

THE FUTURE OF PIER 76

URBAN PLANNING STUDIO FINAL REPORT

Columbia GSAPP

May 2019



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Spring 2019
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PROJECT BACKGROUND

Site Location

Pier 76 sits in the very western edge of Midtown West, just south of Hell’s Kitchen and north of the developing Hudson Yards neighborhood, encompassed within Manhattan Community Board 4. The pier is about 100 yards north of the intersection of 12th avenue and 34th street behind Javits Convention Center, and is designated to become part of Hudson River Park. The neighboring piers are either currently part of Hudson River Park or are in the plans to be integrated into the park. Pier 76 spans 550 acres and is currently home to the New York Police Department (NYPD) Tow Pound, Roula Cycling, as well as the Classic Car Club of Manhattan.



Hudson River Park

Hudson River Park was created with the passing of the Hudson River Park Act (the Act) in 1998. The Act also created the Hudson River Park Trust, the governing body of the park. The Act was passed following the collapse of the West Side Highway and the ultimate rejection of a 1972 plan to create an underground highway along the shoreline. Construction on the park proceeded after its creation despite a variety of funding and bureaucratic obstacles. In 2012, the park sustained damage from the landfall of Hurricane Sandy, requiring extensive repairs and adding to the debt held by the park. The Act that created the park stipulated that the park must be financially self-sustaining, but a lack of steady streams of revenue has made it difficult for the park to reach that goal. In 2013, in an effort to increase the parks revenue sources, the State legislature passed a bill that allows the park to sell air rights across the street to inland developers. The Hudson River Park Trust also generates income from some of the piers in the park that lease out commercial space. The Act designates Pier 76 as one of these revenue generating piers, stipulating that “at least 50% of the pier footprint was used for passive/active park uses, and the remaining for park/commercial use”. However the NYPD Manhattan tow pound has occupied the pier since 1977, preventing the pier from becoming a part of the park.



Hudson River Park in the 1980's
Hudson River Park Trust



Hudson River Park today
Hudson River Park Trust

Site History

The Hudson River Waterfront was historically used for industry, manufacturing, and shipping. During WWII, the Waterfront was used as a military embarkation point. The piers across the western waterfront fell into decay and disuse as air travel and trucking began to replace shipping and rail as the main modes of commercial transportation.

In the 1980s, after the collapse of the elevated West Side Highway, the Westway proposal for a buried highway along the West Side was floated. The proposal was rejected due to environmentalists' concerns, especially ones regarding the Hudson River striped bass population. Nothing was done for



the West Side Waterfront until 1998, when the state legislature passed the The Hudson River Park Act, designating the area between 59th street and the Battery as a state-run park.

Pier 76 itself was home to about \$21 million worth of new maritime equipment and facilities for the port's shippers in 1964. The 300-foot wide and 635-foot long, single-story terminal was constructed by the Department of Marine and Aviation under a 20-year lease signed in 1961 by United States Lines, as part of a \$25 million Hudson River construction and pier rehabilitation program undertaken by the company. In 1998, the Hudson River Park Act was signed, and Pier 76 became part of the northern section of the four-mile Hudson River Park, across W 34 Street, close to 11th and 12th Avenues. However, in 2007, it was home to the NYPD Mounted Unit with 22,500 square foot stables, a 6,500 square foot heated training ring, spacious box stalls, locker rooms and office space. Today, Pier 76 is a tow pound owned by NYPD and the surrounding area is home to the Hudson Yards mixed-use development.

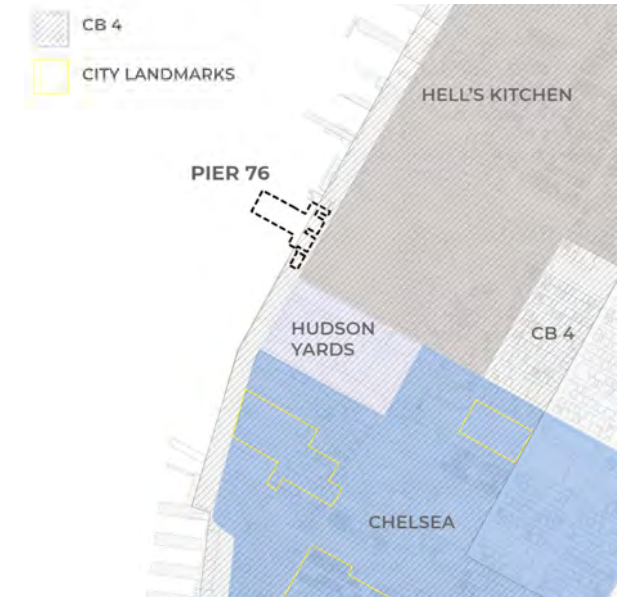


NYPD Tow Pound
Source: Curbed NY

Neighborhood Context

Pier 76 is part of Community Board 4. Surrounding the pier, are three neighborhoods, Hell's Kitchen, Hudson Yards, and Chelsea, each of which are experiencing significant neighborhood change.

