, and other programs. Settlement Houses typically have strong relationships with local city agencies and elected officials and other neighborhood services organizations, are connected to one another through [United Neighborhood Houses](#), which can help disseminate information about initiatives and opportunities across its membership. The City of New York maintains a [list of community-based organizations](#), as do large philanthropic institutions focused on the City's social services sector such as Robin Hood Foundation and New York Foundation.

Educational institutions

Manhattan's K-12 public and charter schools and related programs are important partners for Hub outreach by leveraging space and resources where many Manhattan residents expect to receive information about opportunities and services in their communities. Higher education institutions, including the public City University of New York campuses (such as City College in the Northern Manhattan DAC and Borough of Manhattan Community College in lower Manhattan) and private colleges also provide community space and programming to conduct outreach to young people about green jobs as well as other clean energy programs. Universities also conduct climate-related research and join environmental initiatives such as the NYC Climate Justice Hub.

Religious congregations and organizations including churches, mosques, synagogues, and faith-based community organizations provide regular meeting places and serve as trusted information sources in communities, especially among older residents, making them important Hub outreach partners.

Advocacy and service organizations in housing and environment

Neighborhood-based and borough-wide housing organizations in DACs are important partners in outreach to tenants and LMI homeowners, co-op residents, as well as for knowledge about the local housing stock. Examples of organizations include Met Council, Cooper Square Committee, Housing Conservation Coordinators, Community Voices Heard, East Harlem/El Barrio CLT, Hope Community Inc, Good Old Lower East Side (GOLES), and CAAAV. Some of these nonprofit housing organizations are owners and managers of housing themselves, or have experience working with nonprofit property managers and key partners in housing maintenance and retrofits. Environmental advocacy groups will be important partners for engaging residents with knowledge and interest in the clean energy economy who can then engage their neighbors, as well as for identifying other firms and organizations working in the clean energy economy who may be partners in making upgrades or providing green jobs. Environmental groups, in addition to Hub partners, include the New York City Environmental Justice Alliance, ALIGN, Lower East Side Ecology Center, Urban Green Council and Earth Matter NY.

Workforce development programs

In addition to job training and placement programs run by settlement houses and other social services organizations (referenced above), Manhattan is home to organizations focused on workforce development including the New York City Employment and Training Coalition, Soulful Synergy, Wildan, JobsFirstNYC, Rebuilding Together NYC, Nontraditional Employment for Women, and SBS Workforce1 Centers, among others. These partners will be important outreach partners for the Hub to advance green job training and employment opportunities for jobseekers.

Business associations and networks

Neighborhood-level Business Improvement Districts, local Chambers of Commerce, and trade associations representing Manhattan businesses will be important partners for the Hub to reach potential green employers and small businesses to participate in upgrades.

Construction, retrofit, HVAC, other building trades

Firms will be important partners in implementing clean energy upgrades and as targets for green workforce development, especially MWBEs located in DACs.

Government agencies and entities

These are important partners in programmatic implementation and outreach. This includes public agencies such as the Mayor's Office of Climate and Environmental Justice, Mayor's Office of Climate and Environmental Justice, Department of Small Business Services, Department of Housing Preservation and Development, NYC Economic Development Corporation, and New York City Housing Development Authority. City Council, State legislators, the Manhattan Borough President, and local Community Boards will be important outreach partners.

Utilities

Con Edison and National Grid are important partners to ensure that referrals for clean energy incentives are coordinated to improve program participation and success. Hub organizations could partner with the utilities for outreach events and collaborate with utility staff on sharing resources and information.

E. Regional Assets

Manhattan has a number of significant assets for advancing the clean energy economy in the region. These include public policy and advocacy efforts, civic infrastructure and social services, physical infrastructure, residents' knowledge and networks, and a diverse and strong local economy, further detailed below.

- **Local Climate and Housing Policy**

State and local regulations and investments to advance building decarbonization and building preservation create significant opportunities for clean energy upgrades and workforce development. Practitioners in the field of multifamily retrofits, particularly in the affordable housing sector, highlighted the impact of Local Law 97 and other regulations and associated penalties in advancing clean energy projects and compelling the integration of additional technologies and incentives into construction and rehab projects. In addition, affordable housing preservation financing and programs such as Year 15 refinancing provide some of the most successful opportunities for implementation of upgrades when combined with retrofit programs.

- **Civic Engagement and Information Infrastructure**

Government entities and outreach at the hyper-local level are important resources for community engagement. Local representatives of city, state, and congressional legislators maintain offices in the neighborhoods they represent, often offering strong constituent services and programming in partnership with city agencies and organizations. Community Boards are volunteer, resident-led government bodies that play an important role in relaying information about developments and programs in the community between residents, the government, and other stakeholders. Community-based groups such as civic associations, block associations, NYCHA tenant associations, and local social service and grassroots organizations all play leadership roles in tracking, analyzing, and sharing information about public policy and programs in their communities. Manhattan is also host to a range of public and shared spaces that are essential for community gatherings and outreach, including neighborhood parks and large public parks, recreation centers, libraries, Older Adult Centers, and schools. In addition to these community resources, Manhattan residents have strong personal and neighborhood networks for sharing and accepting information. Finally, New York City agencies maintain

robust data on the built environment, economy, and population that are essential for understanding and improving the reach of programs.

- **Environmental Justice, Climate, Housing and Economic Justice Advocacy, Organizing, and Social Services**

New York City has a sustained legacy of social and economic justice organizing and advocacy, including on the issues of housing, labor, and environmental justice. Today, tenant organizations, public policy research groups, climate organizations, workers centers' and unions, and social services organizations often collaborate on local, city, and state-level campaigns and initiatives at the intersection of these issues. These collaborations ensure that initiatives leverage neighborhood-level knowledge and networks alongside expertise in relevant policy, regulations, and technologies.

- **Large Real Estate, Building Trades, and Related Sectors, Including Nonprofit Organizations**

As a populous, densely built city and center of the international real estate market, New York City is home to development and construction-related businesses and organizations ranging from small-scale MWBE firms to citywide nonprofits to large global corporations. These include developers; engineering, architecture, and design firms; law firms and financial institutions specializing in real estate; environmental and zoning consulting firms; construction managers; construction, plumbing, electrical, and other building trades businesses; and property managers, among others. Many of these businesses are specialized in particular building typologies (e.g. 1-4 family homes, historic buildings, new large-scale multifamily and mixed use buildings), geographies (neighborhoods and boroughs), sectors (e.g. nonprofit, owner-occupied, cooperatively-owned, private non-rent-regulated rental housing), and local law and policy. This robust sector is well-poised to take on clean energy home upgrade projects, and offers significant new opportunities for green jobs, as outlined in Section II.C.

- **Diverse Local Economy**

New York City's economy is not dependent on one or even a few industries, but rather is a national and global center of a number of industries including finance, law, arts and entertainment, real estate, and technology. The City also has large-scale education, healthcare, retail, arts and culture, hospitality and tourism, and public and nonprofit sectors, among others. The city has maintained some manufacturing and seen growth of new boutique makers. In nearly all of these sectors, employers include multinational corporations, government agencies, mid-size firms, small businesses and independent contractors. Manhattan serves as a central business district for the metropolitan area, but each neighborhood has multiple commercial corridors and many neighborhoods are hubs for particular industries. The Upper Manhattan DAC, for instance, is home to a number of large public and private universities and hospitals. This diversity of sectors and scales of businesses and organizations creates ample opportunity for participants in clean energy upgrades and workforce development, and also helps attract a large and diverse workforce.

- **Labor and Workforce Development Organizations**

Manhattan and New York City as a whole has a number of organizations providing workforce development services, from local social service organizations to citywide groups such as the New York City Employment and Training Coalition, the Workforce Development Institute, Nontraditional Employment for Women, Workforce 1 Centers, and many others. Many of these, such as Green City Force, focus on green jobs training, often tailored to LMI and BIPOC communities, and have long-established partnerships with City and State agencies.

- **Educational Institutions**

Higher education institutions in Manhattan and across New York City are important partners in city- and nonprofit-led workforce development initiatives, such as the City University of New York's Green Jobs Training Program and green workforce initiatives across CUNY schools. A number of universities such as Columbia University have introduced climate education curricula and centers. The New York Climate Exchange, to be developed by 2028 on Governor's Island just south of Manhattan, will be an education and training consortium led by Stony Brook University and 15 other university and industry partners.

- **Jobseekers' Local Knowledge, Relationships, and Relevant Skills Including Languages**

A valuable skillset many Manhattan workers and jobseekers can bring to jobs in the clean energy economy, according to workforce development practitioners interviewed for this report, is their knowledge of their neighborhood's residents and social networks, building stock, businesses and organizations, and geography. Some may bring knowledge of local government agencies and policies. In addition, given the size of Manhattan's multilingual population and the diversity of languages spoken, as outlined in Section II, many Manhattan jobseekers speak languages necessary to communicate with other workers and community members. Practitioners emphasized that local knowledge, relationships, and language skills are all important skills for implementing clean energy projects, though some employers may need education and/or experience hiring locally to recognize it as a competitive advantage.

- **Public Transportation Infrastructure**

New York City's 24-hour public transportation network of subways and buses is the largest in the nation, and is the means by which the majority of residents of the City (51%), borough of Manhattan (53%), and Manhattan DACs (61%) access jobs (2021 ACS 5-Year Estimates). The City offers reduced-fare options for public school students, seniors, and qualifying low-income people. While not all areas of the city are well-served by the city's subway network, particularly in parts of the outer-boroughs, public transportation is a significant asset for connecting jobseekers to green jobs and for conducting community outreach and engagement across the borough.

III. Baseline Assessment of Clean Energy Program Participation

Baseline Assessment of Regional Clean Energy Programs

Overall NYSERDA spending in Manhattan is representative of population size; Manhattan has 15.7% of NYC’s total NYSERDA funding and 18.6% of the city’s population. However, Manhattan receives less Residential and Multifamily program funding; it gets 12.0% of NYC’s residential program funding, though it has 25.8% of the City’s total residential units. (A detailed breakdown of this funding by program can be found in Appendix B).

Total NYSERDA residential and multifamily funding and projects in Manhattan are meeting the CLCPA target of 40% going to DACs. DACs receive more NYSERDA residential program funding dollars per person than the borough as a whole, and residential funding tends to be higher in neighborhoods with lower median household income. That said, many census tracts in DACs see little residential program funding or projects. (See Fig. 4)

Existing NYSERDA Community Campaigns

There are no existing NYSERDA community campaigns.

Figure 4. NYSERDA Program Impacts in DACs and non-DAC parts of the region, against CLCPA targets (2019)

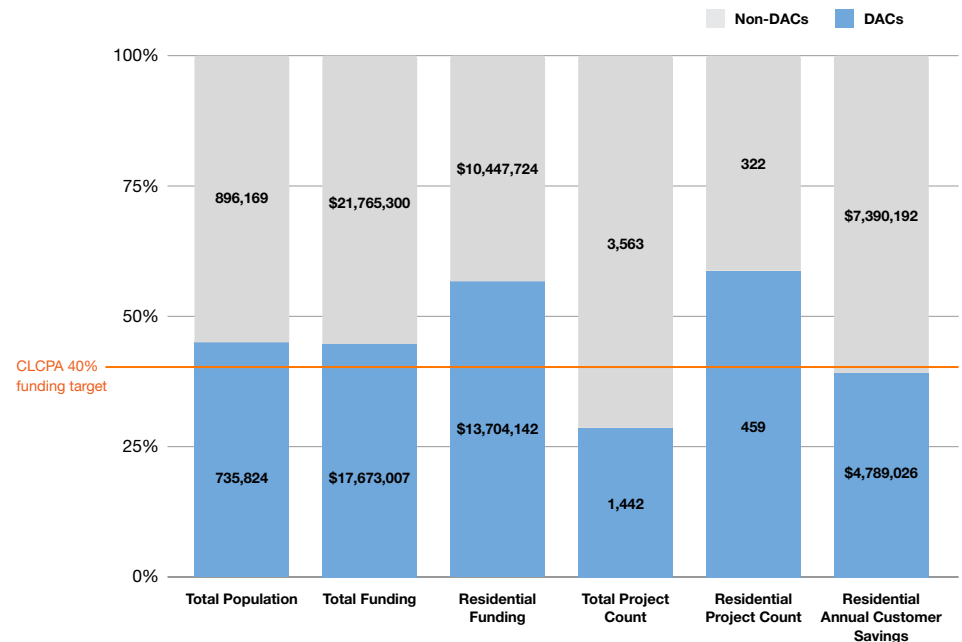


Figure 5. NYSERDA Residential Program Funding Dollars per Household

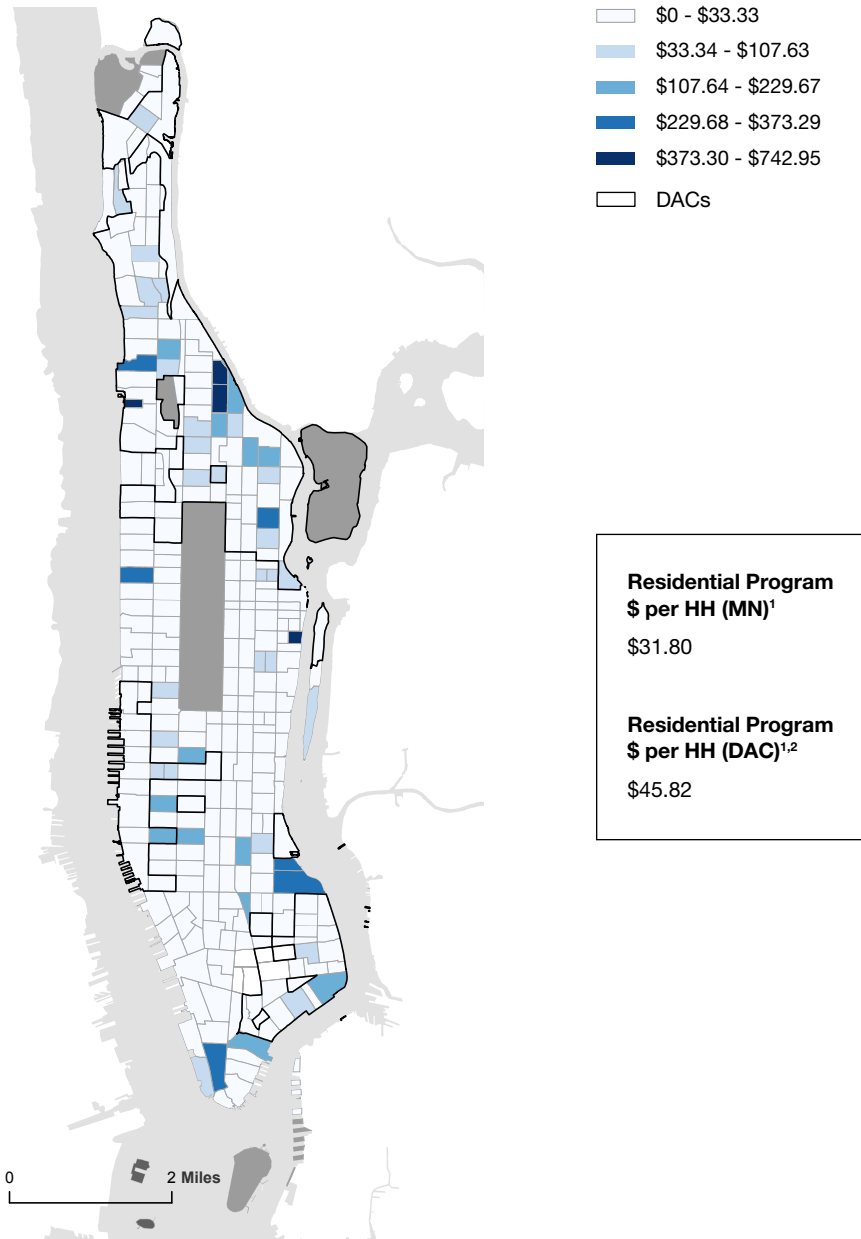
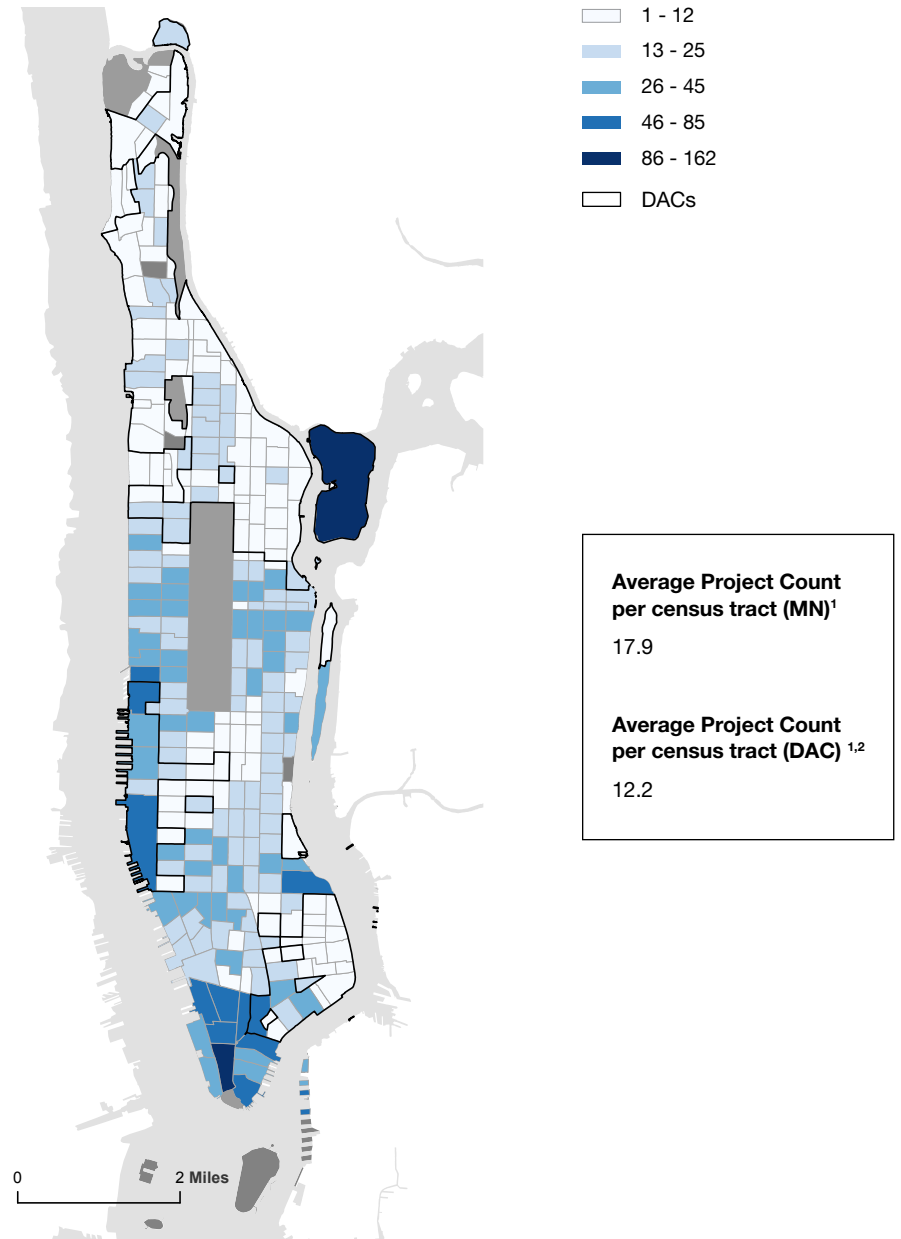


