Appendix 2: Built Parking and Affordable Housing Technical Appendix

Introduction

The Inner Ring is comprised of dense, urban, transit rich neighborhoods just beyond the Manhattan Core, including Upper Manhattan and portions of the Bronx, Queens and Brooklyn. As part of the Inner Ring Parking Study, research pertaining to new residential buildings (1998-2008) included: identifying new residential developments, determining which were new buildings were publicly subsidized by the NYC Department of Housing Preservation and Development (NYCHPD), calculating the number of parking spaces required by existing zoning, assessing the number of NYS Department of Motor Vehicles (NYSDMV) registrations, and using field surveys and NYC Department of Buildings (NYCDOB) Certificates of Occupancy to determine how much parking was built.

This Technical Appendix supports and supplements the Inner Ring Parking Study report chapters pertaining to Built Parking and Affordable Housing. It contains the following sections:

1) Data Sources for New Residential Buildings Research
2) New Residential Buildings: Building Size Trends Based on Year Built
3) Parking Requirements for New Residential Developments
4) Methodology for Built Parking Survey
5) Case Studies for Parking Supply

Data Sources and Methodology for New Residential Buildings Research

Primary data sources for the new residential buildings research were:

- MapPLUTO 2009, together with the DOB Certificate of Occupancy (C of O) and Milestone database, to identify 12,486 new residential buildings constructed in the Inner Ring between 1998 and 2008. These databases provided the year built, zoning, and building class, number of units, lot size and width, and address, allowing DCP to calculate proximity to transit.
- The New York City Department of Building's (NYCDOB) C of O filings to determine the number of off-street parking spaces for buildings surveyed, where such information was available.
- The New York City Department of Housing Preservation and Development (HPD) inventory of new developments to identify publicly assisted housing and nonprofit housing for the elderly.
- The New York City Department for the Aging (DFTA)'s website to provide a supplemental list of residences that served as nonprofit housing for the elderly.
- The New York City Department of Consumer Affairs (DCA) inventory of public parking facilities to identify residential buildings with public parking facilities.
- New York City Zoning Resolution to calculate required accessory parking.
- The New York State Department of Motor Vehicles (NYS DMV) vehicle registration data for New York City addresses from 2008, which were geocoded by DCP and matched with the buildings list, to determine the number of cars registered to each new residential building address.
- The American Community Survey (2007-2009) to determine the relationship between income and vehicle ownership within the study area.

DATA INTEGRITY

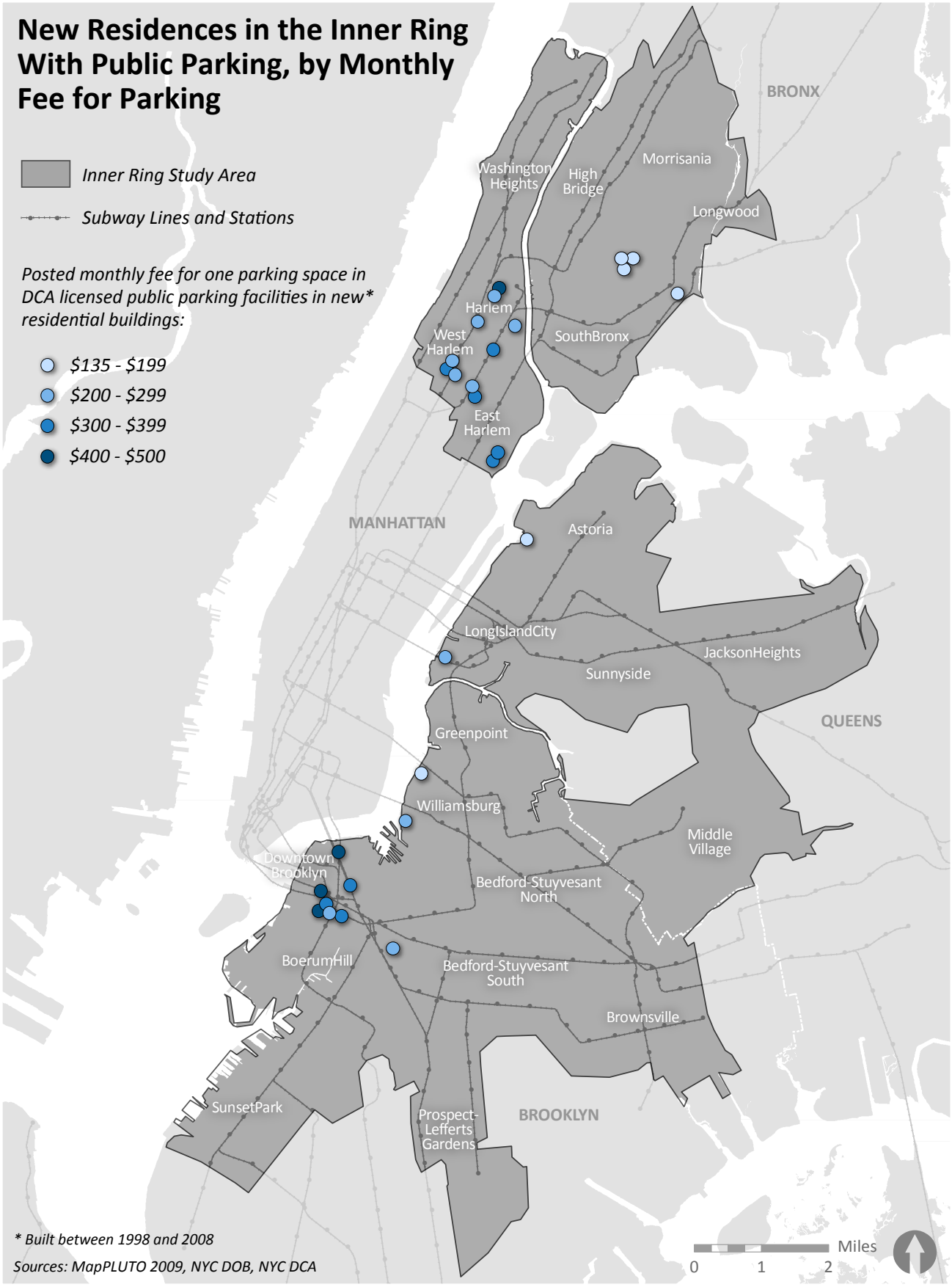
In cases where there were discrepancies between data sources, staff conducted additional research. For example, in cases where MapPLUTO provided a number of residential units that differed from DOB's record of the same development, staff verified information using Google Street Views, the building's C of O, and field survey data if available. Additionally, for certain analyses, subsets of new building records were excluded if they were not applicable. For example, for the DMV vehicle registration analysis, new residential developments that contained residential units but functioned as community facilities (such as group homes for special populations) were not included. For purposes of this study, mixed-use buildings (where another use exists in addition to residential units) were included in the new buildings analysis as long as the building contained residential units. Mixed-use buildings accounted for approximately five percent of new residential construction in the Inner Ring (about 620 of the overall 12,486 buildings) and made up approximately nine percent of the survey sample (about 208 of the overall 2,311 buildings that were surveyed).

PUBLICLY SUBSIDIZED AND SENIOR HOUSING

Of the 12,486 new residential developments, approximately one-third were built through programs administered by NYC HPD and are considered "publicly subsidized" for the purposes of this study. These housing developments were identified using a database of new residential developments that was provided by HPD. The database included a range of building types, target income groups, and funding sources, from one- and two-family homes to large rental apartment buildings; and from middle-income homeownership units to rentals for low-income seniors. Additional new residential developments were categorized as senior housing if they appeared on the New York City Department for the Aging (DFTA)'s website as senior housing facilities.

PUBLIC PARKING

New York City Department of Consumer Affairs (DCA) data was used to identify all of the new residential buildings within the Inner Ring that contained a licensed public parking facility. This dataset revealed that over one-quarter (29 percent) of the new residential buildings with more than 99 units had a DCA-licensed public parking facility, ranging in capacity from 33 to 828 spaces. Field surveys of these sites were used to record the posted monthly parking rate where such data was available. The average posted monthly parking rate for the 28 DCA facilities surveyed as part of this study was $288 per month, with borough averages ranging from $329 in Brooklyn to $162 in the Bronx. While the posted DCA parking rates are the maximum amounts that can be charged, discussions with staff at surveyed DCA-licensed parking facilities indicated that there were substantial discounts available for monthly parkers, especially those living in the building.