Hell's Kitchen is historically a working class neighborhood home to transport, medical, and warehouse-infrastructure. It has transformed to house the arts and entertainment industry, with diverse residents such as actors and financiers. The maritime entertainment section of the Hudson River Park is mostly in Hell's Kitchen.



Source: Department of City Planning

In a decade, Hudson Yards atop the active rail yards at 34th St. and 11th Ave. will resemble Midtown in height and density of buildings. Retail will line major corridors like 34th and 30th St. In the interim, however, sidewalks may be disrupted by construction. The area anticipates 14 acres of gardens, seating areas, and programming. Phase I of , includes 13M SF of the Eastern Yards development, which is to be completed within this month, and the 6.2M SF Phase II development of the Western Yards is set to be complete in 2024, catering primarily to white collar professionals.



Hell's Kitchen



Hudson Yards



Chelsea

Chelsea transformed from predominantly light manufacturing, storage, and auto-related uses to a primarily residential area containing an art gallery district with restaurants, bars, nightclubs, and sports entertainment facilities. The area was historically home to waterfront dock workers, but has become home to an affluent population today. Areas around W21 St and 9 Ave. have been designated as the Chelsea Historic District in 1970 to preserve 30 manufacturing buildings built from 1885-1930. All three neighborhoods are home to a variety of different vibrant communities each with their own developmental and demographic trends.

Demographics

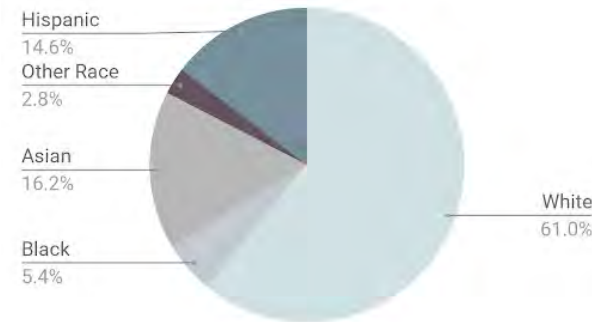
According to the 2012-2016 American Community Survey, Over 72% of residents are employed in the management, business, science, or arts fields, while the remaining tend to be in sales and office. The median household income ranks at the top percentile of median income levels for New York City at \$139,266, with 23% more residents making above \$200,000 than the city average. People tend to live alone in primarily rental units, with 56.4% reported as being single householders and 67% reported as single or never married. Most in the area hold some form of higher education degree, and the neighborhood has a healthy mix of native and foreign born residents. From these numbers, we can preemptively visualize the area around Pier 76 as one populated by mostly single young urban professionals from a fairly educated upper-middle class, a general indicator that the area had experienced significant neighborhood change in the past few decades.

The area surrounding Pier 76 where the current

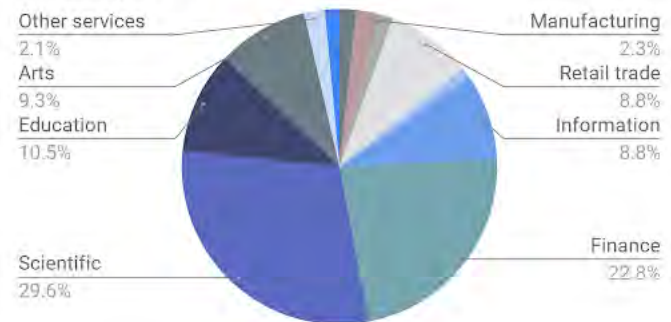


West Side Highway
Source: Savannah Wu

Race



Employment



ACS 2016 5 year estimates

tow pound is located relies mainly on public transit (41.7%) or walking (38.4%) to commute to work, higher than the city average. Eighty-four percent of households do not own a vehicle, and the remaining households have at most one car. Traffic along the West Side Highway in the stretch immediately in front of Pier 76 and behind Javits Convention center averages 25,000-75,000 cars daily, according to the New York Department of Transportation. Traffic in other stretches of the highway can reach up to 300,000 cars daily.

Upland Developments

With the increase in nearby development, many young professionals have moved to the area, and the population is expected to continue to grow. Within Hudson Yards alone, estimates predict roughly 10-12,000 new residents and 40,000 new office users. Although there is an abundance of commercial development to the east of our site, there is a lack of commercial and residential in the area immediately surrounding the pier, which mostly serves parking and public facility uses.