Figure 6. NYSERDA Project Count per Census Tract



IV. Stakeholder and Community Engagement

A. Outreach Tools and Methods

Community engagement and stakeholder research were central to our analysis of regional assets, barriers, and opportunities in Manhattan. Research and engagement methodologies included individual interviews with people working in the clean energy economy and community engagement and surveys of residents and jobseekers.

• Interviews

Practitioners in the clean energy economy—including those coordinating and doing outreach for home upgrade and retrofit programs, providing workforce development trainings, and engaging small businesses and community organizations in clean energy programs in the region—have important first-hand knowledge of the barriers and opportunities facing tenants, homeowners, contractors, building owners and property managers, jobseekers, employers, and community partners. Pratt Center conducted interviews first with Hub organization staff and then with organizations referred by Hub partners as key partners working in the region. Some of these organizations serve other parts of New York City, but all operate in Manhattan.

• Surveys

Pratt Center designed a survey for Manhattan renters and jobseekers on their knowledge, perspectives on, and participation in the clean energy economy and programs. The survey was made available online, via the platform TypeForm, in English and Spanish, as well as on paper for in-person engagement in English. Appendix A provides details on the survey design, outreach, and key findings.

Figure 7. Manhattan Clean Energy and Community Outreach Practitioner Interviews

Organization	Description	Participants	Date
Green City Force	Workforce development	<ul style="list-style-type: none"> Chief Program Officer Executive Director 	5/2/23
WE ACT	Environmental justice organizing and advocacy, clean energy upgrades and workforce development	<ul style="list-style-type: none"> Clean Energy Program Manager Director of Policy 	7/19/23
Association for Neighborhood and Housing Development (ANHD)	Community engagement, Clean Energy Upgrades (Multi-Family), small business and industrial business policy, housing policy	Director of Programs	7/31/23
Soulful Synergy	Offers workforce development training programs, including in green industries	<ul style="list-style-type: none"> Co-founder and COO Co-Founder Director of Decarbonization 	8/3/23
Neighborhood Restore	Creates affordable housing through restoring abandoned properties for LMI homeowners	Construction Project Manager	8/10/23
KC3	Clean Energy Upgrades (Multi-family affordable)	<ul style="list-style-type: none"> Program Manager Program Manager 	11/27/23
ANHD	Clean Energy Upgrades (Multi-family affordable)	Contract Project Management for AMEEP	11/30/23
USL Technology Consulting	Sustainability and technology consulting to small businesses, property owners and developers; workforce	<ul style="list-style-type: none"> CEO and Founder Director, Brand & Digital Marketing 	11/30/23

B. Stakeholder and Community Engagement Feedback

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

• Clean Energy Upgrades

Resident surveys and interviews with people working on home upgrade programs all emphasized that a central barrier to participation facing both renters and homeowners is the complexity of various programs and their processes. Practitioners emphasized that building age and deferred maintenance, combined with a lack of accessible financing options were significant barriers to retrofits and upgrades, especially in small homes, cooperatively-owned apartment buildings, and rent-stabilized apartment buildings. They find the biggest motivators to making upgrades for owners of multifamily housing are local laws with non-compliance penalties and opportunities to integrate upgrades into other renovation projects with public financing or incentives attached.

For renters, their lack of authority to make upgrades is a top barrier. More renters than homeowners identified not knowing what upgrades and technologies are available to them as a major barrier. Practitioners emphasized that homeowners are often deterred by competing home improvement priorities and the extensiveness and inconvenience of construction work; survey results did not emphasize this as significantly but did not contradict this perception. High costs for materials and labor along with insufficient homeowner financial resources are also significant barriers. High utility costs are both a motivator and barrier for renters and homeowners to make upgrades. Renters are most interested in upgrades that improve the health and comfort of their homes, according to surveys, while homeowners are most interested in cost savings and preserving their home and its value.

• Workforce Development Training and Green Jobs

Providers of workforce development training and job placement services emphasized that LMI jobseekers often lack the financial resources, baseline education, or interest required to gain highly technical skills. These job seekers also

lack information about the range of jobs in the clean energy economy that are a closer match to their skillsets and interests or how to find them. Those working in job placement find that a lack of soft skills (interview skills, professional norms) and basic computer and communication skills can be barriers to securing jobs. Those working in job training, however, emphasized structural barriers (such as lack of time due to childcare and balancing multiple jobs) as well as jobseekers mistaken perceptions that their skills (such as sales experience from retail and service sector jobs, speaking multiple languages) are not relevant or that they cannot develop new skills (such as data entry software). Survey results indicate that training in basic skills with computers, job-seeking, and driving are needed by some jobseekers, and that job-seekers are not familiar with the range of roles in the sector but are interested in many of the benefits and learning more. Both job training providers and jobseekers indicated that increased stipends and free childcare would address financial barriers to participation in trainings.

• Information Sources

For information about housing, jobs, and their neighborhood, Manhattan survey respondents across all age groups primarily rely on personal networks, local cultural and community events, information sessions held by local organizations or elected officials, and internet searches. Social media is widely used, but several respondents commented on the proliferation of unreliable information and accounts on social media, and the need to rely on trusted organizations and government sources. Practitioners' outreach methods include these channels, as well as email newsletters and direct mail, which may be less effective especially for reaching older and less engaged residents. Other widely-used sources include newspaper, civic association/local political organization and community board meetings, and flyers posted locally. Mailers are not widely relied upon by respondents for information. Surveys and interviews indicate the effectiveness of having credible messengers from the community who have successfully participated in home upgrade or job training programs to speak to their networks or prospective participants.

V. Barriers and Opportunities

Based on Manhattan’s regional characteristics outlined in Sections II and III, input from residents and communities discussed in Section IV, and building on the Disadvantaged Communities Barriers and Opportunities report released in December 2021, we identify the following barriers and opportunities to advancing an inclusive clean energy economy across the borough. Where relevant, we highlight which market segments, Low- and Moderate Income (LMI) or Market-Rate (MR), are affected by a given barrier.

While regional and Manhattan Clean Energy Hub organization assets provide many significant opportunities, it must be noted that these alone are not sufficient to address the barriers identified here. The Recommendations identified in Section V highlight additional strategies to address barriers to participation in the clean energy economy in Manhattan.

1. Physical and Economic Structures and Conditions

REGIONAL BARRIERS IDENTIFIED

OPPORTUNITY TO ADDRESS BARRIER

Clean Energy Upgrades

1.1. Aging and historic building stock

1.1a The building stock is older in Manhattan than citywide, and older in Manhattan DACs than the borough as a whole; 88% of 1-4 unit buildings in Manhattan DACs were built before 1930. Age of buildings expands project scope, complexity, cost (Market segment: LMI, MR). Buildings may require additional renovations before upgrades can be implemented (roof replacement, mold remediation, updating electrical systems, etc). Existing home repair programs (e.g. HomeFix, RESTORE) are vastly underfunded and inadequate, and multi-family affordable housing preservation programs typically have a 1+ year waiting list; health and safety upgrades (asbestos, lead, mold remediation) must be self-funded by the building owner.

1.1.b. Manhattan DACs contain historic preservation districts; renovations to some homes may need to conform with individual landmarking or historic preservation district requirements. (See Appendix B)

1.1. New York City nonprofit organizations, project managers, and contractors with experience in preservation and retrofit programs are knowledgeable about strategies for engaging homeowners, managing projects, and navigating programs to address the complexity and cost associated with older buildings. (It must be noted, however, that challenges persist with availability of contractors to perform this work.) Housing and social service organizations often have staff dedicated to homeowner and rental outreach and financial and legal counseling. For 5+ unit buildings, city housing preservation programs offer a good opportunity for integrating retrofits into renovations and refinancing if they are fully funded and expanded (see Recommendations). The NYC Accelerator program also provides opportunities for the Hub to collaborate with the City.

1.2 Most Manhattan residents are renters, who have perceived and actual physical limitations in their ability to implement upgrades. In DACs, 88.8% of all households are in rental housing, in Manhattan as a whole, 75.4% are renter households. Black and Hispanic households are even more likely to rent.

1.2a Renters do not have authority to make major physical alterations to their apartments nor to require the owner to make optional building-level upgrades.

1.2b Electrification may increase renters' energy burdens, as tenants in buildings with gas heat do not directly pay their heat bill but those whose heat is powered by electricity do. (Market segment: LMI, MR)

1.3. Many Manhattan owner-occupiers live in cooperative apartment buildings, where building-level retrofits and some in-unit projects require approval of a majority of shareholders, and where there may be deferred maintenance, especially in LMI communities.

1.4. Most Manhattan small businesses are renters, and may not know whether or how to work with the landlord to navigate programs. (Market segment: LMI, MR)

1.2. Based on our Manhattan survey findings and interviews, many renters are interested in having clean energy upgrades in their homes. Surveyed Manhattan tenants indicated that benefits of clean energy upgrades, including fighting climate change, making indoor temperature more comfortable, and improving indoor air quality were all highly motivating for having upgrades in their housing. (See Section V for Recommendations on how to leverage this opportunity through marketing.)

1.3.a Hub organizations and partner/ally organizations have experience working with affordable cooperative apartment buildings on preservation and other projects, better positioning them to help cooperatives navigate decision-making on clean energy projects.

1.3.b. Surveyed Manhattan homeowners included co-op residents, who expressed interest in home energy upgrades

1.4 Hub organizations have experience working with energy-intensive small businesses, such as grocery stores and barber shops/beauty salons, to participate in clean energy programs. Their knowledge of these small businesses' energy challenges, common perceptions of and challenges with landlords, utility companies, and government agencies, and the communities in which they work better enables them to engage small business owners and help them navigate their options.

Clean Energy Jobs

1.4.a. The population living in DACs has less formal education than the borough as a whole; 21.9% of residents in DACs who are 25 or older have less than a high school education.

1.4a Many of the borough's region's workforce development programs and organizations currently serve populations in DACs including those without a college degree. For example, Green City Force and Soulful Synergy, two

Clean Energy Jobs

1.5. Some Manhattan jobseekers need to develop basic job skills before or alongside more specialized training to qualify for green jobs. Among survey respondents, this includes job seeking skills (using job search sites, resume/cover letter writing, interview skills) (17% of respondents), office management and administrative skills (17%), basic computer skills (14%), obtaining a driver's license (14%), GED or remedial education programs (11%) and gaining English language proficiency (8%). Lack of soft skills and basic skills can be a barrier to job placement.

1.6. Most Manhattan residents commute to work by public transportation; jobseekers may face barriers to green jobs that require a car or driver's license or are located two to three transfers away. In addition, unemployed, low-income, and student jobseekers may be unable to pay the transit fare to participate in job training programs.

organizations providing workforce development services in Manhattan, train participants without college degrees.

1.4b Many buildings trades jobs, including green jobs, do not require a college degree and offer living wages, as outlined in Section II.C.

1.5.a Many of the region's workforce development programs and organizations include or can make referrals to programs to provide basic skills training, and have knowledge of the green jobs landscape and skill requirements for different roles.

1.5.b There are qualified local Mechanical, electrical and plumbing (MEP) designers, architects, and contractors that are MWBE firms in Manhattan including in DACs that would make good partners for workforce development programs. The Hub can target outreach to these firms and forge connections with community-based organizations to address workforce development gaps for those without a college degree. The New York City School Construction Authority's workforce development partnerships, for instance, provides a useful model.

1.6 Workforce development practitioners report that offering transportation stipends reduces barriers to participation. (See Recommendations for discussion of the need to expand this resource.)

All Programs

1.7 Unequal internet access, particularly in DACs. 15% of households in DACs lack at-home internet subscriptions (higher than borough- and statewide)

1.7.a. Manhattan residents rely on a range of communication channels for information, including local community events and trusted community partners. Hub partners can build on their success conducting outreach and engagement for other programs in their communities using diverse communication channels.

1.7.b. The hub website is mobile-responsive, enabling easier engagement for residents who rely on their phones to access the internet via public networks or data subscriptions.

2. Financial and Knowledge Resources and Capacity

Clean Energy Upgrades

2.1. Manhattan has the highest cost of living in New York City for renters and homeowners, limiting residents' financial resources for implementing upgrades, especially for residents of color in DACs.

2.1.a. High housing cost burden: 43% of all New York City renters are rent-burdened (paying more than 30% of monthly income on rent. The vast majority of New Yorkers earning \$50,000/month or less are moderately or severely rent-burdened (paying more than 30% or more than 50% of their income on rent, respectively), per the 2023 NYCHVS. 34% of Manhattan homeowners with mortgages are also cost-burdened. Aging homeowners on fixed or low incomes are often asset-rich but cash-poor. Housing cost burdens are higher among people of color; Black households have the highest rent burdens citywide.

2.1.b. The racial income and wealth gap persists in the region, including in DACs. In DACs, the median income of Black households is less than half of the median income of white households.

2.1.c. Household annual energy costs are highest among 1-4 family homes, and energy burdens are highest among LMI households in 1-4 unit homes.

2.1. Clean energy upgrades and programs that reduce household energy costs could help relieve living costs and motivate participation for homeowners, especially LMI homeowners in DACs, if sufficient financing for upfront costs is available (see recommendations). (See Recommendations for discussion of additional strategies to address cost of living-related barriers for Manhattan residents. We note, however, that this is multi-layered systemic challenge that Opportunities and Recommendations for the Hub will not be able to overcome.)