New Residences in the Inner Ring With Public Parking, by Monthly Fee for Parking
Inner Ring Study Area
Subway Lines and Stations
Posted monthly fee for one parking space in DCA licensed public parking facilities in new* residential buildings:
$135 - $199
$200 - $299
$300 - $399
$400 - $500
BRONX
Washington Heights
High Bridge
Morrisania
Longwood
Harlem
West Harlem
SouthBronx
East Harlem
MANHATTAN
Astoria
LongIslandCity
JacksonHeights
Sunnyside
QUEENS
Greenpoint
Williamsburg
Middle Village
Downtown Brooklyn
Bedford-Stuyvesant North
BoerumHill
Bedford-Stuyvesant South
Brownsville
SunsetPark
Prospect-Lefferts Gardens
BROOKLYN
* Built between 1998 and 2008
Sources: MapPLUTO 2009, NYC DOB, NYC DCA
Miles
0
1
2

VEHICLE OWNERSHIP BASED ON VEHICLE REGISTRATIONS

In order to examine the relationship between the off-street residential parking supply and vehicle ownership, the NYS DMV vehicle registration data from 2008 was geocoded to match the 12,486 new residential buildings within the Inner Ring study area. As stated in DCP's 2009 *Residential Parking Study*, DMV vehicle registrations often under represent vehicle ownership rates in New York City because many residents register their vehicles elsewhere to reduce what would often otherwise be extremely high insurance costs. Despite its limitations, the 2008 DMV data serves as the most accurate information available to assess vehicle ownership in New York City at the address level for buildings constructed between 1998 and 2008.

Several analyses were performed for this report using 2008 DMV registration data that is matched by address with new residential developments. In order to account for lag time between a building's completion date and the time of the building's full occupancy, as well as the likelihood of a delay before a resident submits the new address for a vehicle registration to the DMV, all non-publicly subsidized buildings constructed after 2004 were excluded from these analyses. In publicly subsidized HPD developments, buildings that were constructed after 2006 were excluded. Less lag time was assigned to publicly subsidized developments because there are often waiting lists for new residents, and the buildings tend to reach full occupancy faster than non-publicly subsidized units. Because of this methodology, some sample sizes that include vehicle registration data are smaller than for other analyses.[1]

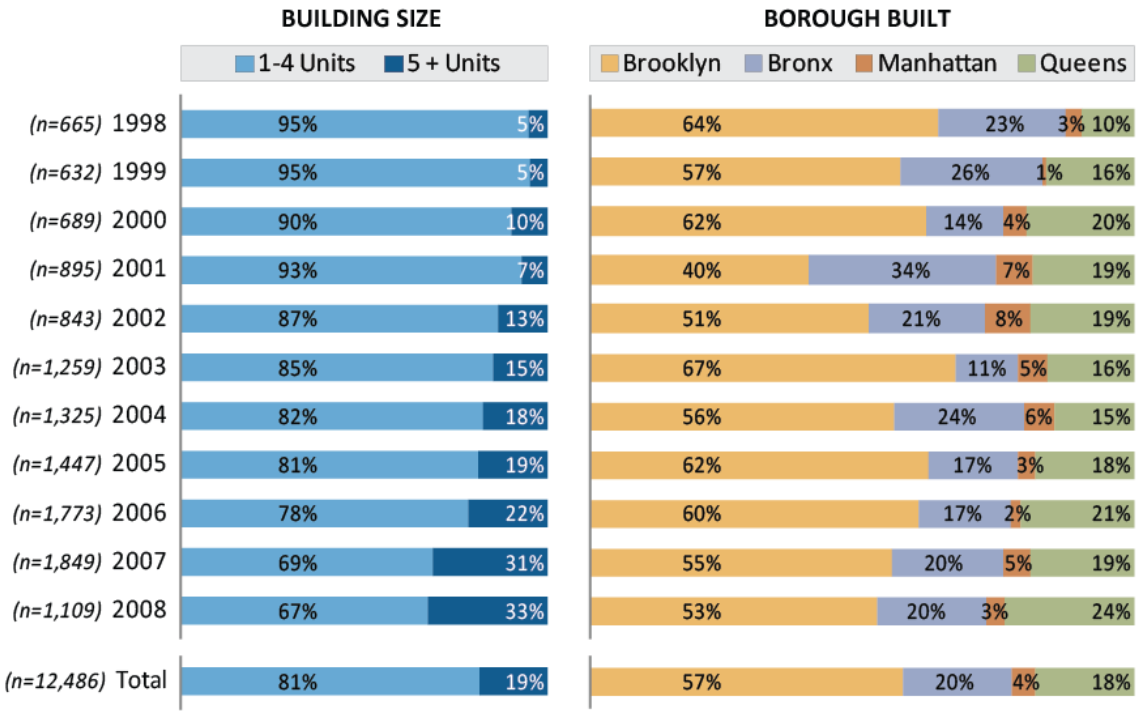
[1] The ratio of vehicles to unit counts an only vehicle registered to new residential building site addresses, and does not account for vehicles owned by residents of these buildings but registered at another location. The prevalence of out-of-state registrations in some neighborhoods, especially parts of Brooklyn, suggests that overall registration rates are somewhat higher than reported here.

New Residential Buildings Research: Building Trends Based on Year Built

Of the 12,486 new residential buildings constructed in the Inner Ring between 1998 and 2008, the majority of new residential construction occurred after 2003. While most buildings in the Inner Ring have fewer than five units, there has been a trend toward larger buildings in recent years: in 2008 one-third of new residential buildings within the Inner Ring had five or more units, compared to 5 percent in 1998.

In every year between 1998 and 2008, except for 2001, more than half of the new residential buildings in the Inner Ring were located in Brooklyn.

Annual Trends for New Buildings in the Inner Ring



Parking Requirements for New Residential Developments

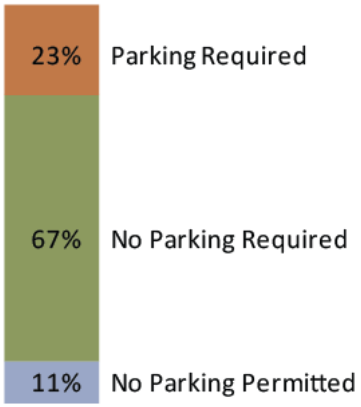
OVERVIEW AND METHODOLOGY

To compare the minimum number of residential parking spaces required for developments within the Inner Ring to the number of spaces actually built from 1998 to 2008, zoning regulations were was used to calculate the number of parking spaces required. This research revealed that over two-thirds of new buildings in the Inner Ring (67 percent) did not require off-street parking, mainly because most new residential buildings were small enough to be eligible for parking waivers.

The number of parking spaces required by zoning regulations varies with many factors, including density of the zoning district, development lot size, number of residential units, and whether the housing is for a special population (low income or senior). Buildings may opt to waive required parking if the number of required spaces is small. For example, in R6 districts, waivers are available if 5 or fewer parking spaces are required. When parking requirements were calculated for this study, where the Infill option (R4 and R5 districts) or the Quality Housing option (R6 through R10 districts) was available, parking requirements for Infill and Quality Housing were used, to reflect the lowest potentially applicable requirement. Because of the large number of new buildings, 2009 zoning was used because of the additional labor involved in determining which zoning regulations were in effect when each building was developed on a case-by-case basis. Zoning requirement calculations were performed for all 12,486 new buildings within the Inner Ring, of which 12,317 had a residential parking requirement that could be determined. It is important to note that some new buildings analyzed in this study were built to comply with zoning in place at the time of development, but which was no longer mapped at that location in 2009.

When zoning requirements were calculated for new residential buildings within the Inner Ring, less than one-quarter of new buildings had "Parking Required." The category "No Parking Permitted" means a provision in the Zoning Resolution prohibits parking. Parking is prohibited in certain instances, such as within the Atlantic Avenue Sub-district of the Downtown Brooklyn Special District where no curb cuts are permitted, and in districts with a "B" suffix where lot widths fall below the minimum for which a curb cut is allowed to access parking (such as a building located on a lot less than 40 feet wide in an R6B district). "No Parking Required" generally means the building qualified for a waiver based on its zoning district, number of units, and number of spaces which would have been required.