Hudson Yards Under Construction
Source: Hudson Yards

These development projects have not been without controversy, and various community stakeholders have voiced their concern regarding the perceived use and ownership of parks and public spaces in the area. An increase in tourism and noise remain as concerns for residents of Midtown West. Still, these developments exhibit the evolving neighborhood's market vibrance, which increases the urgency of transforming the pier into a park providing an abundance of potential green space for the growing community.



Javits Center Expansion
Source: Javits Center

Developments are happening rapidly in the upland area surrounding the pier, including an expansion of the Javits Convention Center, which includes an exhibition hall and ballroom to be completed by 2021. The expanded convention center will generate \$393 million more in economic activity and bring many more visitors to the area. The development of Hudson Yards also represents a major change in the upland area. Following the conclusion and opening of Phase I in April 2019, the 6.2M SF Phase II development of the Western Yards is set to be complete in 2024, catering primarily to white collar professionals. This is estimated to provide 2,000,000 SF office space, 4,000,000 SF residential space, 100,000 SF retail space, and 120,000 SF of school area. In addition, the Highline has been fully developed up the 34th street.

Open Space

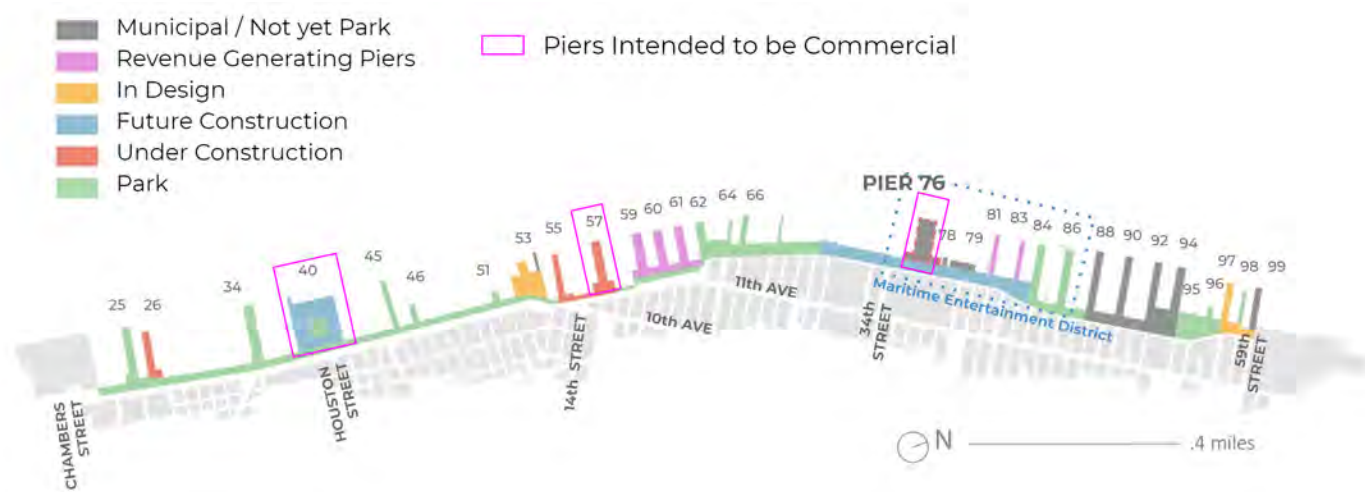
In proximity to the pier, the largest green spaces are the recently developed High Line and Hudson Boulevard. Compared to these two parks, the Hudson River Park differs in shape and size, extending well across the western waterfront with connections to other piers along the greenway. Despite the increase in park space in recent years, and the planned expansions, the neighborhood has no substantial dedicated open park space and new spaces will likely be crowded, providing little solitude for thousands of new residents, workers, and tourists. In addition, the West Side Highway and remaining industrial uses in the area, further limiting residents access to park spaces.

The pier is part of the four mile Hudson River Park,



but in this area the park mainly serves as a paved bike and pedestrian pathway, with little dedicated open space. Because only a few piers within the nearly 550 acre Hudson River Park are designated as revenue generating piers, Pier 76 is under significant development pressure for financially viable uses that are complementary to the 50% park space. The community board 4 has reaffirmed its belief that Pier 76 should be no less than 50% commercial and 50% park space.

Hudson River Park Development



Hudson River Park Trust, Department of City Planning

Zoning Regulations

The Hudson River Park Act dictates the allowable uses to include amusement park and recreational, retail and restaurant, performing arts and entertainment, educational, ferry terminal, and event space. In terms of zoning, the pier is quite restricted in its uses. It is currently zoned M2-3, with a maximum allowed FAR of 2. M2-3 zoning allows for limited commercial uses including retail, entertainment, and boating activities. When concentrated on half of the park's footprint, a value of 2 FAR allows for a four story building.