2.2. Construction and retrofit projects in New York City are more costly than those in the rest of the state, largely due to labor, logistics, and competition. Projects require designers, builders, and consultants with expertise working in a complex regulatory environment and many different assistance/incentive programs

2.2 Hub organizations and partners have experience engaging homeowners, property managers, tenants, and relevant agencies on construction and retrofit projects including those targeting LMI residents

2.3. Financial products and incentives do not effectively serve LMI homeowners and multi-family affordable building owners

2.3.a Clean energy program financial incentives and benefits are insufficient and not tailored to needs of LMI homeowners or owners of buildings with significant debt: rebates do not serve LMI homeowners who cannot afford upfront costs, tax credits don't work for households with no tax liability, and information about cost-sharing and levels of benefits are often unclear to homeowners (an issue exacerbated by age of buildings, which can make project scope unpredictable - see 1.1).

2.3.b Lenders and other financial institutions often reject nonprofit landlords and other applicants for retrofit applications because they want to see higher cashflow, which would require increasing rents (which would often run counter to organizational mission and/or the law); many LMI homeowners are already mortgage-burdened; both multifamily building owners and homeowners may be denied by lenders if they already have too much debt.

2.4. High turnover among property manager staff and other key partners amidst long project timelines, largely resulting from byzantine and slow government program administration, can set back/restart projects.

2.5 Many organizations working on retrofits in Manhattan are focused on multifamily housing, and many NYC organizations with experience doing retrofits for small homes are focused on outer-boroughs and/or market-rate/high-wealth homeowners.

2.3. Hub organizations can help set expectations for homeowners and building owners given their experience and expertise with these programs, and build more feasible scopes and pursue programs based on better information. Hubs can also provide a conduit of feedback to NYSERDA to improve program design.

(See Recommendations for strategies to more meaningfully address this significant financial barrier.)

2.4.a. Nonprofit organizations managing programs provide consistency and are persistent in reengaging property managers and new staff

2.4b. Organizations know of other local resources and can help building owners / property managers braid together resource that are siloed, such as Homefix and EmPower+.

2.5. Hub organizations are familiar with the housing retrofit landscape and can help broker new connections and partnerships via the Hub.

Clean Energy Jobs

2.6.a. LMI job-seekers may be juggling multiple jobs, childcare, school, and other obligations with little flexibility, which impedes their enrollment in or completion of workforce development/job training programs.

2.6.b. Job training programs with application fees, training costs, and/or certification fees present additional financial barriers for LMI jobseekers.

2.6 Manhattan jobseekers indicated that they would be highly motivated to participate in a job training program that provided stipends; for some, free childcare during the program would be an important motivator.

3. Perspectives and Information

Clean Energy Upgrades

3.1. The Manhattan renter population lacks widespread awareness of clean energy upgrade programs for renters (42% of surveyed renters had not heard of any clean energy programs), and the vast majority had not adopted any clean energy technologies in their homes (Market segment: LMI, MR).

3.2. Renters and homeowners report perceptions of difficulty, complexity, and lack of information regarding the process of receiving upgrades, and identify this as a significant barrier to their interest in and ability to make upgrades (Market segment: LMI, MR).

3.3. Given rising utility costs, many residents and small businesses do not trust utility companies to offer benefits/incentives.

3.1. Building owners can be engaged by the Hub to implement upgrades that benefit themselves and their tenants. Hub organizations routinely engage property managers of multifamily affordable rental housing on clean energy opportunities. Surveyed Manhattan homeowners have awareness of and interest in at least some clean energy upgrade programs, which can be leveraged to benefit tenants.

3.2. Manhattan renters and homeowners may be motivated to participate in programs and implement upgrades if given clear information about what programs are available, how to access them, and how these programs will make their homes more comfortable, lower utility bills, and help fight climate change. In addition, as Hub partners' proven track records show, renters and homeowners benefit from receiving ongoing energy advisement and support in applying for and participating in programs and the upgrade process.

See Recommendations.

3.4. Building owners and property managers are more motivated to complete retrofits and other projects in order to comply with regulations and avoid fines than by the prospect of potential future savings on operating costs.

3.4. Local environmental and other building regulations, as well as refinancing programs, create opportunities to fold additional clean energy upgrades into other retrofits or renovation projects.

Clean Energy Jobs

3.4 Jobseekers do not know where to find information about green jobs and workforce development programs. 48% of surveyed Manhattan residents reported this as a barrier to participating in a green jobs program. (Market segment: LMI).

3.4.a. Jobseekers are interested in working in the green economy; 65% of Manhattan survey respondents said they currently work or are interested in working a green job, and 11% said they were unsure or would need more information.

3.4.b. Manhattan residents seek and are open to information about career opportunities from local cultural and community events, information sessions held by local organizations and officials, internet searches, social media accounts of trusted sources (organizations, government agencies, etc.), and personal networks.

3.4.c. Hub organizations are experienced with and well-poised to outreach to jobseekers in DACs and across the borough about green job training opportunities.

3.5 Jobseekers lack clear information about the clean energy economy, and may assume most jobs are physical or technical and that they cannot gain the skills or interest for these jobs, and opt-out. (Market segment: LMI).

3.5. Workforce development organizations in the region have developed messaging and materials on the range of job opportunities and skill requirements in the clean energy economy.

All Programs

3.6 Manhattan residents, especially in DACs, rely primarily on their personal networks for information, and are most motivated to participate in programs based on first-hand reports from people they trust, rather than media channels. Many people are concerned about false or unreliable information or scams on social media; many residents get information through local events and organizations, though this may skew towards already highly-engaged residents; residents may mistrust government agencies and utility companies, but have more trust toward some elected officials, civic associations, and community groups.

3.6. Manhattan residents and jobseekers are savvy and discerning in which information sources they trust, and are open to information about programs and services that will benefit them and their communities, especially financially and health-wise, when delivered by trusted sources; the Hub can establish credible messengers and work with participants to connect with others in their community, as well as building on the trust of local organizations and leaders.

4. Programmatic Design and Implementation

Clean Energy Upgrades

4.1. Clean energy programs are numerous, intersecting, have different eligibility requirements and timelines, require various lengthy and complicated applications, and are overseen by different entities that do not communicate with one another.

4.2. Renters and landlords have split incentives for making clean energy upgrades: surveyed renters indicated that upgrades that make their homes healthier, and more comfortable were highly motivating; renters do not benefit from rebate and incentive programs, and in fact could see utility costs increase after electrification. Homeowners were more motivated by cost savings and making the home resilient to natural disasters. Homeowners in owner-occupied homes with tenants may have more aligned interests with tenants.

4.3. Programs may have restrictive eligibility requirements that exclude some housing typologies by housing tenure. For example, EmPower+ does not recognize the condo structure, in which a multi-family building's units are separately owned and may contain both owner-occupied and rental units, and can require tenants in the building to qualify as low-income in order for a single owner to participate.

4.4. EmPower+ uses State Median Income (SMI) instead of local Area Median Income (AMI) to determine income eligibility for the low income incentive, creating a big eligibility gap.

4.1 The Hub and its member organizations and allies are experienced with helping owners navigate programs; building owners and property managers who have completed retrofits with the support of these organizations have reported back to them that they never could or would have completed the program without their support.

4.2 Hub organizations can target outreach to owner-occupied 1-4-unit homes with tenants.

4.3 Hub partners are highly knowledgeable about New York City housing types and programs, have experience encountering obstacles and exclusions as a result of clean energy program design, and can provide feedback and Recommendations to NYSERDA to reduce these barriers. (See Recommendations.)

4.4. Hub organizations have already conducted research and identified policy recommendations to address income eligibility barriers. (See Recommendations.)

Clean Energy Jobs

4.5. Many current NYSERDA programs target colleges, which leaves out adults without college degrees and who are not pursuing higher education, and are highly technical or focused on manual labor, which survey respondents and practitioners emphasized is not a fit for many jobseekers interested in the green economy.

4.5. Hub organizations have and will build relationships with partners (K-12 schools, social services organizations, workforce development partners, community centers, religious institutions) that enable outreach to diverse jobseekers, utilizing messaging and messengers that emphasize accessible green careers outside of manual and technical labor.

All Programs

4.6. Clean Energy programs and materials are largely in English, while more than half of households in DACS speak a language other than English at home, and 15.7% have limited English proficiency.

4.6.a. Hub organizations and potential partner organizations have multilingual staff, largely targeted to the communities they serve.

4.6.b. Community-based and other translation and interpreter services in a range of languages are available in the region, with adequate resources (see recommendations).

VI. Next Steps

Recommendations to address barriers and expand opportunities include, as well as their priority-level and general timeline, are outlined below. Priority is rated 1-3, with 1 being the highest priority. High priority recommendations (rated “1”) have the most potential impact and feasibility, whereas lower priority recommendations (rated “3”) are more complex to implement or may have lesser impact, or both. Timeline includes short-term, medium-term and long-term categories, with short-term defined as within the next year, medium-term defined as during the first Hub contract (through mid-2026), and long-term being beyond this period.

<p>Priority</p> <ul style="list-style-type: none"> 1 Most potential impact and feasibility 2 High-impact, requires increased funding 3 More complex to implement or may have lesser impact 	<p>Timeline</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center; border: 1px solid #ccc; padding: 2px;">Short term</td> <td style="text-align: center; border: 1px solid #ccc; padding: 2px;">Medium term</td> <td style="text-align: center; border: 1px solid #ccc; padding: 2px;">Long term</td> </tr> <tr> <td style="text-align: center; padding: 2px;">Within the next year</td> <td style="text-align: center; padding: 2px;">Through mid-2026</td> <td style="text-align: center; padding: 2px;">Post-2026</td> </tr> </table>	Short term	Medium term	Long term	Within the next year	Through mid-2026	Post-2026
Short term	Medium term	Long term					
Within the next year	Through mid-2026	Post-2026					

Recommendation

Clean Energy Upgrades

NYSERDA should partner with the Hub to create program messaging and outreach materials tailored to priorities of target populations, including:

1
2
3

(Ongoing)

- Financial benefits, long-term resiliency, and availability of support to navigate programs for homeowners
- Financial benefits, long-term resiliency, reduced tenant complaints, and availability of support to navigate programs for owners of rental buildings

NYSERDA should support the Hub to increase landlord engagement strategies, including requiring tenant (residential and small business), landlord, and co-op board engagement strategies in NYSERDA-funded programs in order to make some retrofits more cost-effective and to move projects forward.

1
2
3

(Ongoing)

Increase LMI program accessibility and reduce enrollment barriers by expanding income verification options. For example, a HEAP award letter is needed for EmPower+ customers seeking heat pump installation funds; allowing other HEAP documents to be proof of awardee would make it easier for residents to enroll. As another example, for EmPower+ programs administered by Hub partners with public housing residents, NYSERDA has allowed a waiver for individual income verification, accepting proof from the New York City Housing Authority that participants are LMI residents.

1
2
3

NYSERDA should immediately change the income threshold for the EmPower+ low-income incentive from 60% of State Median Income to the greater of 60% SMI or 60% AMI, and in the long run change how they define low-income to match the Federal government’s IRA definition at 80% AMI.

1
2
3

NYSERDA should increase investments in renter programs, such as increasing the number of slots for community solar, as well as expanding education and outreach for these programs.

1
2
3

(Ongoing)

NYSERDA should partner with federal, state, and city housing agencies to expand accessible financing and financial incentives for capital improvements and clean energy retrofits in affordable housing and for LMI homeowners, including providing no/low-interest loans and grants aligned with affordability goals.

1
2
3

Expand renter financial incentives. Examples could include helping renters get induction stoves and energy efficient appliances, better engaging landlords and helping residents do the same.

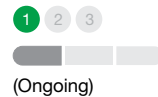


NYSERDA should advocate for and with state policymakers to update habitability law and other housing and utility regulations and programs to ensure that electrification does not increase renter energy burdens.



Clean Energy Upgrades

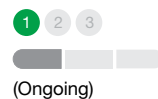
NYSERDA partner with Hub to create program messaging and outreach materials focused on priorities and information gaps of target populations, including: high wages in green jobs, types of roles and education/skills required to access them – emphasizing non-technical roles, and skills training offered.



NYSERDA and Hub should focus on educating employers about the benefits of hiring a diverse and local workforce with language skills and knowledge of the local community and built environment.



Partner with workforce development/job skills training programs including outside of the clean energy economy to provide basic skills training.



NYSERDA and city agencies funding workforce development increase childcare and stipend incentives for job training program participants.



NYSERDA-funded programs could mandate local hiring to boost local workforce development opportunities.



All Programs

NYSERDA expand and dedicate funding for multilingual materials, resources, and interpretation services, to be utilized by the Hubs and partners.



Invest in establishing credible messengers for programs, including creating incentives for program participants to amplify Hub and program information to their networks. Credible messengers include those who have successfully participated in clean energy programs (home upgrades, job training, etc.) and other community members who understand and share relationships and identities with target participants.



Support investments in public broadband and internet benefits to LMI renters and shelter and supportive housing residents



As the Hub partners continue to partner with NYSERDA and key regional partners in the Manhattan Regional Clean Energy Hub, the Hub will continue to identify new opportunities and recommendations and update prioritization for moving these forward to address barriers to Manhattan DAC residents' participation in the clean energy economy.

Notes

1. Pratt Center analysis of American Community Survey 5-Year Estimates, 2021, and NYSEDA Final Disadvantaged Communities, 2023.
2. DACs have many Spanish speakers, with over 250,000 people over the age of 5 speaking Spanish at home. Thirty percent of Spanish-speaking households in DACs have limited English proficiency—or 10% of all households in DACs. Spanish makes up the predominant non-English language spoken in much of Upper Manhattan; in Central Harlem, other Indo-European languages predominate, which corresponds to areas of predominantly Black population. Overall, over 18,000 people ages 5+ speak French, Haitian, or Cajun at home in DACs. The Lower East Side is split into two geographic areas, one with a predominance of Spanish speakers and one with a very strong predominance of Asian languages. Forty-eight percent of AAPI-speaking households in DACs have limited English proficiency (which is 4.3% of all DACs households). Over 48,000 people speak Chinese in DACs. (Note: the U.S. Census Bureau groups Mandarin and Cantonese into a single category for Chinese in the ACS.)
3. Labor participation refers to people in the workforce who are either working or actively looking for work; unemployment refers to people who are actively seeking work and are unemployed (“labor participation” is the denominator).
4. NHPI population sample size is very small in DACs.
5. This data is from the U.S. Census Bureau’s 2021 ACS 5-Year Estimates, the most recent ACS estimates at the time of data collection for this report; a report from The New School Center for New York City Affairs shows updated statistics taken from the Current Population Survey, detailing how NYC unemployment rates have gone down since the onset and immediate aftermath of the COVID-19 pandemic but have actually recently gone up again for Black workers since 2022.
6. Note that this is referring to the number of buildings, not the total square footage of these buildings. See Appendices for a detailed breakdown of buildings and square footage by land use.
7. Note that the “land use” typology is referring to the typology of the tax lot, not to individual buildings. For example, “1-4 units” refers to the total number of units contained within the tax lot. Unfortunately, there is no way to accurately separate the units within each tax lot (for example, there could be a tax lot containing 20 units, with three total buildings, but there is no way to know how these units are distributed within the buildings).
8. The size threshold for compliance with Local Law 97, the city’s flagship building decarbonization regulation.
9. Note: these categories of year built come from MapPLUTO, the New York City Department of City Planning’s definitive resource of land uses.
10. Municipal Arts Society of New York, “[Greening NYC’s Historic Buildings Green Rowhouse Manual](#),” 2012
11. [2020 NYC Energy Conservation Codes](#)
12. NYC Mayor’s Office of Sustainability, “[One City Built to Last: Technical Working Group Report](#);” NYC Mayor’s Office, “[Press Release: Mayor Adams, Speaker Adams Celebrate Passage of Zoning Changes that Fights Climate Change by Opening Doors to Cleaner Air, Lower Energy Costs, December 6, 2023](#)”
13. See NYC HPD’s recent press release regarding the newest [Housing & Vacancy Survey results](#) (pg. 21-22 of HVS results).
14. Vacancy rates are understood in the housing policy sector as an important measure of housing affordability and opportunity, as low vacancy rates are correlated with higher housing costs and mean that current or prospective residents have few housing options. [New York State’s Emergency Tenant Protection Act of 1974](#), which enacted rent-stabilization laws in localities with housing emergencies, establishes a 5% vacancy rate as the maximum threshold for a “housing emergency.”
15. [2023 Housing and Vacancy Survey, Selected Initial Findings](#)
16. The ACS metric “Available Housing Vacancy Rate” is defined as $[(vacant\ for\ sale\ only + vacant\ for\ rent) / (occupied\ units + vacant\ for\ sale\ only + vacant\ for\ rent + vacant\ sold\ but\ not\ occupied + vacant\ rented\ but\ not\ occupied)]$ (see page 44 of ACS definitions). The basic ACS “Vacancy Rate” is calculated as a percentage of total housing units, and includes “other vacant” categories such as seasonal housing, appearing higher than the rates reported by the HVS and its own “Available Housing Vacancy Rate.” This data was utilized in order to analyze vacancy rates in DACs.
17. NYSEDA, “[New York Clean Energy Industry Report 2022](#),” p.66
18. New York City Economic Development Corporation, “[Green Economy Action Plan](#),” March 2024, p. 21
19. New York City Economic Development Corporation, “[Green Economy Action Plan](#),” March 2024, p. 23

20. New York City Economic Development Corporation, "Green Economy Action Plan," March 2024, p. 23
21. NYSERDA, "New York Clean Energy Industry Report 2023," p.9
22. New York City Economic Development Corporation, "Green Economy Action Plan," March 2024, p. 49
23. New York City Economic Development Corporation, "Green Economy Action Plan," March 2024, p. 50
24. New York City Economic Development Corporation, "Green Economy Action Plan," March 2024, p. 49
25. NYSERDA, "New York Clean Energy Industry Report 2023," p.30
26. New York City Economic Development Corporation, "Green Economy Action Plan," March 2024, p. 26-29
27. New York City Economic Development Corporation, "Green Economy Action Plan," March 2024, p. 8
28. New York Just Transition Working Group, "2021 Jobs Study, March 2023: Vintage Update," p.98
29. <https://jobsfirstnyc.org/solutions/sector-network-green-economy>
30. New York City Employment & Training Coalition: <https://nycetc.org/2023/04/green-jobs-in-new-york-city/>

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Appendix A

Manhattan Clean Energy Hub Survey Methodology and Key Findings

In fall 2023, as part of the RABA for the Manhattan Clean Energy Hub, Pratt Center for Community Development published and distributed a survey to Manhattan residents related to clean energy home upgrades and jobs. (See section 4 for more information about survey methodology and respondents.)