Total Parking Requirements for New Buildings in the Inner Ring



(For new buildings in the Inner Ring whose off-street parking requirements were able to be calculated, n=12,317)

EXISTING RESIDENTIAL ZONING

Widely mapped residential zoning districts in the Inner Ring include R5, R6, R6B, R7-1, and R7-2. Almost half of the new residential buildings constructed between 1998 and 2008 within the Inner Ring (47 percent) are located in an R6 district.

R5, R6, R6B, R7-1 and R7-2 districts all have off-street parking requirements:

- R5 districts require off-street parking for a minimum of 85 percent of units. Waivers are not permitted in R5 districts. In areas that are already largely developed, R5 zoning permits infill development, which requires off-street parking for 66 percent of residential units.

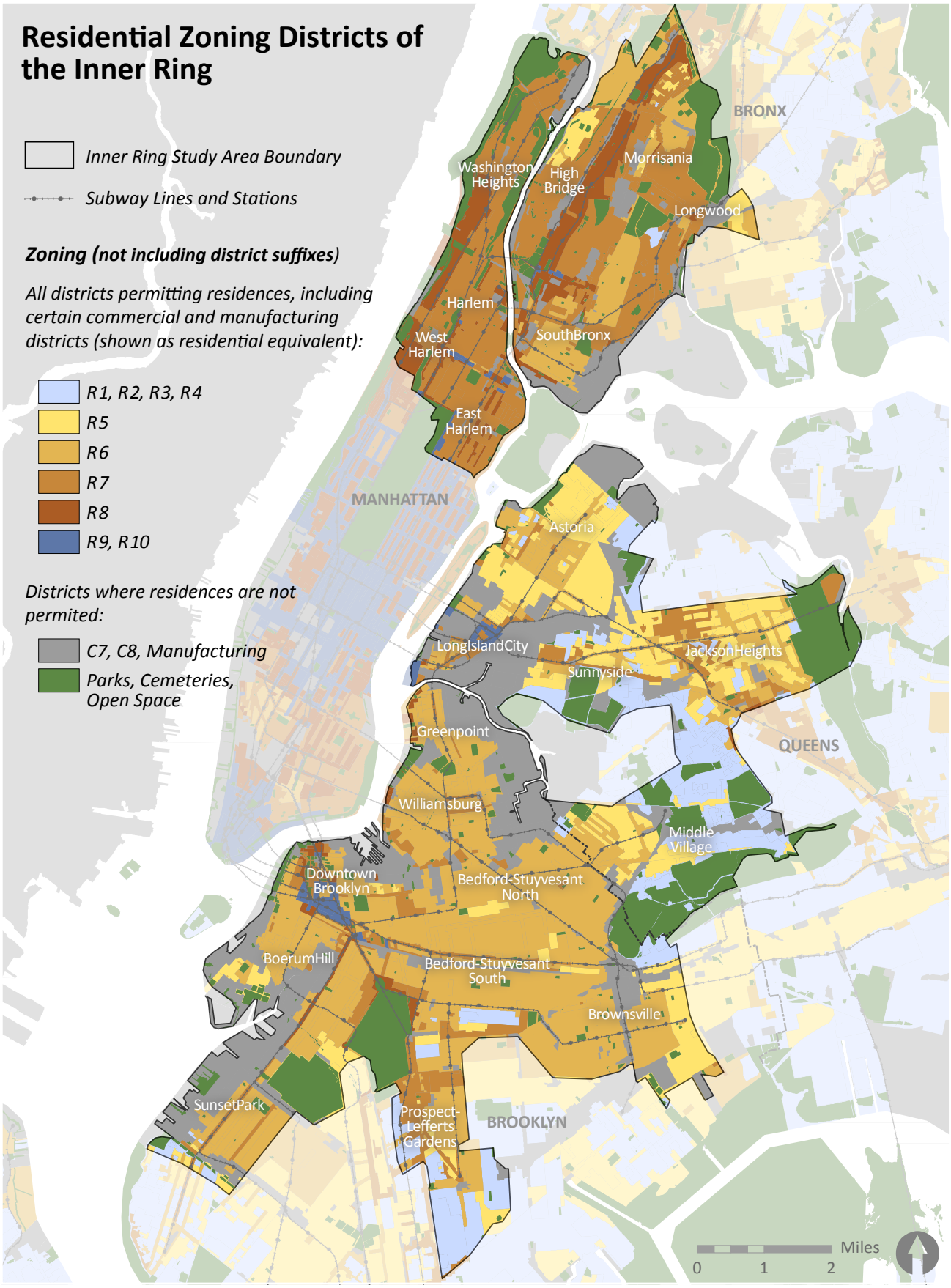
- R6, R7-1 and R7-2 districts, which typically produce medium-density, multi-family apartment buildings, offer two options for bulk and parking regulations under which new buildings may be constructed. The parking requirement can be waived if five spaces or fewer are required in R6 or R7-1 districts, or 15 spaces or fewer in R7-2 districts.

    - The "height factor" regulations produce tall buildings with a substantial amount of open space, half of which can be used for parking. With more space available for parking, these regulations require 70 percent parking in R6, 60 percent in R7-1 and 50 percent in R7-2.

    - The alternative Quality Housing Program produces high-coverage buildings with less open space, and requires off-street parking for 50 percent of the residential units. In R7-1 districts, the requirement is reduced to 30 percent on lots of less than 10,000 square feet. In R7-2 districts, a requirement of 30 percent applies for lots of less than 15,000 square feet, and parking is not required for lots of 10,000 square feet or less. Parking may be located anywhere on the lot, but cannot occupy more than half the required open space.

- R6B districts require parking for 50 percent of units, but requirements may be waived if five spaces or fewer are required. Additionally, R6B districts prohibit curb cuts on lots narrower than 40 feet.

- New residential units in the Inner Ring are also found in commercial and certain manufacturing districts. Regulations for residences in districts refer to a residential district equivalent to determine the required parking.


Residential Zoning Districts of the Inner Ring
Inner Ring Study Area Boundary
Subway Lines and Stations
Zoning (not including district suffixes)
All districts permitting residences, including certain commercial and manufacturing districts (shown as residential equivalent):
R1, R2, R3, R4
R5
R6
R7
R8
R9, R10
Districts where residences are not permited:
C7, C8, Manufacturing
Parks, Cemeteries, Open Space
BRONX
MANHATTAN
QUEENS
BROOKLYN
Washington Heights
High Bridge
Morrisania
Longwood
Harlem
West Harlem
SouthBronx
East Harlem
Astoria
LongIslandCity
JacksonHeights
Sunnyside
Greenpoint
Williamsburg
Middle Village
Downtown Brooklyn
Bedford-Stuyvesant North
BoerumHill
Bedford-Stuyvesant South
Brownsville
SunsetPark
Prospect-Lefferts Gardens
Miles
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2

New residences are typically not permitted within C8 districts or in manufacturing districts. For this reason, there are no off-street parking provisions for residential units in manufacturing districts, except for mixed-use manufacturing-residential districts. The underlying zoning applies to parking in Special Mixed-Use Districts (Article XII, Chapter 3), but not in the Special Long Island City Mixed-Use District (Article XI, Chapter 7). Special regulations apply within a portion of Long Island City, within which no parking is required for new residences (see figure below).