HRP Act	Hudson River Park Act	At least 50% of footprint as park		
	M2-3	FAR	2.0	
Waterfront Regulation	Public Access on Piers	25% Seaward Edge	40' Landward Edge	15' All Other Water Facing Edges
	Building Height	30'	With Setback: 40'	
	Building Dimensions	200' x 200'		
	Building Spacing	<30' : No Limit	>30' : 100' In Spacing	



Permissible Development under current regulations
Source: Department of City Planning

The waterfront regulations for the area further limit structure size, building height, dimension, spacing, and bulk. These regulations also specify public access to the waterfront, by requiring 25% of the seaward edge, 40' on the landward edge, and 15' on all other water facing edges. However, these regulations do not change the development area on pier 76 much, as most of that area already falls within the park's 50% footprint.



STUDIO MISSION

“

To encourage and expand public access to the Hudson River, to promote public recreational opportunities, provide economic self-sufficiency, and enhance the environmental sustainability of Pier 76, for the local community and its visitors.

Future of Pier 76 Studio Mission

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Why Now?

We believe that certain advancements make the development of Pier 76 more plausible than ever before. Community Board 4 continues to put pressure on the NYPD to relocate the tow pound. On a wider scale, the pier was listed on the Citywide Statement of Needs for 2020-2021, a governmental document through which the city publishes its most pressing needs for each financial year. In addition, the city’s changing relationship with the waterfront places greater pressure for the development of Pier 76 within the community.

An increase in political willpower also presents an opportunity for the pier’s progress. Corey Johnson is not only the city council member for Pier 76’s district, but also considers the pier’s successful development a priority. With his recent election to the Speaker of the New York City Council, he is better positioned to advance the pier’s development. Richard Gottfried, the lead writer of the Hudson River Park Act, continues to have a vested interest in Pier 76’s development and the subsequent completion of Hudson River Park. In addition, the NYPD added the Manhattan tow pound relocation to its Statement of Needs for 2020-2021, which had not been a stated need for previous years.

Increasing community and political willpower combined with the upland development context, put pressure on the NYPD to move the tow pound and create a climate that can support financially feasible development on the pier once the tow pound moves.



A selection of stakeholders that the studio engaged through our process

Client’s Charge

Our client is the Hudson River Park Trust, the governing body for Hudson River Park. The Trust was created out of a partnership between the city and the state to develop and maintain park spaces along the Hudson River waterfront.

Our client’s charge thus stems from the Hudson River Park Act: to explore tow pound relocation, and to propose economically feasible park development options that would pay for pier redevelopment, and provide revenue to support the Hudson River Park.

Therefore, the purpose of this report is to provide the client with the tools to encourage and expand public access to the Hudson River, to promote public recreational opportunities, provide economic self-sufficiency, and enhance the environmental sustainability of Pier 76, for the local community and its visitors.



TOW POUND RELOCATION

NYPD Tow Pound

Despite major community and political efforts over the past 20 years, the tow pound remains a major obstacle to the development of Pier 76 as a park for the surrounding community, and for completion of the Hudson River Park as designated by the Act. Conflicts of interests, costs, and lack of momentum have prohibited the relocation progress.

Fair Share Criteria

The Fair Share Criteria for an Equitable Distribution of City Facilities adopted by the New York City charter in 1989 and formerly drafted in 1991, were not applied to the tow pound, which was already placed on the Pier in 1977 when many of the more onerous municipal uses were relegated to the dilapidated waterfront. Because much of the inland developable open space in Manhattan is considered prime real estate, such undesirable but necessary facilities face opposition when attempting to relocate. However, as the revitalizing of the waterfront continues throughout the city, it becomes harder to argue that the tow pound is the highest and best use for a pier.

In 2017, the New York City Council passed a Fair Share report, which outlined renewed siting guidelines for municipal facilities, and recommended that the Fair Share criteria be updated to reflect the changes in the needs of the city. These new guidelines warn against the deliberate siting of noxious facilities in over-concentrated communities, or in ways that have promoted residential segregation due to ease of planning or cost considerations. The city requires that siting of new facilities take into consideration the “relative fairness” of each site, and applies to “facilities on City-owned or -leased land that are larger than 750 square feet and non-City-owned or -leased facilities that are used primarily for programs that derive at least 50 percent of their budget and more than \$50,000 from contracts with the City.” Any selection or acquisition of city owned sites must also go through Uniform Land Use Review Procedure (ULURP). The ULURP process typically takes 6 months, and requires roughly \$250,000 funds to assemble the required documents for approval, as well as the Environmental Impact Analysis.