Survey promotion and outreach

The survey was promoted by Manhattan Hub organizations including WE ACT, Pratt Center, ANHD, KC3, USL, and Green City Force, using outreach materials developed by Pratt Center and approved by NYSEDA. Materials included email and social media graphics and template text, including links to the online survey, as well as physical fliers with links and QR codes for the online survey. Outreach channels included Hub organizations' email newsletters and social media channels (with combined audiences in the thousands), tabling at in-person events (job fairs, community events), flyer at community facilities (public libraries, community centers in public housing, community-based organizations' bulletin boards and information stations, public recreation centers, with an emphasis on DACs), and attending community meetings. At the community meetings, both paper surveys and links to the online survey were made available, with staff from Hub organizations available to assist in survey completion as needed. An important method for survey engagement was offering an incentive; survey respondents were entered in a raffle for a \$100 gift card.

Survey Design

All survey respondents completed sections regarding demographics, housing tenure, and information channels they utilize. The survey contained separate sections for renters, homeowners, and jobseekers, which respondents completed depending on their housing tenure and jobseeker status. Questions were mostly multiple choice or ratings, with options to provide additional information in short-form responses. Each of these sections surveyed respondents about their level of awareness and interest in different clean energy technologies and programs, perspectives on various barriers to and benefits of participating in clean energy programs, and knowledge and financial resources, barriers, and needs related to home upgrades and job training.

Survey Findings

Key survey findings are highlighted below.

1. Information Sources and Community Engagement

1a. For information about housing, jobs, and their neighborhood, **Manhattan survey respondents across age groups primarily rely on:**

- **personal networks,**
- **local cultural and community events,**
- **information sessions held by local organizations or elected officials, and**
- **internet searches.**

Social media is widely used, but several respondents commented on the proliferation of unreliable information and accounts on social media, and the need to rely on trusted organizations and government sources.

Other widely-used sources include newspaper, civic association/local political organization and community board meetings, flyers posted locally. Mailers are not widely relied upon by respondents for information.

2. Clean Energy Home Upgrades: Perspectives and Information

2a. Awareness of Technologies: Most Manhattan survey respondents had some knowledge of some clean energy upgrades. The vast majority had heard of LED light bulbs (77.8%), Electric or induction stoves (71.1%), solar panels (68.9%) and other energy efficient appliances (64.4%). Roughly half were aware of high-efficiency windows (51.1%). A large minority of respondents were aware of improved insulation (44.4%) but only a quarter had heard of air-sealing. More than a third (37.8%) were aware of heat pumps/mini-splits. Less than a third had heard of heat pump water heaters or low-flow faucets or showers. **A small minority (6.7%) had not heard of any of these upgrades.**

2b. Implementation of Technologies: Uptake of or interest in these upgrades was much lower than awareness. LED light bulbs were the most-commonly adopted upgrade among respondents (20%), followed by energy efficient appliances (11%); less than 5% of respondents had implemented or planned to implement all other upgrades. Technologies people were interested in adopting

but unsure how to access or afford included high-efficiency windows (11%), heat pumps/mini-splits (9%), and solar panels (9%).

Fig. 1. What sources do you often hear about new programs through or turn to for information related to your housing, neighborhood, or job opportunities?

Personal networks (friends, family, neighbors, colleagues)	68.9%
Street fair, local concert, or other cultural or art event	60.0%
Information session or resource fair held by a local organization and/or elected official (job fair, affordable housing info, health fair, etc.)	57.8%
Community events (fairs, town halls and public meetings, etc.)	51.1%
Internet search	48.9%
Civic association or neighborhood political organization meeting	42.2%
Newspaper	40.0%
Social Media	40.0%
Community Board meeting, public hearing, or other meeting held by government agency	40.0%
Flyer posted on bulletin board, on the street	37.8%
Religious services at my church/mosque/synagogue/temple	35.6%
Block association, tenant association, homeowners association, or co-op board meeting	35.6%
Local nonprofit organization	31.1%
Local elected official (councilmember, Assemblymember, State Senator, etc.)	28.9%
TV, radio	26.7%
Community center or rec center	20.0%
Pamphlet sent through the mail	17.8%
Local Blog or newsletter	13.3%
Parent association meeting or events at my child's school	13.3%
My church/mosque/synagogue/temple	8.9%
Other	6.7%
I have not attended any of these community events	4.4%

2c. Motivation: The most motivating messaging about the benefits of clean energy upgrades for both owners and renters include:

- fighting climate change,
- making the temperature of the home more comfortable, and
- lowering utility bills.

Improving indoor air quality is highly motivating to a majority of surveyed renters, but with mixed importance to homeowners. Owners were also motivated by making needed repairs to their home, but less so than tenants. Across the board, renters were highly motivated by all benefits of home energy upgrades.

Fig. 2. Which of the following clean energy upgrades have you heard of?

LED light bulbs	77.8%
Electric or induction stoves	71.1%
Solar panels	68.9%
Energy efficient appliances (refrigerator, washer/dryer, etc)	64.4%
High-efficiency windows	51.1%
Improved insulations	44.4%
Heat pumps or mini-splits	37.8%
Heat pump water heaters	31.1%
Low-flow faucets or showers	31.1%
Smart thermostats	31.1%
Air sealing	24.4%
I haven't heard of any of these	6.7%

2d. Barriers: For renters and homeowners alike, the difficulty, complexity, and lack of information regarding process of receiving upgrades is a significant perceived barrier to making upgrades. Costs are a concern for both groups, but less so. For renters, the greatest perceived barriers to implementing upgrades that as renters they do not have the power to make upgrades they are interested in. More renters than homeowners identified not knowing what upgrades and technologies are available to them as major barriers. Among homeowners, other home upgrades being a bigger priority may present a barrier.

Fig. 3. On a scale of 1 to 5, with 1 being a benefit that is not at all appealing and 5 being a benefit that is very appealing to you, rate how appealing various benefits of home energy upgrades are to you?

Motivation (1=least, 5=most)	1	2	3	4	5
Lowering my utility bills	3.2%	0%	9.7%	35%	51.6%
Making needed home repairs like a roof replacement or mold/lead abatement as part of the upgrade	3.2%	9.7%	6.5%	22.6%	58.1%
Making my home's temperature more comfortable	0%	3.2%	9.7%	19.4%	67.7%
Preparing my home to withstand natural disasters and avoid power outages	0%	6.5%	9.7%	16.1%	67.7%
Improving indoor air quality in my home	0%	0%	9.7%	12.9%	77.4%
Fighting climate change/improving the environment	0%	3.2%	9.7%	16.1%	71%
Lowering my utility bills	0%	0%	20%	30%	50%
Making needed home repairs like a roof replacement or mold/lead abatement as part of the upgrade	0%	40%	0%	50%	20%
Making my home's temperature more comfortable	0%	0%	20%	30%	50%
Preparing my home to withstand natural disasters and avoid power outages	0%	0%	20%	40%	40%
Improving indoor air quality in my home	10%	0%	30%	30%	30%
Getting my tenant to stop complaining about being cold/hot	60%	10%	20%	20%	0%
Fighting climate change/improving the environment	0%	0%	0%	50%	50%

Fig. 4. Rate various obstacles to making clean energy upgrades in your home, with 1 being not an obstacle at all and 5 being a huge obstacle to making clean energy upgrades

Obstacle (1 lowest, 5 highest)	1	2	3	4	5
I cannot make the upgrades I'm interested in on my own as a renter	0%	0%	12.9%	22.6%	64.5%
I don't know what kinds of upgrades, technologies, and programs exist and what it is possible for me to do as a renter	9.7%	3.2%	19.4%	25.8%	45.2%
The process of receiving upgrades (how to get permission from landlord, how to access incentive programs, etc.) is daunting/complicated	3.2%	3.2%	16.1%	12.9%	67.7%
Other home repairs or upgrades are a bigger priority for me	0%	10%	40%	50%	10%
I don't know what kinds of upgrades, technologies, and programs exist and what it is possible for me to do	0%	10%	40%	30%	20%
The process of receiving upgrades (how to find a contractor, how to access incentive programs, etc.) is daunting / complicated	0%	0%	20%	60%	20%
I can't afford the upfront cost of the upgrades I'm interested in	2.4%	4.9%	24.4%	29.3%	39%
I don't want people coming into my home to install upgrades	51.2%	22%	14.6%	7.3%	4.9%

2e. Awareness of clean energy programs: 42% of renters had not heard of any of the home energy assistance programs available to renters that were included in the survey. The programs with the most renters reporting having heard of them included Home Energy Assistance Program (HEAP) (55% of respondents), National Grid Home Energy Affordability Team (HEAT) (29%), Community Solar (23%), NYSERA Loans (19%), and federal appliance rebates/grants and renewable energy/energy efficiency tax credits and incentives (19%). A small minority had heard of Empower+ (10%) and Weather Assistance Program (13%).

Surveyed homeowners generally had more awareness of programs available to them; 20% of homeowners reporting never having heard of any of the programs mentioned in the survey. Similar to renters, HEAP and Community Solar were among the best-known programs, with 40% and 50% of respondents reporting awareness of these programs respectively. There were several programs that no surveyed homeowners reported awareness of, including Comfort Home, NY-SUN, Affordable Solar Program, HomeFix, Sealed, and National Grid HEAT.

Fig. 5. Which of the following home energy assistance programs available to renters do you know about?

Home Energy Assistance Program (HEAP)	54.8%
I haven't heard of any of these programs	41.9%
National Grid Home Energy Affordability Team (HEAT)	29.0%
Community Solar	22.6%
Federal renewable energy/energy efficiency tax credits and incentives	19.4%
Federal appliance rebates or grants	19.4%
NYSERDA Loans (Smart Energy Loan, On-Bill Recovery Loan, Renewable Energy Tax Credit Bridge)	19.4%
Weatherization Assistance Program (WAP)	12.9%
Empower+	9.7%

Fig. 6. Homeowners, which of the following home energy assistance programs do you know about?

Community Solar	50%
Home Energy Assistance Program (HEAP)	40%
Weatherization Assistance Program (WAP)	20%
Con Edison Clean Heat + Insulation Discounts	20%
NYSERDA Loans (Smart Energy Loan, On-Bill Recovery Loan, Renewable Energy Tax Credit Bridge)	20%
I haven't heard of any of these programs	20%
Empower+	10%
Federal renewable energy/energy efficiency tax credits and incentives	10%
Federal appliance rebates or grants	10%
Comfort Home	0%
NY-SUN	0%
Affordable Solar Program	0%
HomeFix	0%
Sealed	0%
National Grid Home Energy Affordability Team (HEAT)	0%

3. Green Jobs and Workforce Development Programs:

3a. Perspectives on working in the clean energy economy and green jobs: Most surveyed Manhattan residents are interested in working in the green economy. 65% of Manhattan survey respondents said they currently work or are interested in working a green job, and 11% said they were unsure or would need more information.

Fig. 7. Are you interested in or open to working in the green economy?

No	24%	No - I already work in another field and do not plan on switching careers	18%
		No - the green economy is not of interest to me as a career	7%
Unsure	11%	I'm unsure or want more information	11%
		Yes - I already work in the green economy	9%
Yes	64%	Yes - I am open to working in the green economy in the future, but not actively planning to at the moment	42%
		Yes - I am planning on working in the green economy	13%

3b. Barriers and opportunities to working in the clean energy economy: Some Manhattan jobseekers may need workforce development training to build more basic skills. Among survey respondents, this includes job seeking skills (using job search sites, resume/cover letter writing, interview skills) (17% of respondents), office management and administrative skills (17%), basic computer skills (14%), obtaining a driver's license (14%), GED or remedial education programs (11%) and gaining English language proficiency (8%).

There is also interest in gaining more advanced or specialized skills. One-third of surveyed residents is interested in gaining data analysis skills. In addition, 28% are interested in gaining professional certifications (like those from the Building Performance Institute), 19% are interested in building inspections/auditing/evaluation, 17% are interested in construction management, and 14% are interested in renewable energy assembly/installation and mechanical/HVAC and other technical skills.

3c. Barriers and opportunities to participating in workforce development programs: The biggest barrier to participation in green job training programs reported by surveyed Manhattan residents is lack of information. 48% of respondents said not knowing how to find a green job training program was a

Fig. 8. Which of the below skills, certifications, and experiences you are interested in gaining/improving?

Data analysis skills	33.3%
Professional certifications like those from the Building Performance Institute (BPI)	27.8%
Building inspections, auditing, evaluation	19.4%
Job seeking skills (using job search sites, resume writing, cover letter writing, interview skills)	16.7%
Office management/administrative skills	16.7%
Construction management	16.7%
Basic computer skills (navigating the internet, storing files, emailing, word processing software)	13.9%
Driver's license	13.9%
Renewable energy (solar, wind) assembly/installation	13.9%
Mechanical, HVAC, building envelope, electrical, plumbing, other technical skills	13.9%
I'm not interested in gaining/improving any of these skills	13.9%
GED or remedial education programs	11.1%
English language proficiency	8.3%
Sales experience	5.6%
Construction (carpentry, masonry, welding, other construction labor) skills	5.6%

strong barrier to participation, rating this a 4 or 5 out of 5, with 5 being the greatest barrier to participation.

The biggest motivations for surveyed Manhattan residents to participate in a green job training program include learning new skills and the possibility of earning better wages and benefits. Notably, every respondent who expressed interest in job training programs reported these as highly motivating factors. The vast majority also would be highly motivated by receiving a stipend to participate. More than three-quarters said they would be motivated to participate in a green jobs training program by hearing about the program from a trusted source, and 70% would be motivated by hearing positive experiences from past participants. The vast majority also reported that they were motivated by the opportunity to do work that helps their community and the environment. A large subset (40%) reported free childcare during the program as an important motivating incentive to participate as well.

Fig. 9. Rate how certain benefits, incentives, or information would motivate you or enable you to participate in a green jobs training program (1 being not at all motivating and 5 being a huge motivator)

Motivation (1=least, 5=most)	1	2	3	4	5
Stipend (payment) for participation	0%	3.7%	7.4%	25.9%	63.0%
Free childcare during the program	37%	11.1%	11.1%	3.7%	37%
Possibility of earning better wages and benefits	0%	0%	0%	25.9%	74.1%
Learning new skills	0%	0%	0%	18.5%	81.5%
Doing work that helps my community and the environment	0%	3.7%	7.4%	14.8%	74.1%
Hearing positive experiences from people who completed the program	7.4%	3.7%	18.5%	18.5%	51.9%
Someone I trust recommending the program	3.7%	0%	18.5%	22.2%	55.6%

4. Survey Methods and Respondent Demographics

Pratt Center designed the resident surveys in consultation with Hub partners, based on RABA guidelines and goals of the Clean Energy Hubs program.

Survey distribution, outreach, and participation. Surveys were made available to complete online (via Typeform) and on paper. Surveys were promoted via partner and ally organization email lists and social media, flyers posted in community centers, libraries, and other public spaces and distributed at community events and meetings, with a focus on DACs. These outreach efforts reached thousands of online and in-person viewers. To incentivize participation, respondents were entered into a raffle for a \$100 gift card.