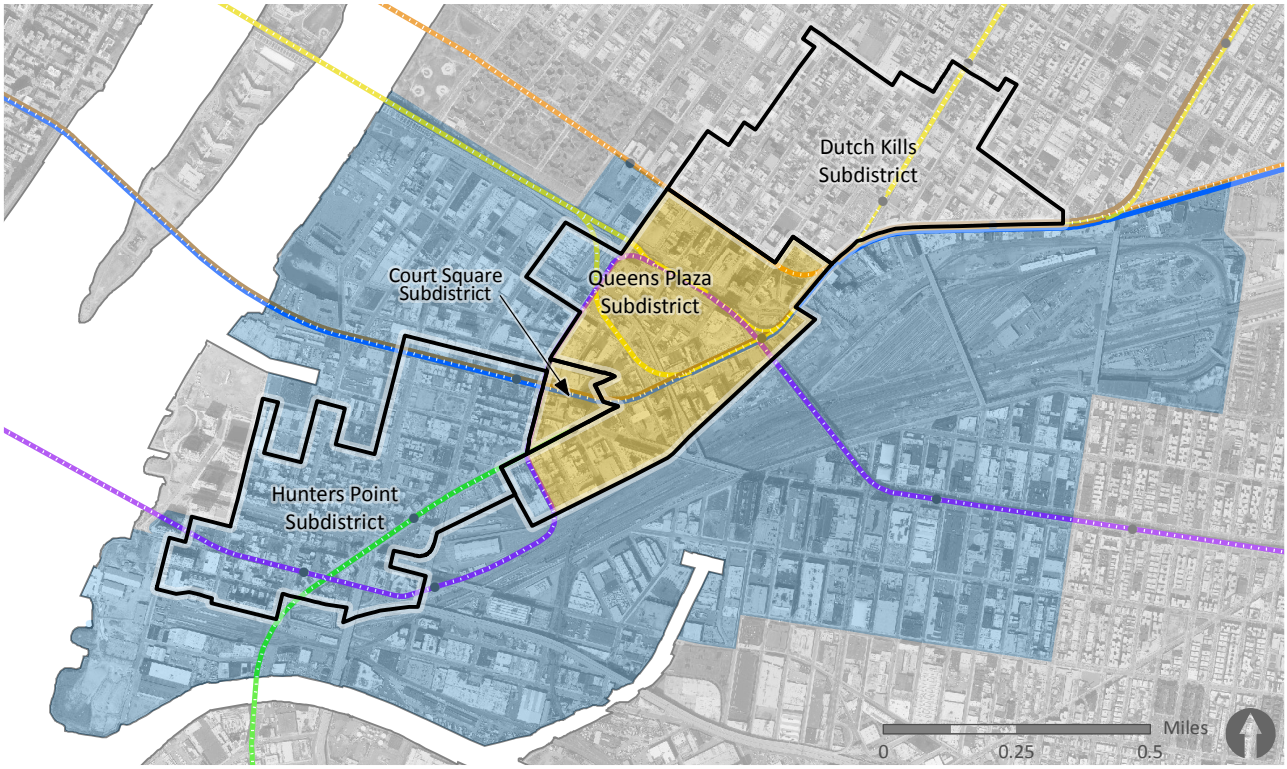
Long Island City Residential Off-Street Parking Regulations

LIC Mixed-Use District with labeled Subdistricts

Long Island City Subject Areas as defined in Article 1, Chapter 3 of the Zoning Resolution:

Area A: Parking spaces cannot exceed half the number of dwelling units

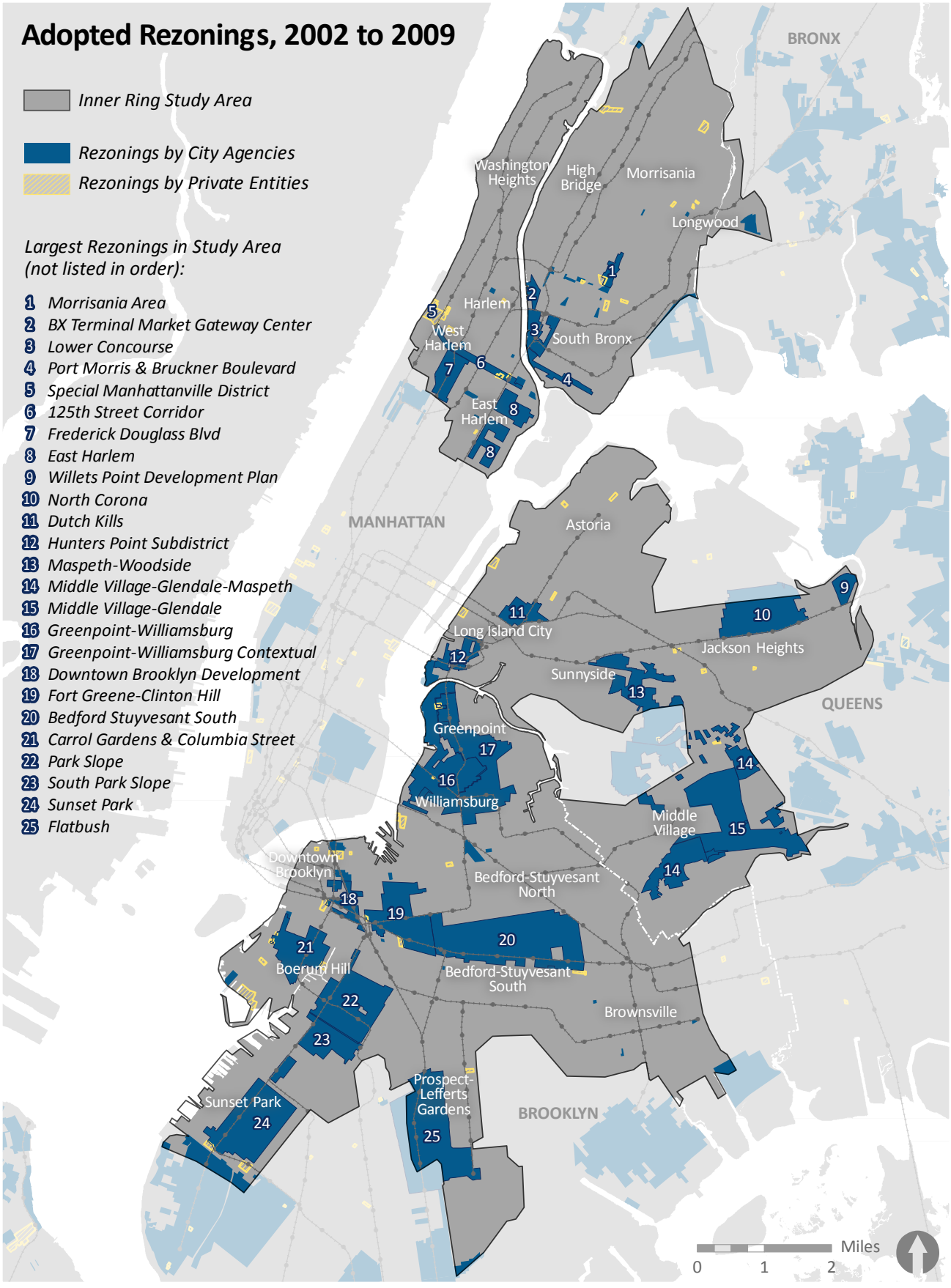
Areas B and C: Parking spaces cannot exceed the total number of dwelling units



Additional Special Purpose Mixed-Use Districts within the Inner Ring are mapped in Fulton Ferry, Flushing/Bedford, Red Hook, Greenpoint–Williamsburg, and Morrisania. These districts include zoning designations such as M1-5/R7A. The residential zoning requirements for each of these districts are used to calculate the off-street parking requirements for the dwelling units. Other Special Purpose Districts that include specific off-street parking provisions within the Inner Ring include the Downtown Brooklyn District, the Madison Avenue Preservation District, the Park Improvement District, and the Transit Land Use District. The Downtown Brooklyn Special District, for example, does not permit curb cuts in the Atlantic Avenue Sub-district.

Some individual sites and several neighborhoods in the Inner Ring such as Stuyvesant Heights, Fort Greene, Clinton Hill, Williamsburg, Bedford Stuyvesant, Morrisania, Concourse Village/ Longwood, Harlem, and Corona have been rezoned since 2002. In some cases, changes to the underlying zoning districts have altered residential parking requirements.

The map on the next page shows adopted rezoning from 2002-2009, and the table that follows contains parking requirement details that were used to determine how many parking spaces were required for new residential developments within the Inner Ring study area.