Though there has not been a fair share criteria analysis done for city tow pounds, we can assume that the distribution and criteria between a tow pound would be similar to ones used for a waste transfer station, as both are onerous uses. The 2017 Fair Share Report stated that waste transfer stations have historically been situated disproportionately in areas home to communities of color, exposing those residents to increase traffic from sanitation trucks, noise, and dirtier air. Since 2006, NY Department of Sanitation (DSNY) has tried to ensure that the “impacts of the commercial waste system are more evenly distributed throughout the City”. However, construction of new DSNY facilities have been met with “extensive opposition”, especially in Marine Transfer Station (MTS) on 91st Street in the Upper East Side. From this, we can anticipate that the relocation of the tow pound will also be met with opposition from any community a site is selected in, but progress can nevertheless be made given enough political support and willpower, and adherence to Fair Share guidelines.

Past Relocation Efforts

Since the 2004 fiscal year, Community Board 4 has included in their Statement of Needs, a call for the tow pound to be removed, and for Pier 76 to be developed into park space. Several letters have been sent by the community board, addressed to individuals including Governor Andrew Cuomo and former Mayor Michael Bloomberg, Mayor Bill de Blasio, and the NYPD, asking for more substantial steps to be taken. Relocation of the tow pound has persisted as a top priority for community board 4, but as conversations regarding the tow pound’s relocation and the development of the pier have spanned multiple decades without significant progress, leaving many discouraged.

To support efforts by the NYPD and the city, our studio first reviewed existing studies done to identify suitable relocation sites. After internalizing the information from past efforts, we explored methods of reducing the size and/or use of a tow pound so to allow for a wider range of new available relocation site options. This process allowed us to decide on criteria that were then used to conduct a site selection by the studio.

We looked at previous studies done in service of the tow pound relocation, and examined the criteria’s used and possible limitations of previous proposed sites. During 2004, the Empire State Development corp conducted an environmental impact study of the area in preparation for the development of Hudson Yards. A co-location study was done to entertain the idea of a joint facility between NYPD and Department of Sanitation within the ESDC report. The report identified 3 sites that had potential.

“Block 596, Lot 50 (between Washington and West Streets, north of Spring Street), which is currently used by the UPS as an at-grade storage yard for semi trailers, would house a multi-story building for the DSNY Manhattan District 2 garage (District 2), which would be shared with existing UPS operations. A site on either Block 1092, 1093 or 1094, (between West 44th Street and West 47th Street, west of Eleventh Avenue) would house the DSNY Manhattan District 5 garage (District 5). If Block 1092 were to be used, the constructed multi-story facility would be shared with UPS. Block 1093 or 1094 would have a building dedicated solely to DSNY operations.”

All of the identified areas were still located in community Board 4, and were over 100,000 square feet in



Address: 46th St and 12th Ave
Current Use: Warehouse/Parking Lot
Owner: Private
Zoning: M2-4 / M2-3 (2.0 FAR)



Address: 47th St and 12th Ave
Current Use: Car Wash/Car Dealership
Owner: Private
Zoning: M2-4 (2.0 FAR)



Address: 30th St and 12th Ave
Current Use: Warehouses/Parking
Owner: Private
Zoning: C6-4X / M1-6 (10.0 FAR)

Google Earth

size. Site A and Site B are located north of Javits Convention Center, in an auto-manufacturing heavy area. Site C is south of Javits, and has been used as a parking lot for private charter buses. Unfortunately, none of these sites were ultimately selected, and have since been designated for other private uses. Site A is being used as a parking lot for visitors to the Intrepid. Site B currently hosts a car wash and car dealerships. Site C is currently under development plans by a private developer. However, the study did conclude that the addition of a tow pound would have no significant impact in the selected sites, as all were already designated for auto-related and manufacturing uses.



Community Board: 4
Ownership: NYS & Private
Size: 117,831 SF & 115,391 SF



Community Board: 4
Ownership: Private
Size: 192,155 SF



Physical Tow Pound Reduction

Since the previous studies selected only sites with over 100,000 square feet of space (or roughly over 2 acres), our studio looked into ways to include even smaller sites. The current tow pound spans 5 acres, and is used for a variety administrative and storage purposes.

The ESDC EIS estimated that the tow pound only needs a capacity for 300 cars. This number was corroborated through an audit of the tow pound by Senator Gottfried's office in 2018. Using calculations provided by a study on parking



Inside the tow pound
instagram: jsortwell

lot needs done by the University of Tennessee, our studio found that it is possible to achieve a 300 car capacity with a less than 2 acre footprint size. To reduce the physical footprint even more, a rethinking of physical form can be applied as Multilevel garages, or stacking rows of cars vertically. These methods can greatly free up more city vacant lots that are smaller in size for potential relocation.