Data quality assurance. Data validation methods for online responses included: ensuring a valid email address, borough and zip code validation, and other methods to screen automatically-generated responses.

Respondent demographics. The final survey results analyzed responses from 45 individuals, submitted online and on paper, in person. Demographics are reflective of Manhattan DACs.

Fig. 10. Respondent Demographics

Gender			Household Size		
Male	14	31.1%	1	15	33.3%
Female	30	66.7%	2	16	35.6%
No answer	1	2.2%	3	1	2.2%
			4	8	17.8%
			5	1	2.2%
			6	1	2.2%
			7+	1	2.2%
			No answer	2	4.4%
Age					
18-24	2	4.4%			
25-34	10	22.2%			
35-44	12	26.7%			
45-54	1	2.2%			
55-64	6	13.3%			
65+	14	31.1%			

Fig. 10. Respondent Demographics (continued)

Race and Ethnicity		
Not Hisp/Lat	33	73.3%
Black (alone)	10	22.2%
White (alone)	15	33.3%
Asian (alone)	4	8.9%
Indigenous/Native American (alone)	0	0.0%
"Other" (alone)	1	2.2%
Two or More (alone)	3	6.7%
Hisp/Lat	9	20.0%
Hispanic/Latino ALONE, no race specified	5	11.1%
Black (alone)	2	4.4%
White (alone)	1	2.2%
Asian (alone)	0	0.0%
Indigenous/Native American (alone)	1	2.2%
"Other" (alone)	0	0.0%
Two or More (alone)	0	0.0%
No answer	3	6.7%

Income		
Less than \$30,000	12	26.7%
\$30,000-\$59,999	9	20.0%
\$60,000-\$89,999	11	24.4%
\$90,000-119,999	3	6.7%
\$120,000-\$149,999	2	4.4%
\$150,000 or more	4	8.9%
No answer	4	8.9%

Education		
Some High School	1	2.2%
High School Diploma or G.E.D.	5	11.1%
Some College	4	8.9%
Trade school Degree	1	2.2%
Bachelor's Degree	13	28.9%
Some Graduate School	3	6.7%
Masters Degree or Higher	16	35.6%

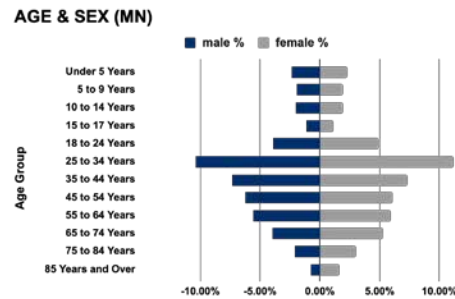
Housing Tenure		Building Type (by housing tenure)	
		Small Home	Apartment Building
Homeless/unhoused or living with family/friends	8.9%	N/A	N/A
Homeowner	22.2%	20.0%	80.0%
Renter	68.9%	16.1%	83.9%

Appendix B

RABA Manhattan Data Visualizations

TOTAL POPULATION ¹
1,669,127

TOTAL POPULATION DAC ^{1,2}
748,434



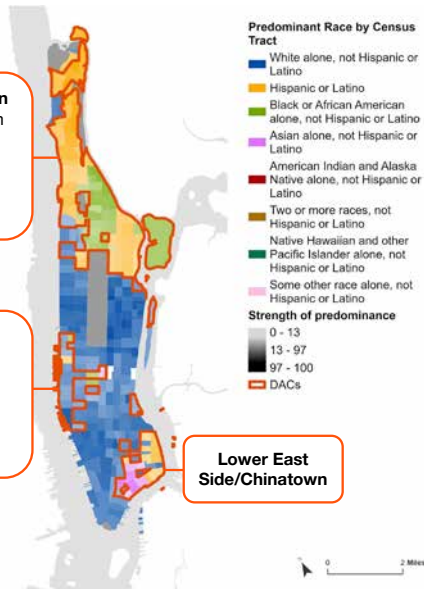
Harlem/Upper Manhattan

- Central & East Harlem
- Morningside Heights
- Hamilton Heights
- Washington Heights
- Inwood

Midtown West

- Hell's Kitchen
- Hudson Yards
- Chelsea
- parts of Midtown/
Garment District

Lower East Side/Chinatown



RACE & ETHNICITY

Race	DACs	Manhattan	NYC	NYS
White Alone	29.0%	53.6%	39.8%	60.7%
Black or African American Alone	26.0%	14.1%	23.4%	15.2%
American Indian and Alaska Native Alone	0.8%	0.4%	0.5%	0.4%
Asian Alone	11.0%	12.0%	14.3%	8.7%
Native Hawaiian and Other Pacific Islander Alone	0.0%	0.0%	0.1%	0.1%
Some Other Race Alone	23.1%	12.4%	14.9%	9.0%
Two or More Races	10.1%	7.6%	7.1%	6.0%

Ethnicity	DACs	Manhattan	NYC	NYS
Hispanic or Latino	42.9%	25.7%	28.9%	19.3%
White Alone	8.6%	6.8%	7.8%	6.1%
Black or African American Alone	3.6%	1.9%	2.3%	1.3%
American Indian and Alaska Native Alone	0.6%	0.3%	0.4%	0.2%
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	22.3%	11.7%	13.9%	8.3%
Two or More Races	7.7%	4.7%	4.4%	3.3%
Not Hispanic or Latino	57.1%	74.4%	71.1%	80.8%
White Alone	20.4%	46.7%	31.9%	54.7%
Black or African American Alone	22.3%	12.1%	21.1%	13.9%
American Indian and Alaska Native Alone	0.2%	0.1%	0.2%	0.2%
Asian Alone	10.9%	11.8%	14.1%	8.6%
Native Hawaiian and Other Pacific Islander Alone	0.0%	0.0%	0.0%	0.0%
Some Other Race Alone	0.8%	0.6%	1.0%	0.7%
Two or More Races	2.5%	2.9%	2.7%	2.7%

¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

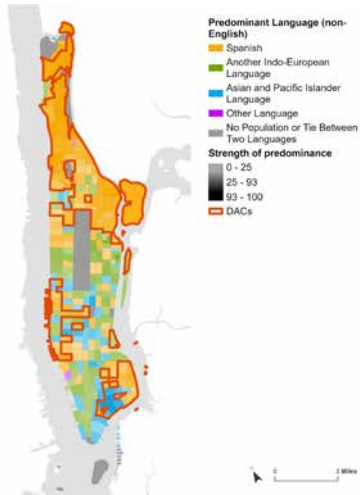
¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

Appendix B

RABA Manhattan Data Visualizations

LANGUAGE



Top non-English languages in DACs:

1. Spanish
2. Chinese (incl. Mandarin, Cantonese)
3. French, Haitian, or Cajun

Language Spoken at Home (Population 5+)	DACs	Manhattan	NYC	NYS
Speak Only English	47.7%	61.7%	52.1%	69.5%
Spanish	36.2%	21.1%	23.5%	14.8%
French, Haitian, Or Cajun	2.6%	2.5%	2.3%	1.5%
German Or Other West Germanic Languages	0.4%	0.7%	1.5%	1.3%
Russian, Polish, Or Other Slavic Languages	0.9%	1.5%	3.6%	2.1%
Other Indo-European Languages	1.9%	3.3%	5.5%	3.9%
Korean	0.4%	0.7%	0.8%	0.5%
Chinese (Incl. Mandarin, Cantonese)	6.8%	5.3%	6.1%	3.2%
Vietnamese	0.1%	0.1%	0.1%	0.1%
Tagalog (Incl. Filipino)	0.2%	0.3%	0.6%	0.4%
Other Asian And Pacific Island Languages	0.7%	1.2%	1.1%	0.9%
Arabic	0.5%	0.4%	0.9%	0.6%
Other And Unspecified Languages	1.6%	1.4%	1.9%	1.2%

Language Spoken at Home: Total Number of Speakers (Population 5+)	DACs	Manhattan	NYC	NYS
Speak Only English	339,584	981,406	4,271,921	13,177,639
Spanish	257,537	336,436	1,923,155	2,801,677
French, Haitian, Or Cajun	18,810	39,462	185,662	280,169
German Or Other West Germanic Languages	2,548	10,615	125,911	252,986
Russian, Polish, Or Other Slavic Languages	6,370	23,948	292,422	397,510
Other Indo-European Languages	13,157	51,977	449,051	744,335
Korean	2,766	11,456	62,803	91,014
Chinese (Incl. Mandarin, Cantonese)	48,510	83,656	500,659	600,113
Vietnamese	668	1,258	11,046	22,710
Tagalog (Incl. Filipino)	1,644	4,128	49,292	76,783
Other Asian And Pacific Island Languages	4,913	18,405	87,729	173,537
Arabic	3,682	6,789	75,392	115,658
Other And Unspecified Languages	11,495	22,190	157,567	226,238

¹ ACS 5-Year Estimates, 2021

² NYSEDA Final Disadvantaged Communities, 2023

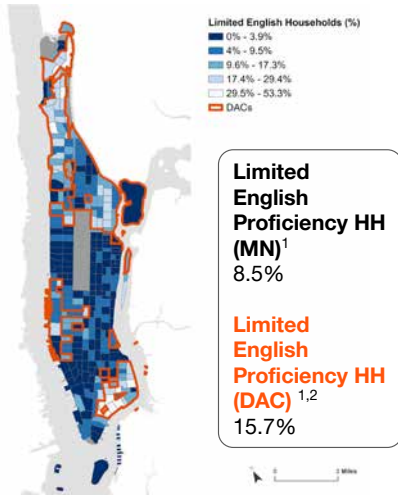
¹ ACS 5-Year Estimates, 2021

² NYSEDA Final Disadvantaged Communities, 2023

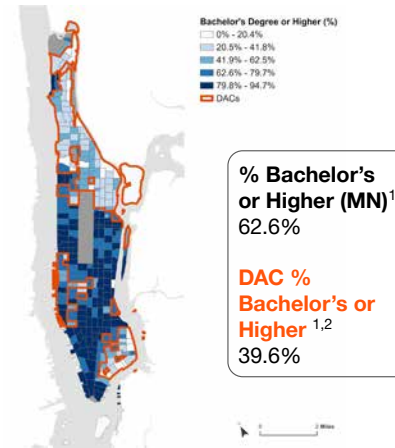
Appendix B

RABA Manhattan Data Visualizations

LANGUAGE



EDUCATIONAL ATTAINMENT ¹



Household Language and English Proficiency by Household (% of Total HH)					
Household Language	English Proficiency	DACs	Manhattan	NYC	NYS
English Only	N/A	48.6%	62.1%	50.6%	68.5%
Spanish	Limited English Speaking Household	10.2%	4.7%	6.5%	3.6%
	Not A Limited English Speaking Household	23.7%	13.8%	17.2%	11.2%
Other Indo-European Languages	Limited English Speaking Household	0.9%	0.9%	3.6%	2.0%
	Not A Limited English Speaking Household	5.9%	8.7%	10.5%	7.8%
Asian And Pacific Island Languages	Limited English Speaking Household	4.3%	2.7%	3.4%	1.7%
	Not A Limited English Speaking Household	4.7%	5.2%	5.4%	3.4%
Other Languages	Limited English Speaking Household	0.3%	0.2%	0.4%	0.3%
	Not A Limited English Speaking Household	1.7%	1.6%	2.4%	1.6%

Educational Attainment Level (Ages 25+)	DACs	Manhattan	NYC	NYS
Less than High School	21.9%	11.6%	16.8%	12.6%
High School Graduate or More (Includes Equivalency)	78.1%	88.4%	83.2%	87.4%
Some College or More	58.0%	76.2%	59.6%	62.2%
Bachelor's Degree or More	39.6%	62.6%	39.6%	38.1%
Master's Degree or More	16.6%	30.6%	16.7%	16.8%
Professional School Degree or More	5.0%	11.3%	4.9%	4.7%
Doctorate Degree	2.0%	3.7%	1.6%	1.6%

¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

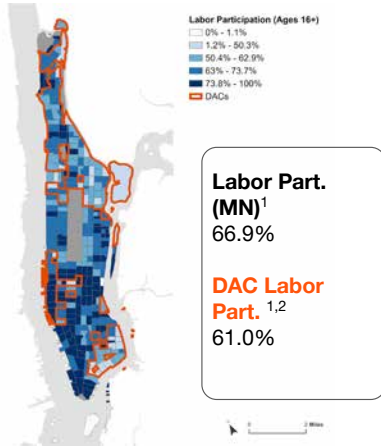
¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

Appendix B

RABA Manhattan Data Visualizations

LABOR PARTICIPATION & UNEMPLOYMENT



NYC
63.4%

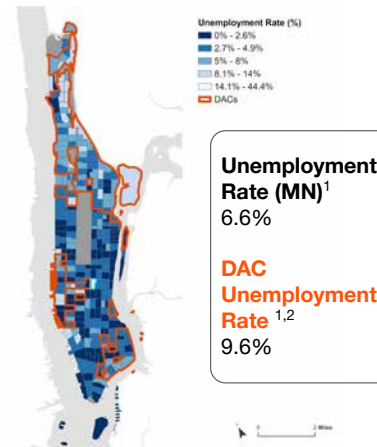
NYS
63.1%

Race or Ethnicity		Manhattan	NYC	NYS
Race	White alone	71.8%	65.0%	63.1%
	Black or African American alone	56.5%	60.6%	61.1%
	American Indian and Alaska Native alone	64.8%	62.9%	58.9%
	Asian alone	66.4%	64.2%	64.2%
	Native Hawaiian and Other Pacific Islander alone	70.5%	65.0%	63.8%
	Some other race alone	56.4%	61.7%	63.4%
	Two or more races	66.9%	65.4%	66.6%
Ethnicity	Hispanic or Latino origin (of any race)	59.8%	62.1%	64.2%
	White alone, not Hispanic or Latino	73.2%	65.8%	62.9%

¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

LABOR PARTICIPATION & UNEMPLOYMENT



NYC
7.5%

NYS
6.2%

Race or Ethnicity		DACs	Manhattan	NYC	NYS
Race	White Alone	6.8%	4.6%	5.5%	5.0%
	Black or African American Alone	10.8%	10.8%	9.7%	9.2%
	American Indian or Alaska Native Alone	21.4%	21.2%	10.0%	9.2%
	Asian Alone	6.7%	5.5%	6.1%	5.7%
	Native Hawaiian or Pacific Islander Alone	0.0%	8.0%	15.5%	12.0%
	Some Other Race Alone	14.0%	12.9%	10.0%	9.0%
	Two or More Races Alone	10.5%	9.7%	10.0%	9.0%
	Ethnicity	Hispanic or Latino	12.2%	10.7%	9.3%
White Alone, Not Hispanic or Latino		6.4%	4.4%	5.3%	4.9%

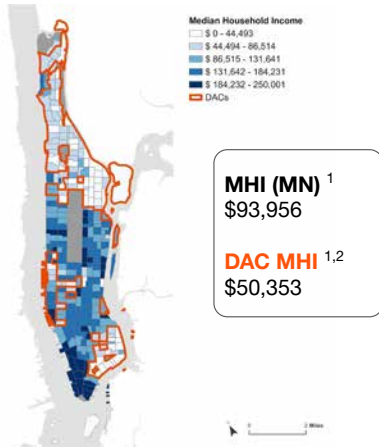
¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

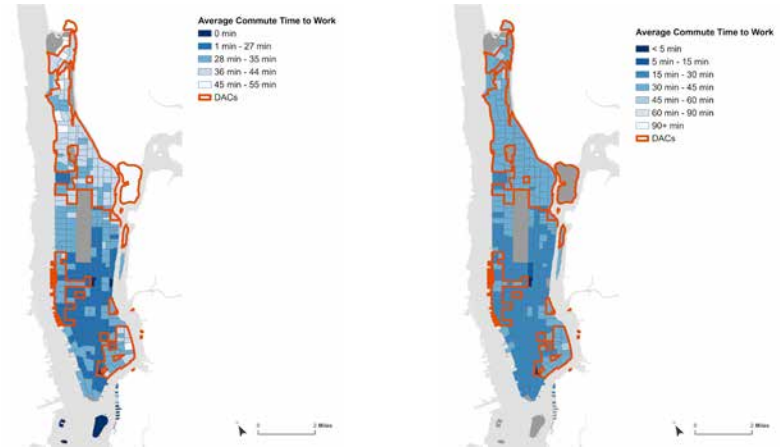
Appendix B

RABA Manhattan Data Visualizations

MEDIAN HOUSEHOLD INCOME ¹



AVERAGE COMMUTE TIME



Race or Ethnicity		DACs	Manhattan	NYC	NYS
Race	White Alone Householder	\$84,057	\$128,040	\$93,105	\$83,877
	Black or African American Alone Householder	\$39,012	\$42,341	\$53,095	\$53,697
	American Indian and Alaska Native Alone Householder	\$47,953	\$46,790	\$52,801	\$50,731
	Asian Alone Householder	\$40,404	\$94,758	\$76,634	\$83,399
	Native Hawaiian and Other Pacific Islander Alone Householder	\$48,500	\$79,432	\$46,009	\$49,528
	Some Other Race Alone Householder	\$34,877	\$38,117	\$45,336	\$49,838
	Two or More Races Householder	\$46,773	\$64,546	\$65,288	\$68,158
	Ethnicity	Hispanic or Latino Householder	\$37,115	\$44,456	\$49,189
	White Alone Householder, Not Hispanic or Latino	\$102,952	\$136,386	\$102,633	\$85,520

Travel Time to Work (for workers 16+)	DACs	Manhattan	NYC	NYS
< 5 min.	1.1%	1.6%	1.1%	2.4%
5 - 14 min.	8.3%	10.6%	8.1%	17.5%
15 - 29 min.	21.6%	31.9%	20.6%	29.4%
30 - 44 min.	34.7%	32.7%	27.1%	22.1%
45 - 59 min.	17.6%	12.1%	16.3%	11.0%
60 - 89 min.	12.8%	8.3%	19.2%	12.1%
90+ min.	3.9%	2.9%	7.6%	5.7%
Average Commute Time	38 min.	32 min.	41 min.	33 min.