Adopted Rezonings, 2002 to 2009
Inner Ring Study Area
Rezonings by City Agencies
Rezonings by Private Entities
Largest Rezonings in Study Area
(not listed in order):
1 Morrisania Area
2 BX Terminal Market Gateway Center
3 Lower Concourse
4 Port Morris & Bruckner Boulevard
5 Special Manhattanville District
6 125th Street Corridor
7 Frederick Douglass Blvd
8 East Harlem
9 Willets Point Development Plan
10 North Corona
11 Dutch Kills
12 Hunters Point Subdistrict
13 Maspeth-Woodside
14 Middle Village-Glendale-Maspeth
15 Middle Village-Glendale
16 Greenpoint-Williamsburg
17 Greenpoint-Williamsburg Contextual
18 Downtown Brooklyn Development
19 Fort Greene-Clinton Hill
20 Bedford Stuyvesant South
21 Carrol Gardens & Columbia Street
22 Park Slope
23 South Park Slope
24 Sunset Park
25 Flatbush
BRONX
Washington Heights
High Bridge
Morrisania
Longwood
Harlem
West Harlem
South Bronx
East Harlem
MANHATTAN
Astoria
Long Island City
Jackson Heights
Sunnyside
QUEENS
Greenpoint
Williamsburg
Middle Village
Downtown Brooklyn
Bedford-Stuyvesant North
Boerum Hill
Bedford-Stuyvesant South
Brownsville
Sunset Park
Prospect-Lefferts Gardens
BROOKLYN
Miles
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Zoning Calculations for New Residential Developments

Zoning District	Lot Size	Off-Street Parking Requirement (Spaces/Dwelling Unit)			Waiver if # of required spaces ≤ :	Parking prohibited if lot width is less than:
		For non-publicly subsidized housing	For publicly subsidized housing	For seniors/ non-profit housing for the elderly		
R1-1, R1-2, R2, R2A, R2X, R3X, R3, R3-1, R3-2	All	1.00	0.80			
R3A	All	1.00	0.80	0.35		25 ft
R4	All	0.66	0.66	0.35		
R4-1	All	1.00	0.80	0.35		25 ft
R4A	All	1.00	1.00	0.35		
R4B	All	1.00	1.00	0.35	1	40 ft
R5	All	0.66	0.66	0.315		
R5A	All	1.00	1.00	0.315		
R5B	All	0.66	0.66	0.315	1	40 ft
R5D	All	0.66	0.55	0.225	1	
R6	All	0.50	0.39	0.16	5	
R6A	All	0.50	0.35	0.16	5	
R6B	All	0.50	0.35	0.16	5	40 ft
R7-1	≤ 10,000 ft²	0.30	0.30	0.125	5	
	> 10,000 ft²	0.50				
R7-2	≤ 10,000 ft²	None	None	0.125	15	
	> 10,000 and ≤ 15,000 ft²	0.30	0.25			
	> 15,000 ft²	0.50				
R7-3	≤ 10,000 ft²	None	None	0.125	15	
	> 10,000 and ≤ 15,000 ft²	0.30	0.30			
	> 15,000 ft²	0.50				
R7A, R7D, R7X	≤ 10,000 ft²	0.30	0.25	0.125	15	
	> 10,000 ft²	0.50				
R7B	All	0.50	0.35	0.125	5	40 ft
R8, R8A, R8X	≤ 10,000 ft²	None	None	0.10	15	
	> 10,000 and ≤ 15,000 ft²	0.20	0.20			
	> 15,000 ft²	0.40	0.25			
R8B (Brooklyn)	All	0.40	0.25	0.10	15	40 ft
R8B (Except Brooklyn)	All	0.50	0.25	0.10	15	40 ft
R9A, R9X, R10A	≤ 10,000 ft²	None	None	0.10	15	
	> 10,000 and ≤ 15,000 ft²	0.20	0.20			
	> 15,000 ft²	0.40	0.30			
R9, R10	≤ 10,000 ft²	None	None	0.10	15	
	> 10,000 and ≤ 15,000 ft²	0.20	0.20			
	> 15,000 ft²	0.40	0.25			
R10X	All	None	None	0.10		
C4-1	All	0.85	0.70	0.351		
C4-2, C4-3	≤ 10,000 ft²	0.50	0.39	0.16	5	
	> 10,000 ft²	0.70				
C4-2A, C4-3A	All	0.50	0.39	0.16		
C4-4	≤ 15,000 ft²	0.30	0.30	0.125	15	
	> 15,000 ft²	0.50	0.39			
C4-4A, C4-5D, C4-5X	≤ 15,000 ft²	0.30	0.30	0.125	15	
	> 15,000 ft²	0.50				
C4-4D	≤ 15,000 ft²	0.30	0.30	0.125		
	> 15,000 ft²	0.50				
C4-6, C5-2A	≤ 15,000 ft²	0.20	0.20	0.10	15	
	> 15,000 ft²	0.40	0.30			
C5-4	≤ 15,000 ft²	0.20	0.20	0.125	15	
	> 15,000 ft²	0.40	0.30			
C6-1	≤ 15,000 ft²	0.30	0.20	0.125	15	
	> 15,000 ft²	0.50	0.30			
C6-2, C6-2A, C6-4	≤ 15,000 ft²	0.20	0.20	0.10	15	
	> 15,000 ft²	0.40	0.30			

Notes: In cases were several requirements apply to one building or lot, the most restrictive regulations take precedent. Special Purpose District regulations were applied to parking calculations. In zoning districts where Infill or Quality Housing is permitted, it was assumed that buildings were complying with such regulations.

Methodology for Built Parking Survey

The Inner Ring Parking Study included a survey of approximately 2,500 new residential developments to verify the presence or absence of off-street parking. DCP examined Certificates of Occupancy (C of O) on file to determine the number of off-street parking spaces provided. This research was limited because not all records were available electronically, and many available records did not provide parking space counts even when field visits indicated the presence parking on-site. It was therefore determined that field surveys would be conducted for a sample of about 2,500 of the 12,486 new residential buildings within the study area to confirm or deny the presence of parking at each site. The field visit results were then combined with information from the Certificates of Occupancy to record the number of spaces provided for as many records as possible.

Based on a sampling methodology (described below), between May and November 2009, DCP staff visited 2,525 new buildings to determine the presence of off-street parking. The survey instrument is shown below. Some of the field surveys were deemed invalid (reasons included buildings still under construction, or the building was not new construction) leaving 2,311 records to be included in the final analysis.

Using C of O data, the number of off-street parking spaces was available for approximately two-thirds (64 percent) of the surveyed buildings where off-street parking was confirmed through field surveys (781 out of 1,222). As part of the field work, surveyors were asked to count the parking spaces for each building that had accessory parking. This was not always possible because some or all of the parking spaces were completely enclosed within a garage, or located behind a building or high fence. In some cases where the number of parking spaces was recorded in the field, there were discrepancies with the number of spaces listed on the C of O (when this information was available). In order to resolve these discrepancies, three rules were established for recording built parking data:

- Field visits were deemed the conclusive determination as to whether a new building included parking: even if C of O data reported that a building had parking, if the field visit did not confirm that parking was present, the building was considered not to have parking.
- C of Os were the only source used for the number of built parking spaces: if a field visit confirmed the presence of parking, the number of parking spaces listed on the C of O was used for the built parking analysis.
- For cases where a field visit confirmed the presence of parking but the number of spaces was not available from C of O data, then the number of spaces would be recorded as unknown, but the presence of parking would be reported as confirmed

Survey Instrument

INNER RING FIELD SHEET

CHECK ALL BOXES that apply and make note of any discrepancies. Please look for any literature, brochures or available contact information on site.

Surveyor Name: _____
Date: _____
Time: _____
Batch #: _____

BBL: _____
Map Pluto Address: _____
Year Built: _____
Number of Floors: _____
DOB Parking_____
Units #: _____

BUILDING INFO

Is the address correct: Yes ☐ No ☐

If not, what us the correct address (for the BBL shown on the survey map):_____

Building status: Under Construction ☐ Built but Unoccupied ☐ Built but Occupied ☐ Not Sure ☐

If you can not tell, please explain: _____

How many units are in the building (can be determined by buzzers, mailboxes, etc.):

_____

Please record any information about the superintendent, building management, or real estate broker (if available):_____

BUILT PARKING DATA

Does the building have designated parking on the lot: Yes ☐ No ☐ Not Sure ☐

If you can not tell, please explain: _____

_____

If Yes, it the parking outdoor/indoor (circle one)? Notes: _____

If Yes, how many vehicular entrances are there to the parking facility: _____

If Yes, how many curb cuts are there: _____

Type of parking: **(Check all that apply)** Public (DCA) ☐ Private ☐ Open ☐ Structured ☐

If the building has parking and it is visible from the street please record the number of spaces:

_____

If it is a DCA lot/garage what is the license number: _____

If it is a DCA lot/garage what is the posted capacity: _____

FIELD OBSERVATIONS

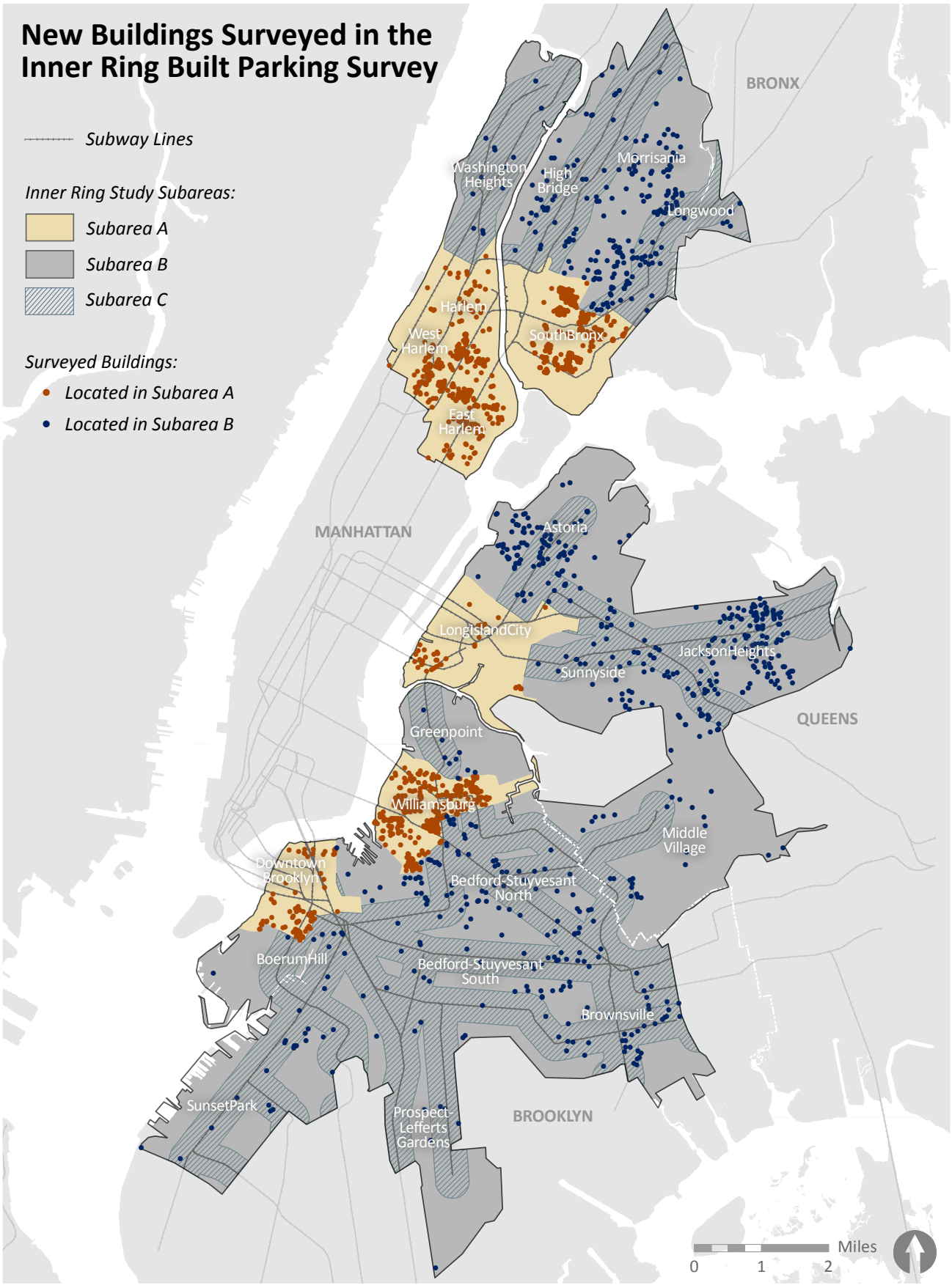
Is the building located on what appears to be subdivided lot? Yes ☐ No ☐

Is there a lot of observed double parking/congestion/parking problems, etc.on the block/area? Yes ☐ No ☐

Additional notes/observations: _____

_____

_____


New Buildings Surveyed in the Inner Ring Built Parking Survey
Subway Lines
Inner Ring Study Subareas:
Subarea A
Subarea B
Subarea C
Surveyed Buildings:
Located in Subarea A
Located in Subarea B
BRONX
Washington Heights
High Bridge
Morrisania
Longwood
Harlem
West Harlem
SouthBronx
East Harlem
MANHATTAN
Astoria
LongIslandCity
Sunnyside
JacksonHeights
QUEENS
Greenpoint
Williamsburg
Middle Village
Downtown Brooklyn
Bedford-Stuyvesant North
BoerumHill
Bedford-Stuyvesant South
Brownsville
SunsetPark
Prospect-Lefferts Gardens
BROOKLYN
Miles
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SAMPLING AND WEIGHTING METHODOLOGIES

Since there were 12,486 new residential buildings within the Inner Ring, and it was not possible to survey all of them to determine the presence of parking, a sampling methodology similar to the one used for the Inner Ring Household Travel Survey was used for the Built Parking Survey. This methodology took into account the large number of small buildings (1-4 unit buildings) compared to larger ones (5 or more units) to assure an adequate sample size of both building types.

To develop the stratified sample that represented both vehicle ownership and subarea geography, the Inner Ring Study Area was divided into three Subareas (A, B, and C) based on proximity to transit and other neighborhood characteristics. These Subareas are shown in the preceding map.

- Subarea A is comprised of ZIP codes where the majority of Census Block Groups:
  - are within a quarter mile of more than one subway line
  - have a low modal split of residents who commute by vehicle
  - have a high population density

  Access to more than one subway line affords greater mobility and flexibility in public transportation travel. This access also means that a greater number of destinations are just a "one-seat ride" from home. Subarea A includes many of the most transit-rich neighborhoods of the city.

- Subarea B is comprised of ZIP codes where the majority of Census Block Groups:
  - are within one-half mile of a single subway line
  - have a higher modal split of residents who commute by vehicle and/or have a somewhat lower population density than "A" zones.

  Subarea B is served by fewer subway options than Subarea A, and certain residents of Subarea B may be more than a comfortable walking distance from the subway line. Still, Subarea B is still considered accessible to public transportation, given that very few residents live beyond a half-mile from a subway line.

- Subarea C is the geographic area within Subarea B located within one-quarter mile from a single subway line.

Subareas A, B and C were further split into individual study areas by borough, recognizing that there might be additional land use, demographic and other variations among borough geographies.

Since staff limitations meant that only about 2,500 surveys could be collected, a stratified random sample was created to ensure that a statistically valid number of surveys (at least 75) were collected from 16 different strata, defined by 8 Subareas, each divided into 1-4 unit buildings and 5-or-more-unit buildings. Since Subarea A contained about 1,700 new residential building sites, it was decided to survey all of the sites in Subarea A (except for those with more than one residential building on the tax lot) and a sample of approximately 800 from Subareas B & C. In all, 2,525 surveys were conducted of which 2,311 were valid.

When the survey data was analyzed, a "weight" was applied to each survey within its stratum to reflect the proportion of buildings for the stratum that made up the Inner Ring. The weight value ensured that when the data was analyzed the quantity of surveys within each stratum versus all surveys collected was proportional to the quantity of all new buildings within the same stratum versus all new buildings in the Inner Ring. All charts within the reports reflect statistics that are based on weighted surveys. The "n" numbers on the charts, however, reflect the unweighted number of surveys that were collected in order to clarify the statistical validity of the sample.

As an example of the weighting methodology, for the stratum of "Brooklyn Subareas B & C, 5-or-more-unit buildings," there were 1,014 buildings, representing 8 percent of the 12,488 [2]buildings in the Inner Ring. Within this stratum, 92 surveys were collected, representing 4 percent of the 2,311 collected surveys. To account for this discrepancy, each of the 92 surveys within the stratum "Brooklyn Subareas B & C , 5-or-more-unit buildings" was assigned a weight of 2.004, making the weighted total value of surveys for this stratum 188. The adjusted weighted 188 surveys represented 8 percent of the 2,311 surveys collected in the Inner Ring, just as the 1,014 new buildings in this stratum represent 8 percent of the 12,488 new buildings in the Inner Ring.