Policy and Technology



The barnacle deployed
Hawaii News Now

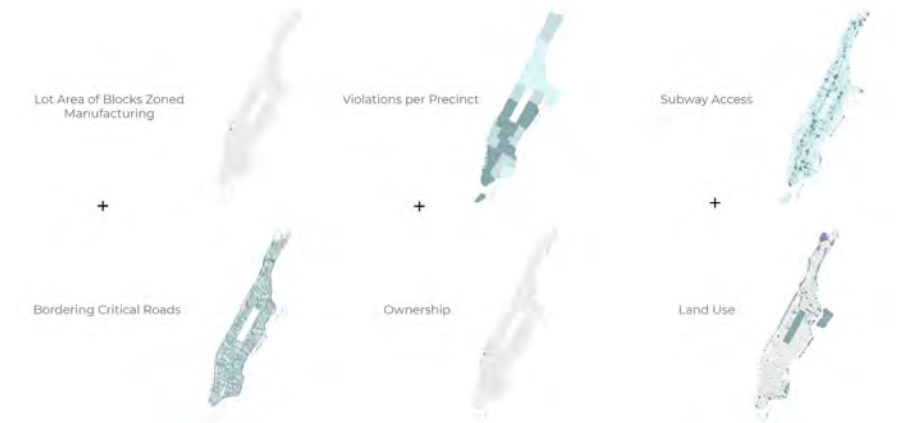
Rapidly changing landscape of urban transportation, these considerations for shrinking the overall need and usage of a tow pound are especially relevant. We anticipate that rideshare programs such as Uber and Lyft, as well as new adopted policies such as congestion pricing in Manhattan, will reduce the need and use of city tow pounds in the future.

Some policy options the city and NYPD can consider include a rethinking which type of parking violation necessitates a towing, or if there are any incentives to discourage illegal parking. Technologies that act as a lightweight boot alternatives, such as the barnacle, can increase the number of boot devices able to be carried by police vans and reduce reliance on towing. Robotic valets make parking more efficient, and save space to fit more cars in a single garage.

Multicriteria Decision Analysis

By leveraging the spatial sorting capabilities of Geographic Information Systems software, we attempted to utilize a multicriteria decision analysis to help narrow down some alternative sites.

The criterias selected largely came from the aforementioned studies. We also added some of our own through research, data analysis on city parking violations, and stakeholder meetings.



From those, the criteria's we included were: manufacturing zones, proximity to public transit, sites bordering critical roads, with more weight given to vacant lots that were publicly owned, and held a high number of traffic violations. However, in the selection of potential sites, we recognize that the outcomes produced by software cannot account for many of the contextual characteristics of any site, even those with the highest scores.

Site Selection

We looked more closely into all of the highest scoring sites and eliminated most sites based on contextual reasons. We narrowed down the sites to three potential sites that we felt was worth presenting for serious consideration. All three are publicly owned and partially vacant or being used as a parking lot. Looking more into the neighborhood context, each site has its concerns as well.



Site 1

The first site is opposite the Site C originally selected in the ESDC EIS. This one, however, is publicly owned by Department of Environmental Conservation and occupied by Con Edison. Though currently being used for parking and storage for Con Edison, this site experiences high development pressure from the opposing Douglas Elliman lot and Hudson Yards

Site 2

The second site is located in the lower east side, in community board 6. It is co-owned by Con Edison and the NY Power Authority. Site 2 is also opposite a large green field and next to a ball field. The area is surrounded by medium to high density residential with residents who have historically been vocal about different types of developments and uses in the area.

Site 3

The third site is on 125th street in west harlem. It is currently being used by the MTA as a partial bus depot and spans the entire block. All three have the benefit of being publicly owned facilities. Site 3 has many schools and community facilities such as a dialysis center that might cause concern regarding pedestrian safety with the potential increase in traffic flow.

SITE (1)



Neighborhood Context: Surrounding on adjacent streets by sanitation trucks. Currently used as storage and ConEd refueling station

Concerns: Development pressure from Hudson Yards

SITE (2)



Neighborhood Context: Flanked by ConEd Power Plant, adjacent to ballfield

Concerns: Surrounding medium-high density residential neighborhood; vocal residential population against onerous uses

SITE (3)



Neighborhood Context: Surrounded by schools and other community facilities

Concerns: Community history of equity issues, high volume of children in the area