Avg. Commute Time (MN) ¹
32 min.

DAC Avg. Commute Time ^{1,2}
38 min

¹ ACS 5-Year Estimates, 2021 (MHI reported in 2021 inflation-adjusted dollars)

² NYSERDA Final Disadvantaged Communities, 2023

¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

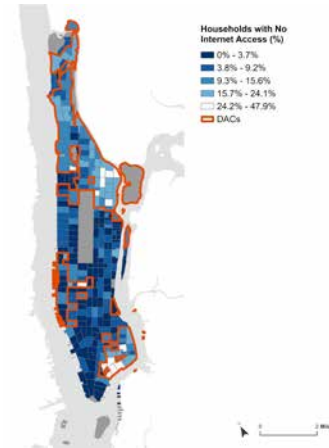
Appendix B

RABA Manhattan Data Visualizations

MEANS OF TRANSPORTATION TO WORK

Means of Transport to Work (for workers 16+)	DACs	Manhattan	NYC	NYS
Public Transportation (Includes Taxicab)	60.8%	53.0%	50.8%	25.4%
Walked	14.1%	18.9%	9.5%	5.8%
Worked At Home	12.7%	17.0%	10.7%	9.5%
Car, Truck, or Van	9.2%	7.6%	26.8%	57.6%
<i>Drove Alone</i>	6.9%	5.8%	22.4%	51.4%
<i>Carpooled</i>	2.2%	1.8%	4.4%	6.3%
Bicycle	2.3%	2.3%	1.4%	0.7%
Other Means	0.9%	1.1%	0.9%	0.8%
Motorcycle	0.1%	0.1%	0.1%	0.1%

INTERNET ACCESS ¹



Internet Access by Household	DACs	Manhattan	NYC	NYS
With An Internet Subscription	82.0%	88.9%	86.3%	87.1%
<i>Dial-Up Alone</i>	0.2%	0.1%	0.2%	0.2%
<i>Broadband (such As Cable, Fiber Optic, or DSL)</i>	68.7%	79.0%	72.9%	74.7%
<i>Satellite Internet Service</i>	2.4%	2.4%	3.7%	4.0%
<i>Other Service</i>	0.6%	0.4%	0.9%	0.8%
Internet Access Without A Subscription	3.0%	2.3%	2.2%	2.4%
No Internet Access	15.0%	8.8%	11.5%	10.5%

¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

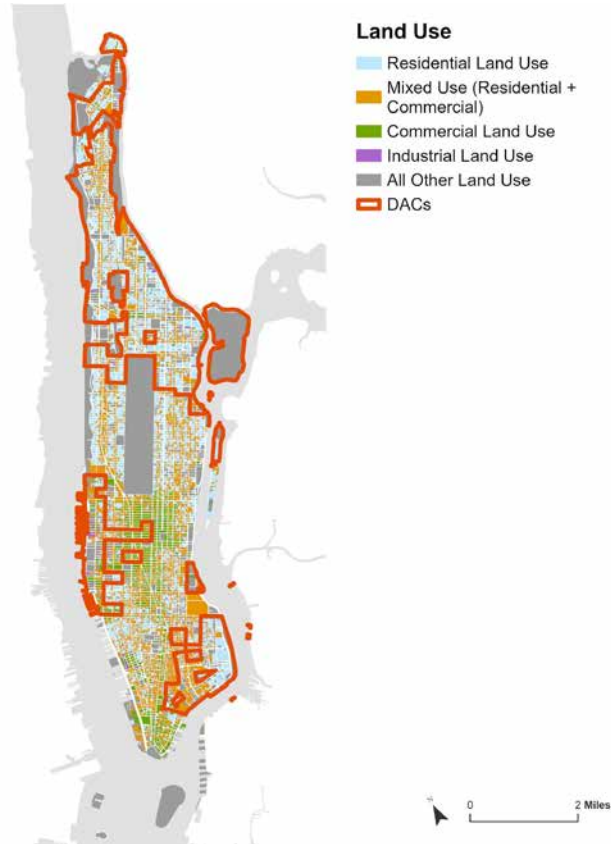
¹ ACS 5-Year Estimates, 2021

² NYSERDA Final Disadvantaged Communities, 2023

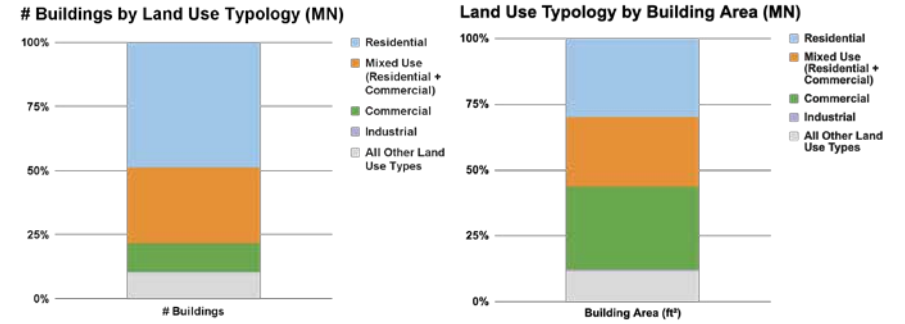
Appendix B

RABA Manhattan Data Visualizations

LAND USE ¹



LAND USE (MN): Overall Land Use Typologies ¹



Land Use (MN)	# Buildings	% of Total Buildings
Residential*	22,301	48.8%
1-4 Unit	6,958	15.2%
5+ Units	15,325	33.5%
0 Units or Blank	18	0.0%
Commercial*	4,990	10.9%
Small (>25,000 ft ²)	2,571	5.6%
Large (<25,000 ft ²)	2,093	4.6%
0 Commercial sq. ft. or Blank	326	0.7%
Mixed Use (residential + commercial)*	13,590	29.7%
1-4 Unit (residential)	2,760	6.0%
5+ Units (residential)	10,105	22.1%
0 Units or Blank	725	1.6%
Industrial	233	0.5%
All Other Land Use Types	4,622	10.1%
Total	45,736	--

* Categories are mutually exclusive and refer to the land use typology of the individual tax lot.

¹ NYC DCP (MapPLUTO), 2023

² NYSEDA Final Disadvantaged Communities, 2023

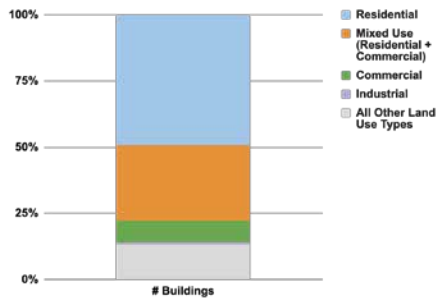
¹ NYC DCP (MapPLUTO), 2023v2

Appendix B

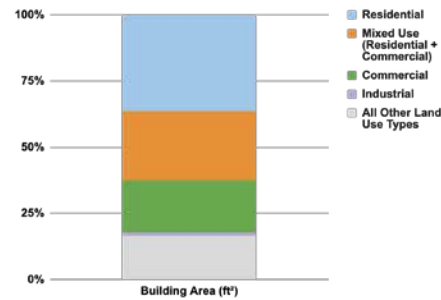
RABA Manhattan Data Visualizations

LAND USE (DACs): Overall Land Use Typologies ¹

Buildings by Land Use Typology (DACs)



Land Use Typology by Building Area (DACs)



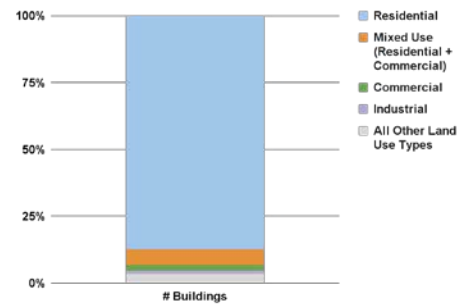
Land Use (MN)	# Buildings	% of Total Buildings
Residential*	9,266	51.9%
1-4 Unit	3,063	17.1%
5+ Units	6,197	34.7%
0 Units or Blank	6	0.0%
Commercial*	1,381	7.7%
Small (>25,000 ft ²)	888	5.0%
Large (<25,000 ft ²)	421	2.4%
0 Commercial sq. ft. or Blank	72	0.4%
Mixed Use (residential + commercial)*	4,825	27.0%
1-4 Unit (residential)	772	4.3%
5+ Units (residential)	3,789	21.2%
0 Units or Blank	264	1.5%
Industrial	170	1.0%
All Other Land Use Types	2,226	12.5%
Total	17,868	--

* Categories are mutually exclusive and refer to the land use typology of the individual tax lot.

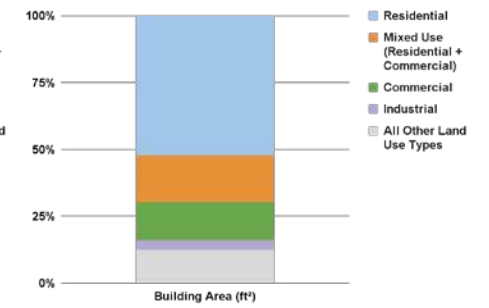
¹ NYC DCP (MapPLUTO), 2023

LAND USE (NYC): Overall Land Use Typologies ¹

Buildings by Land Use Typology (NYC)



Land Use Typology by Building Area (NYC)



Buildings by Land Use (NYC)	# Buildings	% of Total Buildings
Residential*	949,437	87.2%
1-4 Unit	860,466	79.0%
5+ Units	88,754	8.2%
0 Units or Blank	217	0.0%
Commercial*	23,909	2.2%
Small (>25,000 ft ²)	19,328	1.8%
Large (<25,000 ft ²)	3,759	0.3%
0 Commercial sq. ft. or Blank	822	0.1%
Mixed Use (residential + commercial)*	64,608	5.9%
1-4 Unit (residential)	39,544	3.6%
5+ Units (residential)	22,205	2.0%
0 Units or Blank	2,859	0.3%
Industrial	11,870	1.1%
All Other Land Use Types	39,077	3.6%
Total	1,088,901	--

* Categories are mutually exclusive and refer to the land use typology of the individual tax lot.

¹ NYC DCP (MapPLUTO), 2023

Appendix B

RABA Manhattan Data Visualizations

RESIDENTIAL & COMMERCIAL AREA (MN) ¹

Buildings by Land Use (MN)	Building Area (ft ²)	% of Total MN Building Area	Residential Area (ft ²)	% of Total MN Building Area	Commercial Area (ft ²)	% of Total MN Building Area	All Other Building Area (ft ²)	% of Total MN Building Area
Residential*	542,203,368	29.9%	508,204,684	28.0%	19,576,979	1.1%	14,421,705	0.8%
1-4 Unit	28,469,537	1.6%	25,082,923	1.4%	230,815	0.0%	3,155,799	0.2%
5+ Units	511,700,397	28.2%	482,987,447	26.6%	19,311,378	1.1%	9,401,572	0.5%
0 Units or Blank	2,033,434	0.1%	134,314	0.0%	34,786	0.0%	1,864,334	0.1%
Commercial*	573,081,590	31.6%	1,607,718	0.1%	496,054,276	27.3%	75,419,596	4.2%
Small (<25,000 ft ²)	70,651,245	3.9%	700,151	0.0%	20,542,675	1.1%	49,408,419	2.7%
Large (>25,000 ft ²)	502,430,345	27.7%	907,567	0.1%	475,511,601	26.2%	26,011,177	1.4%
0 Commercial sq. ft. or Blank	23,611,154	1.3%	60,866	0.0%	-	-	23,550,288	1.3%
Mixed Use (residential + commercial)*	477,630,304	26.3%	383,934,967	21.2%	81,550,222	4.5%	12,145,115	0.7%
1-4 Unit (residential)	17,563,273	1.0%	10,903,311	0.6%	6,476,613	0.4%	183,349	0.0%
Small commercial (<25,000 ft ²)	15,362,699	0.8%	9,254,237	0.5%	5,978,385	0.3%	130,077	0.0%
Large commercial (>25,000 ft ²)	2,037,404	0.1%	1,539,176	0.1%	498,228	0.0%	0	0.0%
5+ Units (residential)	450,816,202	24.8%	372,919,699	20.6%	66,835,972	3.7%	11,060,531	0.6%
Small commercial (<25,000 ft ²)	262,956,961	14.5%	229,651,290	12.7%	28,545,880	1.6%	4,759,791	0.3%
Large commercial (>25,000 ft ²)	183,636,746	10.1%	140,980,688	7.8%	38,290,092	2.1%	4,365,966	0.2%
0 Units or Blank	9,250,829	0.5%	111,957	0.0%	8,237,637	0.5%	901,235	0.0%
Small commercial (<25,000 ft ²)	5,380,847	0.3%	111,957	0.0%	4,528,239	0.2%	740,651	0.0%
Large commercial (>25,000 ft ²)	3,750,544	0.2%	0	0.0%	3,709,398	0.2%	41,146	0.0%
All Other Land Use Types	221,392,646	12.2%	1,471,760	0.1%	203,446,673	11.2%	16,474,213	0.9%
Total	1,814,307,908	-	895,219,129	49.3%	800,628,150	44.1%	118,460,629	6.5%

¹ NYC DCP (MapPLUTO), 2023

RESIDENTIAL & COMMERCIAL AREA (DACs) ¹

Buildings by Land Use (MN)	Building Area	% of Total MN Building Area	Residential Area	% of Total MN Building Area	Commercial Area	% of Total MN Building Area	All Other Bldg. Area (ft ²)	% of Total MN Bldg. Area
Residential*	191,304,780	10.5%	178,908,039	9.9%	5,003,174	0.3%	7,393,567	0.4%
1-4 Unit	10,422,073	0.6%	9,072,506	0.5%	31,950	0.0%	1,317,617	0.1%
5+ Units	180,520,337	9.9%	169,835,533	9.4%	4,958,840	0.3%	5,725,964	0.3%
0 Units or Blank	362,370	0.0%	0	0.0%	12,384	0.0%	349,986	0.0%
Commercial*	103,298,765	5.7%	222,300	0.0%	90,055,821	5.0%	13,020,644	0.7%
Small (<25,000 ft ²)	11,148,940	0.6%	97,636	0.0%	6,844,438	0.4%	4,206,866	0.2%
Large (>25,000 ft ²)	88,596,604	4.9%	112,854	0.0%	83,211,383	4.6%	5,272,367	0.3%
0 Commercial sq. ft. or Blank	3,553,221	0.2%	11,810	0.0%	0	0.0%	3,541,411	0.2%
Mixed Use (residential + commercial)*	138,016,111	7.6%	112,681,667	6.2%	21,033,545	1.2%	4,300,899	0.2%
1-4 Unit (residential)	4,737,237	0.3%	3,225,086	0.2%	1,485,215	0.1%	26,936	0.0%
Small commercial (<25,000 ft ²)	3,693,221	0.2%	2,304,958	0.1%	1,362,842	0.1%	25,421	0.0%
Large commercial (>25,000 ft ²)	1,021,199	0.1%	898,826	0.0%	122,373	0.0%	0	0.0%
5+ Units (residential)	130,244,564	7.2%	109,381,722	6.0%	16,821,336	0.9%	4,041,506	0.2%
Small commercial (<25,000 ft ²)	90,095,745	5.0%	78,315,657	4.3%	9,472,710	0.5%	2,307,378	0.1%
Large commercial (>25,000 ft ²)	37,023,104	2.0%	29,425,845	1.6%	7,348,626	0.4%	248,633	0.0%
0 Units or Blank	3,034,310	0.2%	74,859	0.0%	2,726,994	0.2%	232,457	0.0%
Small commercial (<25,000 ft ²)	1,912,177	0.1%	74,859	0.0%	1,624,861	0.1%	212,457	0.0%
Large commercial (>25,000 ft ²)	1,102,133	0.1%	0	0.0%	1,102,133	0.1%	0	0.0%
All Other Land Use Types	94,460,924	5.2%	290,125	0.0%	91,779,448	5.1%	2,391,351	0.1%
Total	527,080,580	29.1%	292,102,131	16.1%	207,871,988	11.5%	27,106,461	1.5%