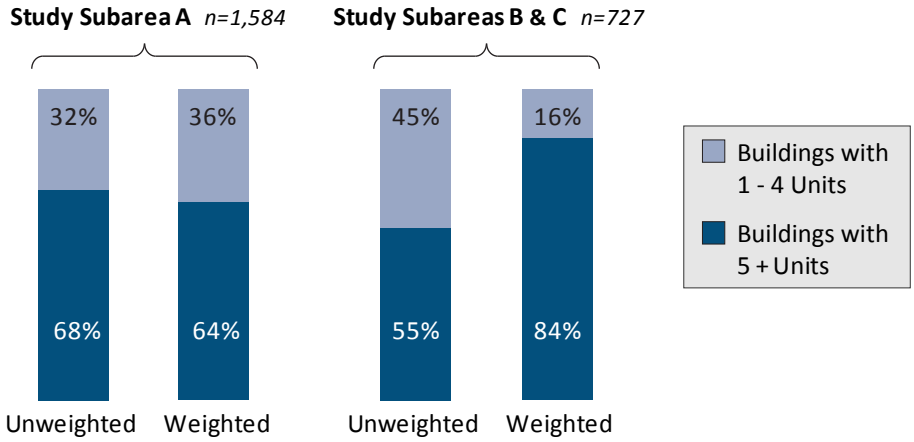
This methodology was replicated so that surveys within each stratum were weighted to reflect the appropriate amount of influence when calculating the survey results. In terms of "n" numbers on the charts, if a survey question was analyzed for "Brooklyn Subareas B & C, 5-or-more-unit buildings" the "n" number on the chart would be would be 92, reflecting the actual number of surveys collected, rather than 188 which is the total of survey weights for the stratum. Because the vast majority of the new buildings in Subarea A were surveyed, compared to only a small portion of those in Subareas B & C, the weights had a far greater effect on Subareas B & C survey sites.

Percent of New Residential Buildings Surveyed, By Study Subarea

Study Subarea	New Buildings	Surveyed Sites	Valid Surveys	Percentage of New Buildings With Valid Surveys
Brooklyn: A	672	595	516	77 %
Brooklyn: B & C	6,489	220	203	3 %
Brooklyn: A	573	572	559	98 %
Bronx: B & C	1,934	220	211	11 %
Manhattan: A & C	535	535	472	88 %
Queens: A	44	44	37	84 %
Queens: B	1,322	171	157	12 %
Queens: C	917	170	156	17 %
Entire Inner Ring Study Area	12,486	2,527	2,311	19 %

[2] At the time when the weighting methodology was established, 12,488 new buildings were identified. Since that time, the number of buildings has been corrected to 12,468, having no substantive effect on the weighting process.

Comparison of Weighted and Unweighted Surveys by Study Subarea and Building Size



Determining the Weight Value for Surveyed New Residential Buildings, by Stratum

Stratum (study subarea; building type)		Total New Buildings (universe)	Percent Distribution (universe)	Valid Surveys (sample)	Percent Distribution (sample)	Stratum Weight $\left(\frac{\text{universe distribution}}{\text{sample distribution}}\right)$	Weighted Cases per Stratum
Brooklyn: A	1 - 4 units	322	2.6	242	10.5	0.246	60
Brooklyn: A	5 or more units	350	2.8	274	11.9	0.236	65
Brooklyn: B & C	1 - 4 units	5,475	43.8	111	4.8	9.128	1013
Brooklyn: B & C	5 or more units	1016	8.1	92	4	2.044	188
Bronx: A	1 - 4 units	539	4.3	529	22.9	0.189	100
Bronx: A	5 or more units	34	0.3	30	1.3	0.210	6
Bronx: B & C	1 - 4 units	1,702	13.6	122	5.3	2.582	315
Bronx: B & C	5 or more units	232	1.9	89	3.9	0.482	43
Manhattan: A & C	1 - 4 units	296	2.4	290	12.5	0.189	55
Manhattan: A & C	5 or more units	239	1.9	182	7.9	0.243	44
Queens: A	1 - 4 units	9	0.1	8	0.3	0.208	2
Queens: A	5 or more units	35	0.3	29	1.3	0.223	6
Queens: B	1 - 4 units	1,136	9.1	89	3.9	2.362	210
Queens: B	5 or more units	186	1.5	68	2.9	0.506	34
Queens: C	1 - 4 units	675	5.4	82	3.5	1.523	125
Queens: C	5 or more units	242	1.9	74	3.2	0.605	45
Entire Inner Ring Study Area		12,488	100.0	2,311	100.0		2,311

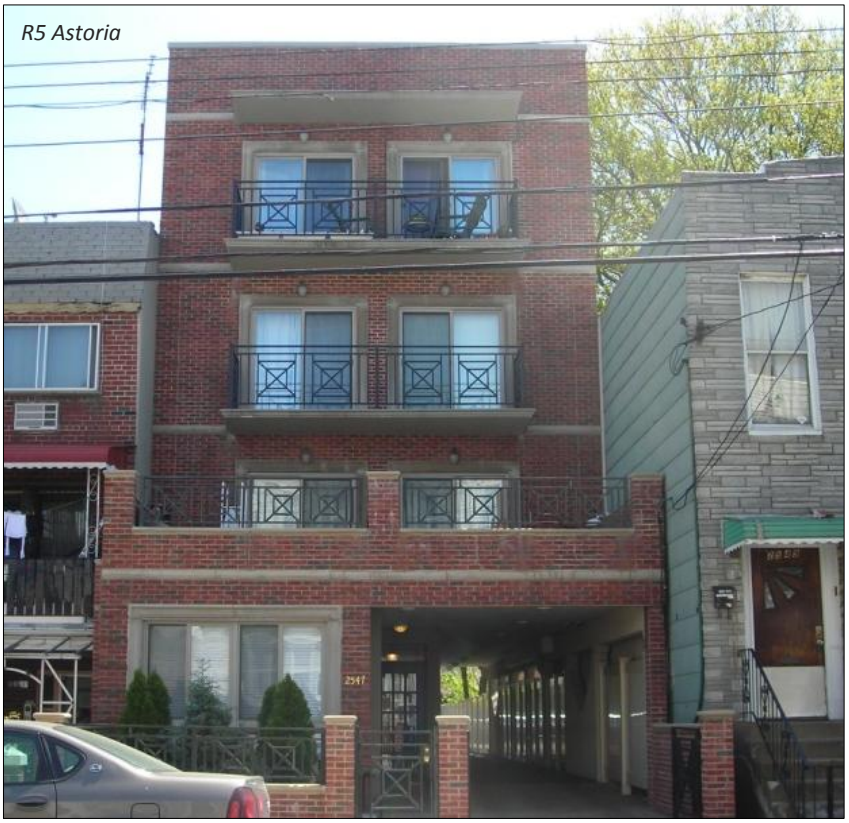
Parking Supply Case Studies

This section provides several case studies intended to illustrate how new buildings responded to off-street parking requirements. Although zoning guides off-street parking, the amount of parking built varies based on developer decisions. Some developers choose to provide more parking than required, while others may have subdivided the lot to produce several buildings, each small enough waive out of the parking requirement. The following cases describe several individual buildings located in the most common zoning districts in the Inner Ring. The buildings in this section were all surveyed for the off-street parking analysis and had a Certificate of Occupancy that listed the number of off-street parking spaces.

R5 District:

The building photographed here is located in Astoria, Queens. Built in 2006, the four-story building contains eight residential units. Assuming this building was constructed as Infill, under R5 zoning, off-street parking is required for 66 percent of units, resulting in five required parking spaces. R5 and R5 Infill zoning districts do not permit waivers.

In this case, the developer provided seven parking spaces, which exceeds the accessory parking requirement. This building has an extended driveway with seven parking spaces located behind the building.



R6 District:

These buildings photographed in Williamsburg, Brooklyn constitute five adjacent and identical four-story buildings, each containing eight residential units. Built in 2005, this set of buildings appears to be a single site subdivided into multiple buildings and developed pursuant to the R6 Quality Housing Option, under which parking is required for 50 percent of units. Under R6 zoning, the parking requirement can be waived if five or fewer spaces are required. Each building has eight units, and requires only four parking spaces, making them all eligible for the parking requirement waiver. Pursuant to the waiver, parking was not provided for these buildings. Had the five buildings been developed as one building with 40 residential units, 20 parking spaces would have been required.