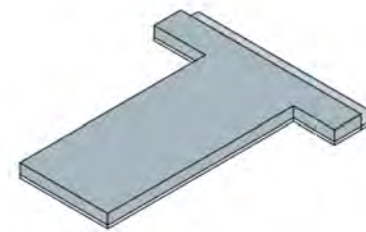
Conclusions

These site are not the only sites we looked at, nor are they necessarily the highest scoring ones. They represent a variety of location and choices in expanding the search for a new site. As a studio, we recognize the difficulties and obstacles the community and the city have encountered thus far in trying to move the tow pound. While the community board has restated its request to move the tow pound completely, our studio did consider the possibility of interim options should the search for a relocation site drag on. Not only is there strong opposition from the community to the tow pound staying on the Pier, keeping the tow pound on the site reduces the overall commercial and economic viability of the pier, reducing its value. A tow pound is also a fundamentally incompatible use with regards to the vision of the Hudson River Park as a whole. Therefore, these options are not acceptable permanent solutions, but might allow room for at least some open green space the community needs. It is clear that the actual spatial needs of the tow pound, which we calculated to be 2 acres, can be met even when the footprint is drastically shrunk. So while the tow pound cannot stay on the pier long term, we can see even in its current state, the tow pound occupies significantly more space than is actually required. We urge the NYPD to conduct a space audit to evaluate actual space needs and to reduce their footprint for a new relocation site.

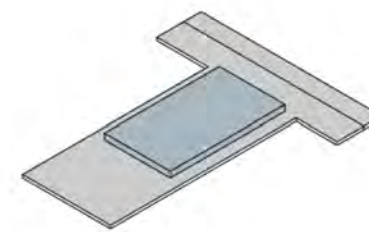
Interim Options

As a studio, we do recognize the difficulties and obstacles the community and the city have encountered thus far in trying to move the tow pound. While the community board has restated its request to move the tow pound completely, our studio did consider the possibility of interim options should the search for a relocation site drag on. However, not only is there strong opposition from the community to the tow pound staying on the Pier, keeping the tow pound on the site reduces the overall commercial and economic viability of the pier, reducing its value. A tow pound is also a fundamentally incompatible use with regards to the vision of the Hudson River Park as a whole.

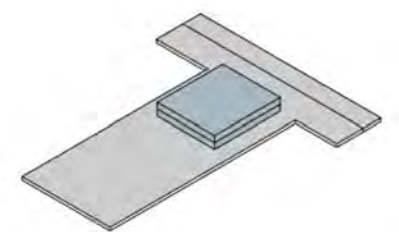
Therefore, these options are not acceptable permanent solutions, but might allow room for at least some open green space the community needs. Since we have already spoken about methods to reduce the tow pound's physical footprint, it is clear from the diagrams shown that the actual spatial needs of the tow pound, which we calculated to be 2 acres, can be met even when the footprint is drastically shrunk. So while the tow pound cannot stay on the pier long term, we can see even in its current state, the tow pound occupies significantly more space than is actually required.