¹ NYC DCP (MapPLUTO), 2023

Appendix B

RABA Manhattan Data Visualizations

LAND USE: Residential Land Use Typologies by # of Residential Units ¹

Manhattan

Residential Land Use Typology	# Total Residential Units	% Total Residential Units
1-4 Units	22,441	2.4%
"Residential" LU	14,885	1.6%
"Mixed Use" LU	7,044	0.7%
Other LU	512	0.1%
5+ Units	921,406	97.6%
"Residential" LU	507,219	53.7%
"Mixed Use" LU	399,816	42.4%
Other LU	14,371	1.5%
Total Residential Units	943,847	--

NYC

Residential Land Use Typology	# Total Residential Units	% Total Residential Units in NYC
1-4 Units	1,184,033	32.5%
"Residential" LU	1,107,911	30.4%
"Mixed Use" LU	73,125	2.0%
Other LU	2,997	0.1%
5+ Units	2,457,491	67.5%
"Residential" LU	1,669,158	45.8%
"Mixed Use" LU	755,871	20.8%
Other LU	32,462	0.9%
Total Residential Units	3,641,524	--

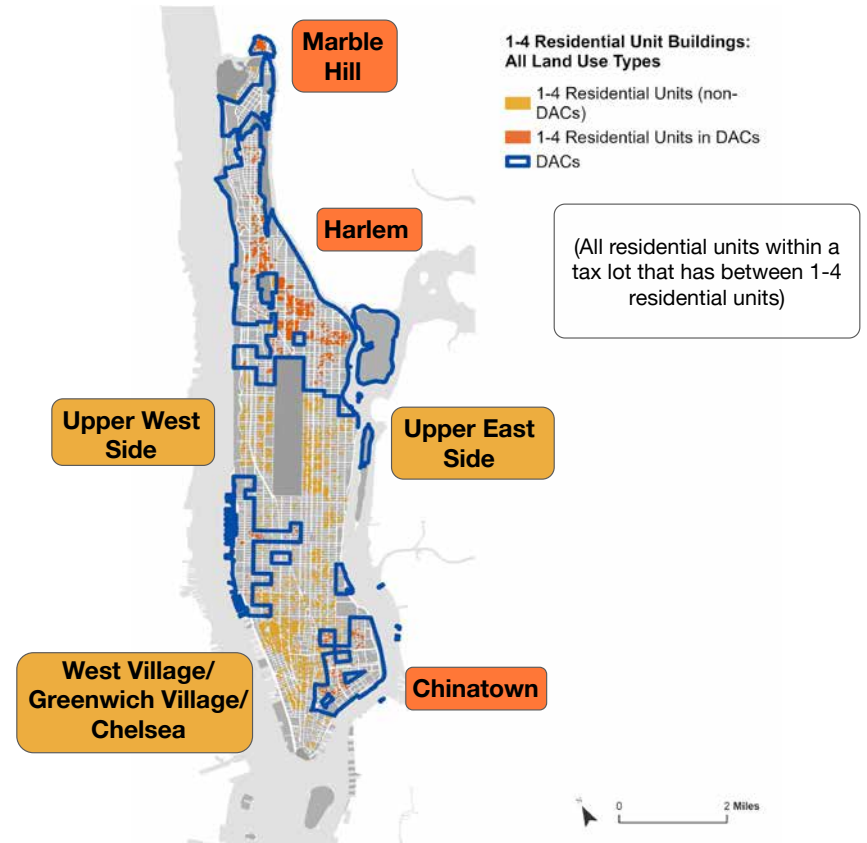
DACs

Residential Land Use Typology	# Total Residential Units	% Total Residential Units in DACs	% Total Residential Units in MN
1-4 Units	9,847	2.9%	1.0%
Residential LU	7,709	2.2%	0.8%
"Mixed Use" LU	2,032	0.6%	0.2%
Other LU	106	0.0%	0.0%
5+ Units	334,370	97.1%	35.4%
Residential LU	204,282	59.3%	21.6%
"Mixed Use" LU	126,305	36.7%	13.4%
Other LU	3,783	1.1%	0.4%
Total Residential Units	344,217	--	36.5%

36.5% of residential units are in DACs, **9,847** of which are in a 1-4 unit 'tax lot'

¹ NYC DCP (MapPLUTO), 2023

1-4 UNIT RESIDENTIAL BUILDINGS ¹



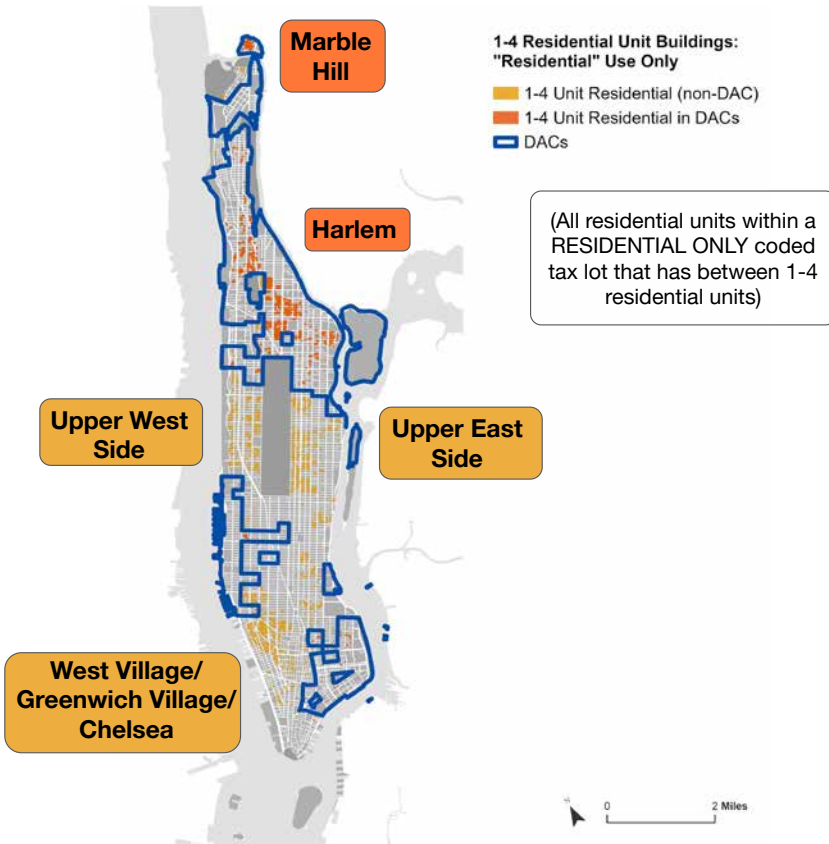
¹ NYC DCP (MapPLUTO), 2023

² NYSERDA Final Disadvantaged Communities, 2023

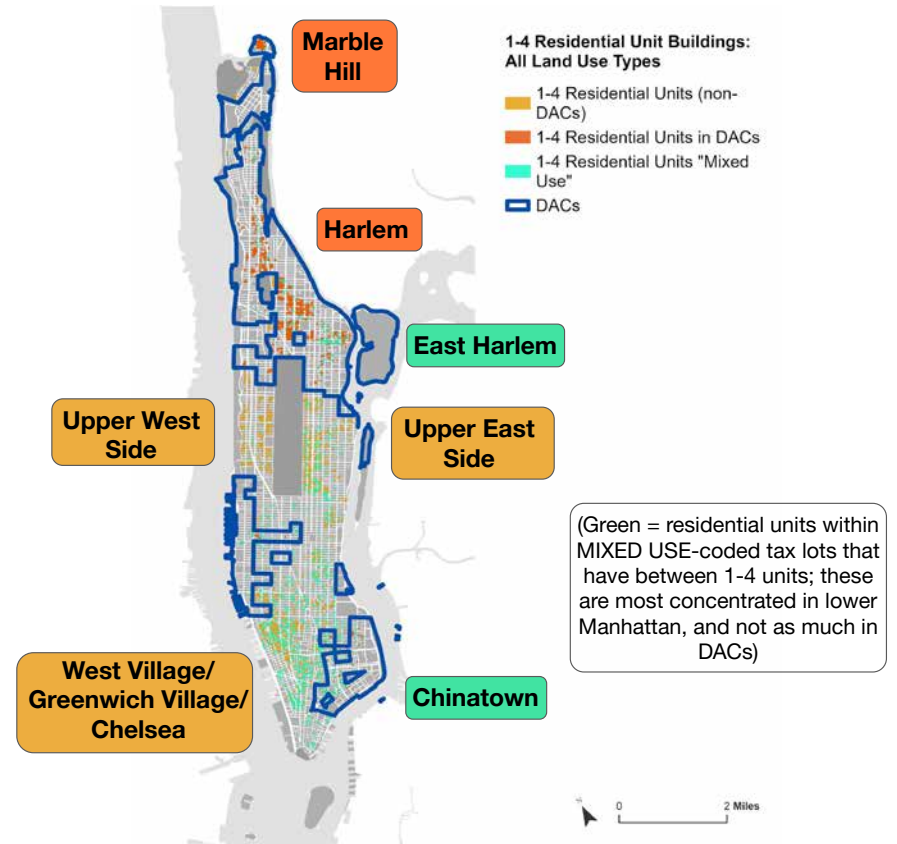
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RABA Manhattan Data Visualizations

1-4 UNIT RESIDENTIAL BUILDINGS ¹



1-4 UNIT RESIDENTIAL BUILDINGS ¹



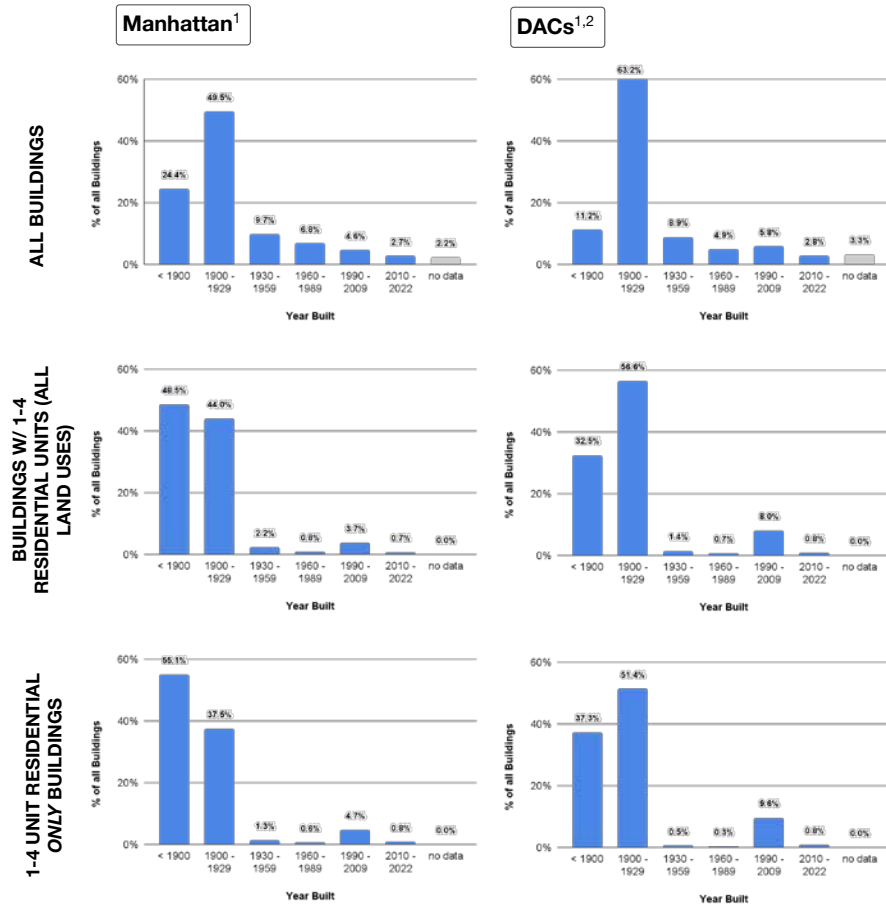
¹ NYC DCP (MapPLUTO), 2023
² NYSERDA Final Disadvantaged Communities, 2023

¹ NYC DCP (MapPLUTO), 2023
² NYSERDA Final Disadvantaged Communities, 2023

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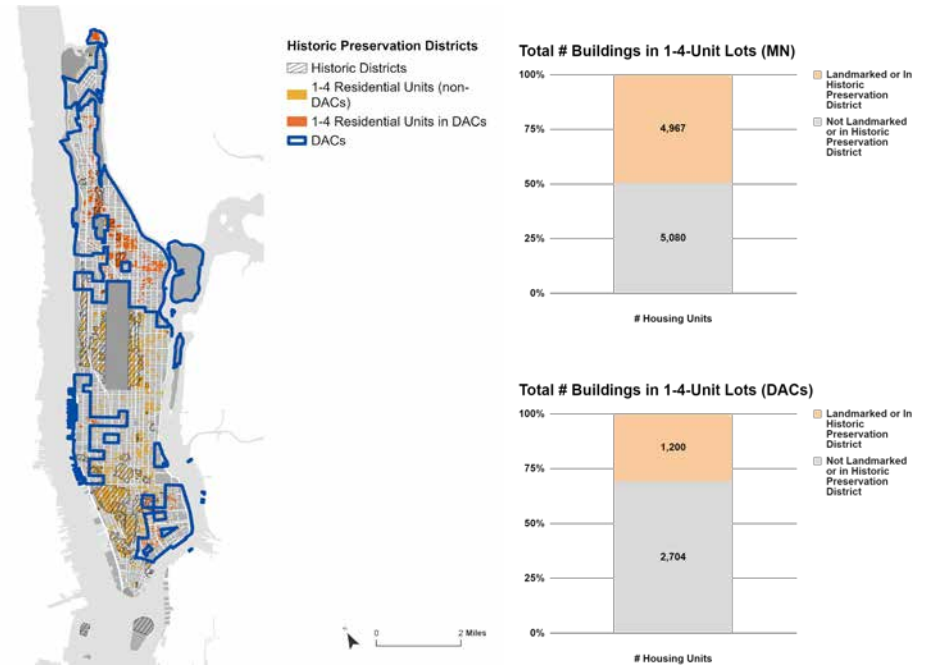
RABA Manhattan Data Visualizations

YEAR BUILT ¹



¹ NYC DCP (MapPLUTO), 2023
² NYSERDA Final Disadvantaged Communities, 2023

Historic Preservation Districts ²



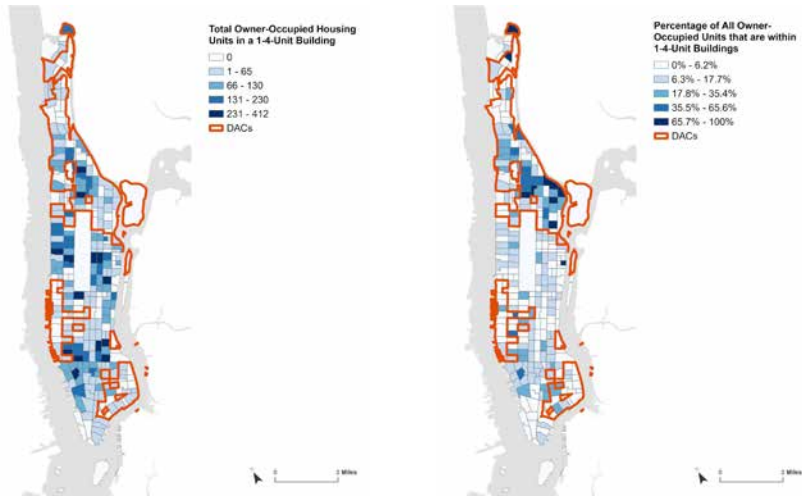
¹ NYC DCP (MapPLUTO), 2023
² NYC Landmarks Preservation Commission, 2023