R6 Williamsburg

This building in Park Slope, also located in an R6 district, was built in 2008 and provided off-street parking. The four-story building has 13 residential units. In accordance with the R6 Quality Housing option, off-street parking was required for 50 percent of the units. Therefore, seven spaces were required. The waiver of five spaces or less for R6 zoning was not available for this building. In this case, the developer provided eight accessory off-street parking spaces, located in an enclosed garage – one more space than the minimum required.


R6 Park Slope

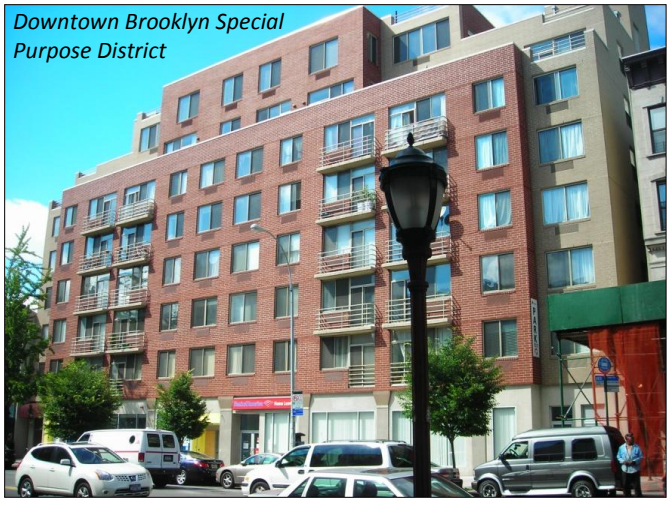
Publicly Assisted Housing in R6 District:


R6 Publicly Assisted Building, Mott Haven/Port Morris

The R6 building in shown here is located in the Mott Haven/Port Morris area of the Bronx. This building was built in 2002 under the Partnership New Homes Program, a joint project between HPD, the State of New York, and the Housing Partnership Development Corporation that produces affordable one- to two-family condos, townhouses, and two- to three-family homes.

This development consists of several row houses, each with three residential units. A publicly assisted building in an R6 zoning district developed pursuant to the Quality Housing option has a minimum off-street parking requirement for 35 percent of residential units. In a three unit building, this would result in a requirement of one parking space. Since a parking waiver for five or fewer parking spaces is available publicly in R6 districts, this development did not require accessory parking. However, in this case, the developer chose to include a paved driveway located in front of at least one of the row houses with a parking space for one vehicle.

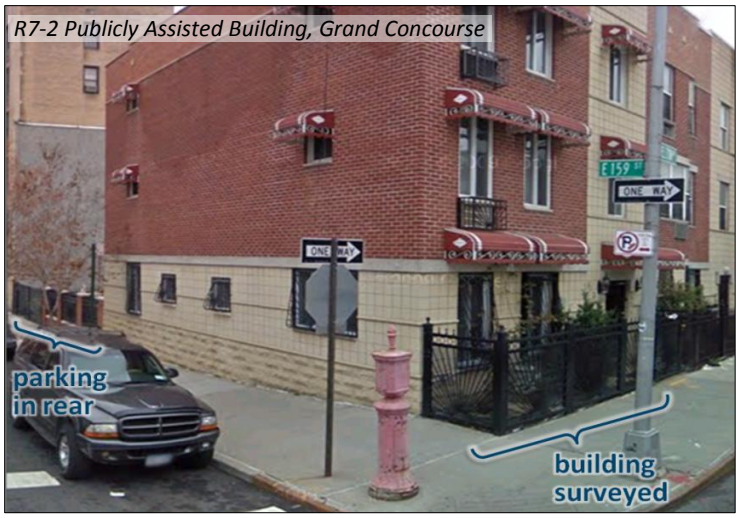
R6B/R7A Special Purpose District:


Downtown Brooklyn Special Purpose District

Located in Subarea B, and built in 2006, this eight-story building is located partially in an R7A and partially in an R6B district within the Atlantic Avenue Sub-district of the Downtown Brooklyn Special District. The building has 71 residential units. Since the building is within the Atlantic Avenue Sub-district of the Downtown Brooklyn Special Purpose District, curb cuts were not allowed on Atlantic Avenue, and accessory parking was not required. Furthermore, in accordance with the Atlantic Avenue Sub-district regulations, parking cannot exceed 40 percent of units or, in this case, approximately 28 spaces. For this development, accessory parking, though not required, is provided for 25 vehicles. The parking is located in the basement of the buildings with its entrance is located behind the building on State Street.

Publicly Assisted Housing in R7-2 District:

The building shown here is located in an R7-2 district in the Grand Concourse neighborhood of the Bronx, in Subarea A. This building was built in 2003 under the Partnership New Homes Program. It has three residential units and was constructed on a 23,000-square foot lot. Under the Quality Housing Option, a publicly assisted building in an R7-2 district is required to provide off-street parking for 30 percent of the units. Therefore, the minimum parking required for this building would be one parking space. Since R7-2 districts permit waivers for up to 15 parking spaces, this building does not require parking. However, the developer did not use the waiver and provided two parking spaces located in a driveway behind the building.

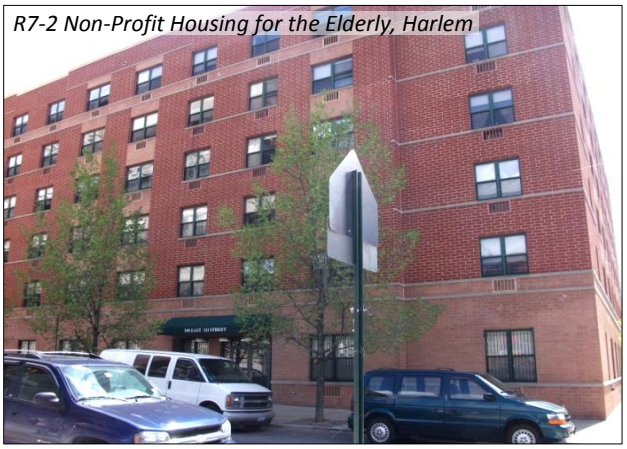


R7-2 Publicly Assisted Building, Grand Concourse

Housing for the Elderly in R7-2 District:

The building in the two photos below is located in the East Harlem neighborhood of Manhattan. This building was built in 2001 under the Section 202 Program, which provides housing for low-income seniors. Different off-street parking requirements apply to buildings which Section 25-25 of the Zoning Resolution defines as "Non-Profit Housing for the Elderly." Parking requirements for these of buildings are lower than publicly assisted housing. However, waivers are not permitted for this type of housing.

The building has 93 residential units. Nonprofit housing for the elderly located in R7-2 districts requires off-street parking for 12.5 percent of the total number of units. This building is therefore required to have 12 parking spaces. The 12 required parking spaces were included as part of the development and are located behind the building.


R7-2 Non-Profit Housing for the Elderly, Harlem


Rear Parking in Same Building

M1-5/R7-3 Special Purpose District:

The nine-story building shown below is located in Long Island City, in Study Subarea A. Built in 2006, this building contains 66 units. The building is located in an M1-5/R7-3 district within the Queens Plaza Subdistrict of the Long Island City Special Mixed-Use District. R7-3 Districts are only found within waterfront areas and in the Special Mixed-Use Districts. The Long Island City Special Mixed-Use District is further divided into different "Subject Areas" in Article I, Chapter III of the Zoning Resolution, which are different from the Subdistricts, and apply additional regulations. This building is located in "Subject Area C", which contains specific regulations governing use, bulk, and floor area.

M1-5/R7-3 Special Purpose District, Long Island City

The parking regulations in the Queens Plaza Subdistrict require no parking for new residences, and mandate that residential buildings cannot contain more than one space per 2,000 square feet of floor area, or 250 spaces, whichever is less. Tighter regulations govern this building because it also lies within the "Long Island City Subject Area C." This establishes that if off-street parking is provided, the number of accessory off-street parking spaces cannot exceed 50 percent of units, or 200 spaces, whichever is less. It also designates that parking spaces must be completely enclosed within the building and used exclusively by occupants of the residential units.

Off-street parking is not required for this building, but the developer provided 33 parking spaces which is the maximum allowable amount of off-street parking for this building. Parking is located in a garage within the building.

Parking Garage in Same Building