Appendix B

RABA Manhattan Data Visualizations

RESIDENTIAL LAND USE: Occupancy, Vacancy, Tenure ¹

Housing Tenure, Occupancy/Vacancy Rates					
	DACs	MN	NYC	NYS	
Occupancy Rate	90.5%	84.6%	90.5%	89.1%	
Owner-Occupied	10.1%	20.9%	30.0%	48.5%	
Units in a 1-4-Unit Building	1.42%	1.9%	19.8%	41.8%	
Units in a 5+-Unit Building	8.7%	19.0%	10.2%	5.4%	
Units in a Mobile Home/Boat/RV/etc.	0.0%	0.0%	0.1%	1.3%	
Renter-Occupied	80.4%	63.7%	60.5%	40.6%	
Units in a 1-4-Unit Building	3.25%	2.3%	15.0%	15.0%	
Units in a 5+-Unit Building	77.2%	61.4%	45.4%	25.2%	
Units in a Mobile Home/Boat/RV/etc.	0.1%	0.1%	0.1%	0.5%	
Vacancy Rate	9.5%	15.4%	9.5%	10.9%	
For Rent	3.7%	3.7%	2.3%	1.7%	
For Sale	0.3%	0.8%	0.6%	0.6%	
Other Vacant	5.5%	10.9%	6.6%	8.5%	



¹ ACS 5-Year Estimates, 2021

RESIDENTIAL LAND USE: Tenure by Race ¹

Ratio of Owner:Renter by Race or Ethnicity		DACs		Manhattan		NYC		NYS	
		Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter
Race	All Householders	11.2%	88.8%	24.7%	75.4%	33.2%	66.8%	54.4%	45.6%
	White Alone Householder	17.1%	82.9%	31.0%	69.0%	39.4%	60.6%	64.5%	35.5%
	Black Or African American Alone Householder	9.0%	91.1%	11.0%	89.0%	27.2%	72.8%	32.2%	67.8%
	American Indian And Alaska Native Alone Householder	3.8%	96.2%	7.1%	92.9%	22.5%	77.5%	36.1%	64.0%
	Asian Alone Householder	14.1%	85.9%	26.5%	73.5%	44.8%	55.2%	50.7%	49.3%
	Native Hawaiian And Other Pacific Islander Alone Householder	29.4%	70.6%	31.1%	68.9%	32.0%	68.0%	38.7%	61.3%
	Some Other Race Alone Householder	3.5%	96.5%	5.1%	94.9%	14.3%	85.7%	21.4%	78.6%
	Two Or More Races Householder	7.9%	92.1%	15.2%	84.8%	24.8%	75.2%	37.9%	62.1%
	Ethnicity	White Alone, Not Hispanic Or Latino Householder	20.5%	79.6%	33.1%	66.9%	42.7%	57.3%	66.9%
Hispanic Or Latino Householder		4.3%	95.7%	8.3%	91.7%	16.9%	83.1%	27.1%	72.9%

"VACANCY RATES"	DACs	Manhattan	NYC	NYS
"Available Housing Vacancy Rate":	4.2%	4.9%	3.0%	2.6%
For Sale + For Rent:	4.0%	4.5%	2.8%	2.4%

¹ ACS 5-Year Estimates, 2021

Appendix B

RABA Manhattan Data Visualizations

RESIDENTIAL LAND USE: House Heating Fuel by Tenure ¹

Owner-Occupied

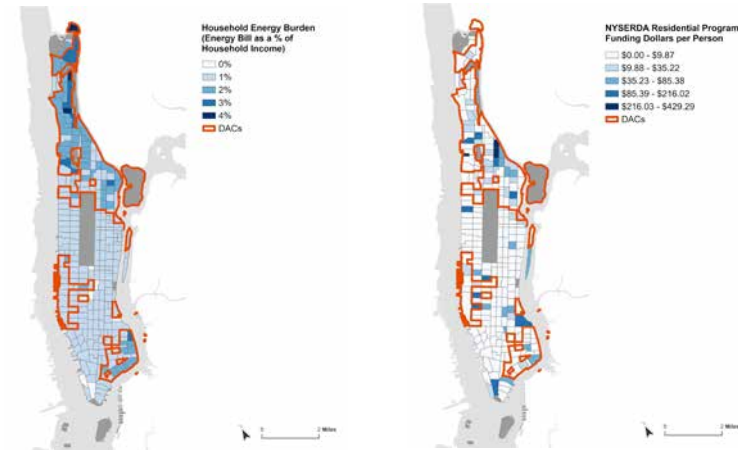
House Heating Fuel for Owner-Occupied Households (as a %age of Total Owner-Occupied Households)	DACs	Manhattan	NYC	NYS
Utility Gas	49.8%	48.1%	73.9%	60.8%
Bottled, Tank, Or Lp Gas	3.6%	2.5%	2.7%	5.6%
Electricity	20.7%	20.1%	8.1%	7.1%
Fuel Oil, Kerosene, Etc.	20.5%	22.8%	12.8%	22.2%
Coal Or Coke	0.0%	0.0%	0.0%	0.3%
Wood	0.1%	0.2%	0.1%	2.5%
Solar Energy	0.1%	0.0%	0.1%	0.1%
Other Fuel	3.1%	3.7%	1.1%	0.9%
No Fuel Used	2.2%	2.5%	1.1%	0.5%

Renter-Occupied

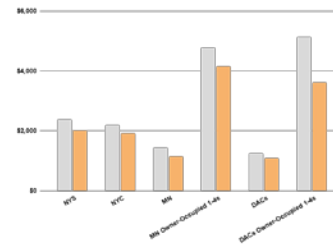
House Heating Fuel for Renter-Occupied Households (as a %age of Total Renter-Occupied Households)	DACs	Manhattan	NYC	NYS
Utility Gas	48.1%	47.6%	61.0%	58.3%
Bottled, Tank, Or Lp Gas	2.0%	1.9%	2.3%	3.1%
Electricity	25.6%	27.8%	16.1%	19.8%
Fuel Oil, Kerosene, etc.	19.2%	16.2%	15.5%	14.4%
Coal Or Coke	0.1%	0.1%	0.1%	0.1%
Wood	0.0%	0.0%	0.0%	0.3%
Solar Energy	0.2%	0.1%	0.1%	0.1%
Other Fuel	1.8%	2.6%	1.8%	1.5%
No Fuel Used	3.2%	3.7%	3.2%	2.4%

¹ ACS 5-Year Estimates, 2021

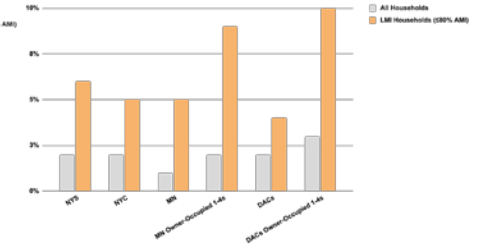
ENERGY COST & BURDEN



Average Household Annual Energy Costs



Average Household Energy Burden

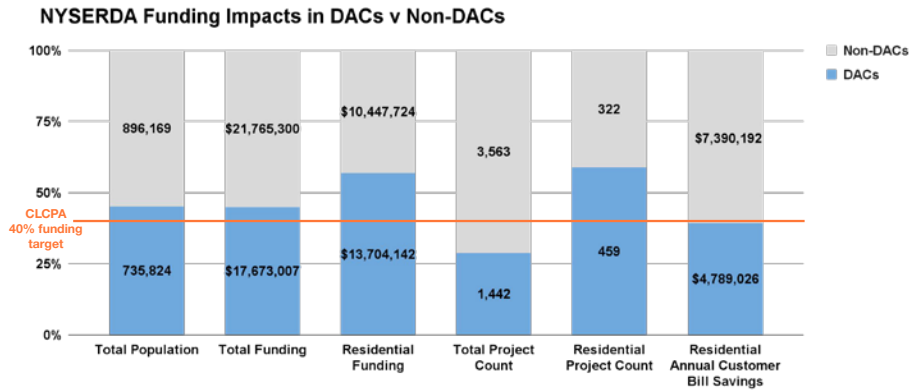


¹ DOE LEAD Tool, 2018

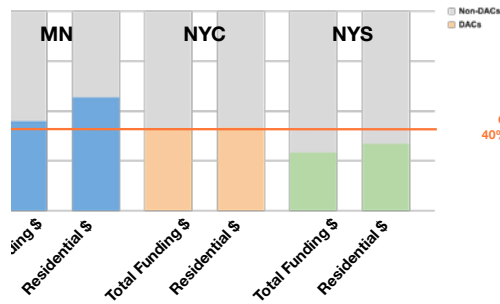
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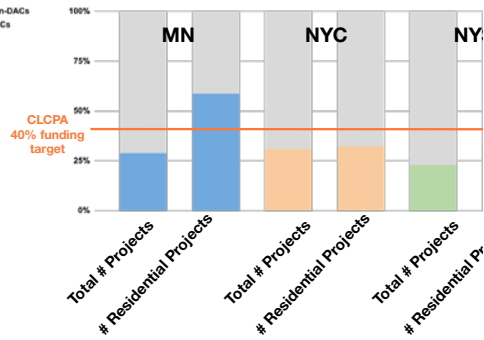
NYSERDA FUNDING DOLLARS



A Funding Impacts in DACs: Manhattan, NYC, New York State

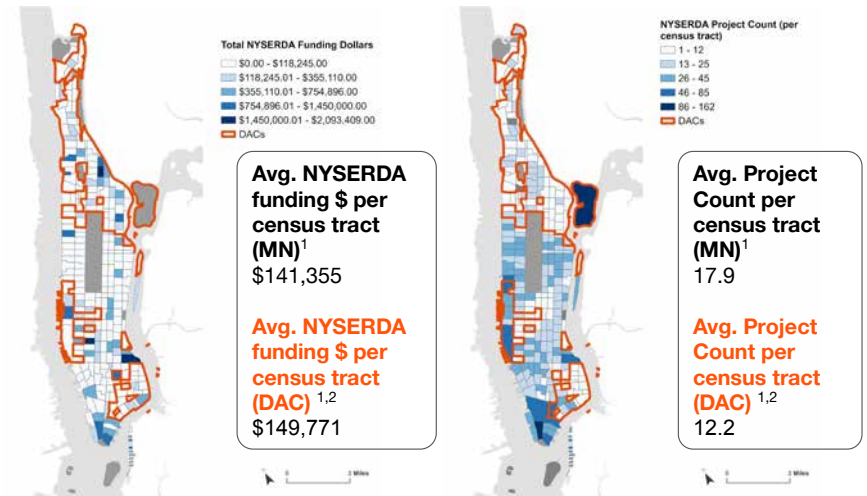
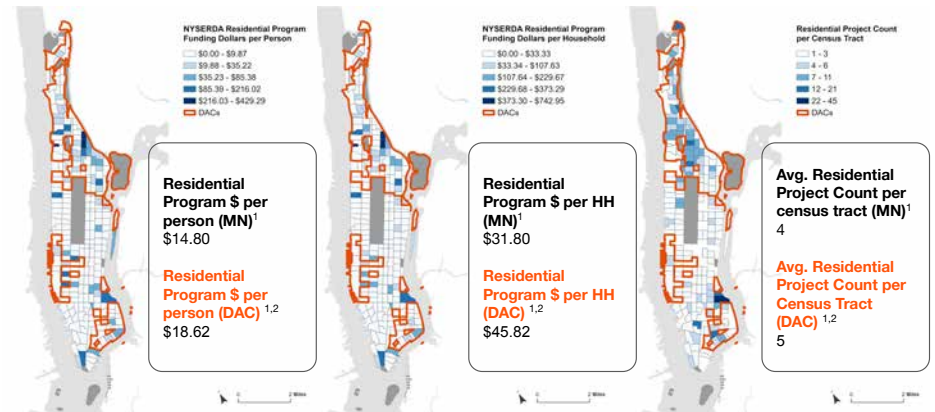


NYSERDA Project Counts in DACs: Manhattan, NYC, New York State



¹ NYSERDA RABA Data Viz Tool (2019 data)

NYSERDA FUNDING DOLLARS



¹ NYSERDA Final Disadvantaged Communities, 2023

Appendix B

RABA Manhattan Data Visualizations

NYSERDA Initiative	Sub-Initiative	Project Count - Manhattan	Funding Dollars - Manhattan
Community Energy Engagement	Community Energy Engagement	1	\$ 962,352.00
Heat Pumps Phase 1 (2017)	Air Source Heat Pumps	200	\$ 230,500.00
LMI Multifamily	Direct Injection Program	3	\$ 2,586,500.00
LMI Multifamily	Multifam Performance Pgm	44	\$ 10,593,298.00
LMI Multifamily	Real Time Enrgy Management	73	\$ 3,240,413.00
Low Rise New Construction Transition - Market Rate	Low Rise New Construction	3	\$ 14,432.00
Multifamily Low Carbon Pathways	Low Carbon Tech Demos	2	\$ 858,050.00
Multifamily New Construction Transition - LMI	Multifam New Construction	14	\$ 943,467.00
Multifamily New Construction Transition - Market Rate	Multifam New Construction	3	\$ 151,340.00
NY-Sun: Con Ed - Residential	NYSUN: Sm MW Blk Incentives	71	\$ 91,301.00
NY-Sun: Con Ed - Residential	RPS:CST- PV	3	\$ 7,400.00
NY-Sun: Residential	RPS:CST- PV	18	\$ 146,259.00
NY-Sun: Residential	RPS:CST- PV I&J	4	\$ 31,221.00
NY-Sun: Residential	SBC:End Use Renewable Engy Mkt	12	\$ 618,936.00
NYS Healthy Homes Value Based Payment Pilot	Healthy Homes VB Payment Pilot	1	\$ 248.00
New Construction - LMI	New Construction Housing	17	\$ 1,973,953.00
New Construction - Market Rate	New Construction Housing	11	\$ 1,423,924.00
REVitalize	REVitalize	1	\$ 65,000.00
Residential	GJGNY Market Rate Audits	2	\$ 300.00
Residential	NYCH: Comfort Home	1	\$ 2,850.00
Residential	NYCH: Technical Assistance	1	\$ -
Single Family - Low Income	Home Perf w Energy Star	305	\$ 208,035.00
Single Family Market Rate Transition	Home Perf w Energy Star	1	\$ 2,100.00

Appendix C

References

Center for NYC, & NYC Economic Development Corporation. (2023). *Although unemployment has fallen in New York City, the last year has seen a sharp divergence in white and black unemployment rates*. Retrieved from <https://www.centernyc.org/reports-briefs/although-unemployment-has-fallen-in-new-york-city-the-last-year-has-seen-a-sharp-divergence-in-white-and-black-unemployment-rates>

New York City Employment & Training Coalition. (2023). *Green jobs in New York City*. Retrieved from <https://nycetc.org/2023/04/green-jobs-in-new-york-city/>

New York City Mayor's Office of Sustainability. (2023). *One city built to last: Technical working group report*.

New York City Mayor's Office. (2023, December 6). *Press release: Mayor Adams, Speaker Adams celebrate passage of zoning changes that fights climate change by opening doors to cleaner air, lower energy costs*.

New York Just Transition Working Group. (2023). *2021 jobs study, March 2023: Vintage update* (p. 98).

New York State Energy Research and Development Authority (NYSERDA). (2022). *New York clean energy industry report 2022*.

New York State Energy Research and Development Authority (NYSERDA). (2023). *New York clean energy industry report 2023*.

Pratt Center. (2021). *Analysis of American Community Survey 5-Year Estimates*.

U.S. Census Bureau. (2021). *American Community Survey 5-Year Estimates*.

New York City Department of Housing Preservation and Development. (2023).

2023 Housing and Vacancy Survey, selected initial findings (pp. 21-22).

Municipal Arts Society of New York. (2012). *Greening NYC's historic buildings: Green rowhouse manual*.

New York City Department of Buildings. (2020). *NYC energy conservation codes*. *JobsFirst NYC*. (n.d.). *Sector network: Green economy*. Retrieved September 23, 2024, from <https://jobsfirstnyc.org/solutions/sector-network-green-economy>

New York City Economic Development Corporation. (2024). *Green Economy Action Plan*.

U.S. Census Bureau. (2021). *Subject definitions for the American Community Survey* (p. 44). Retrieved from https://www2.census.gov/programs-surveys/acs/tech_docs/subject_definitions/2021_ACSSubjectDefinitions.pdf

[New York State's Emergency Tenant Protection Act of 1974](#)

City of New York. (n.d.). *PLUTO and MapPLUTO*. New York City Department of City Planning. <https://www.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page>