Current: 5.3 Acres
233,000 SF



Reduced: 2 Acres
87,120 SF



Reduced: 1 Acre Multilevel
43,560 SF



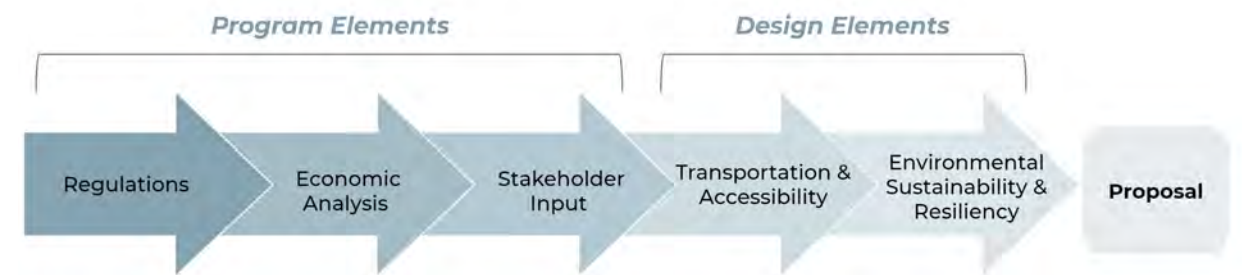
DEVELOPMENT PROPOSAL

PART I: DEVELOPMENT CONSIDERATIONS

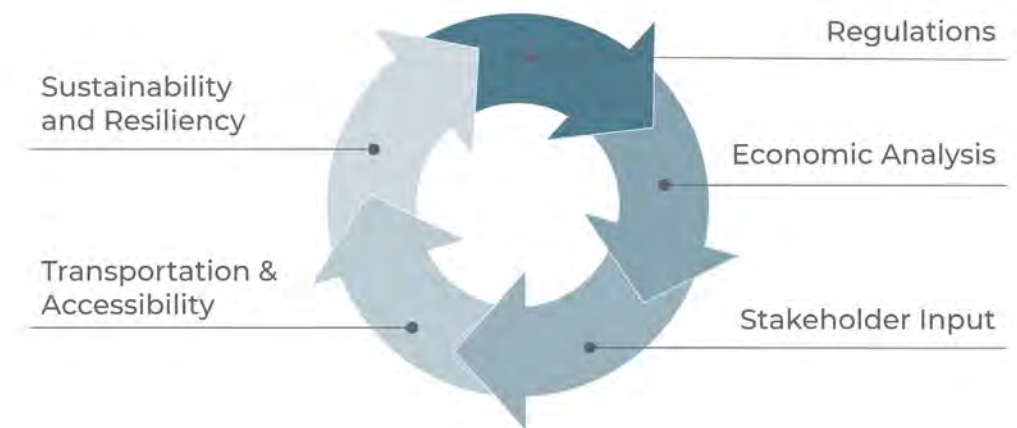
Development Process

In order to create a framework for the trust's development of pier 76 into a park, we integrated various development considerations. We first determined program of uses that accommodate regulatory environment, community and stakeholder interest, financial feasibility, and other design perspectives that incorporates transportation, accessibility, and environmental sustainability. This development planning is an iterative process, which we revisited each piece of components until we have satisfied all needs and considerations.

Linear Process



Iterative Process



Client Needs

Before considering other surrounding factors, we took our client’s needs as one of the primary pillar for development consideration. With the primary concern being the ability for the pier to remain financially self-sustaining, it also needs to provide economic incentive for investment. Financial feasibility of development dictates program of use on the pier.



Community Interests



Accounting for financial consideration, community interests serve as another integral facet that can help determine potential development plans. Community needs ranged from having an open park space, supporting commercial office use, and enjoying recreational event spaces and new restaurants. At the same time, the community also expressed concern with uses that would hinder enjoyment of the pier by local residents.

Cost Considerations

In order to satisfy the client needs and community interests, costs associated with pier development must be addressed and considered. These considerations include demolition of the tow pound, pile repair and maintenance and other development costs. Cost considerations is essential to the development of our proposal. We obtained basic information on the footprint of Pier 76 from the Feasibility Study For the Consolidation of Municipal Functions at Pier 76 by Halcrow and the footprint of tow pound from NYPD 2020-2021 statement of needs. We then calculated the buildable area under the current FAR of 2. Halcrow report was also used as the reference for the cost estimate of park construction and pile reconstruction. We adjusted the costs for inflation to reflect the updated costs since the report was conducted in 2007. Park related cost alone amounts to \$127,094,782 (table x). Total cost would include the cost new commercial development that would generate enough revenue for the park to be self-sustaining.

Cost Breakdown			
	Cost per SF	Total SF	Total Cost
Structural Demolition	\$10	220,000	\$2,200,000
Timber Pile Reconstruction	\$290	245,865	\$71,384,299
Pier Deck Reconstruction	\$64	245,865	\$15,785,152
Park Construction	\$307	122,933	\$37,725,331
Total Park Cost			\$127,094,782

Financial Projections

To analyze the types of development that could bear the costs and generate enough economic incentive, we used a series of financial reports and sources including Cassidy Turley 2012 Midtown Market Sustainability Report, 2018 NA Q4 Construction Cost Report, The NPD Group Report, 2018 SquareFoot Office Report and so on. We adjusted the data from previous years for inflation to reflect current costs. These sources led to formulations of our assumptions of the revenue and cost of the different types of commercial development. From the previous considerations of client needs, community interests, we narrowed down the types of commercial development that worth our consideration into class A office space, event space, and restaurant. Building on these assumptions, we created financial projection for each development option and our results show that under current zoning, none of our selected allowable uses yield financial incentive for development. We consulted with stakeholders and added hotel into the candidate uses. The revenue and cost assumption of all uses considered and a summary of financial projections are listed below.

Type of Use - Revenue Assumption			
	Annual Rent	Vacancy Rate	O & M Expenses
Class A Office Space	\$87.00/SF	5%	\$13.13/SF
Event Space	\$86.50/SF	20%	47% of Gross Revenue
Restaurant	\$50.92/SF	5%	\$20.00/SF
Type of Use - Revenue Assumption			
	Avg Daily Room Rate	Vacancy Rate	O & M Expenses
Hotel	\$569.82	10%	62% of Gross Revenue

Type of Use - Commercial Cost Assumption			
	Unit Cost before Contingency	Contingency Cost	Total Unit Cost including Contingency
Class A Office Space	\$575.00/SF	\$57.50/SF	\$632.50/SF
Event Space	\$152.00/SF	\$15.20/SF	\$167.50/SF
Restaurant	\$216.00/SF	\$21.60/SF	\$237.60/SF
Hotel	\$244,000.00/Room	\$24,400.00/Room	\$268,400.00/Room

Rezoning Context

As discussed earlier, development possibilities of Pier 76 under current zoning and regulation are limited. With restricted uses and programs, pier 76 development cannot accommodate and fulfill the needs and wants of the client and the community. According to the community and stakeholders, we determined the commercial portions of the pier would best be served by a mixed use development including new restaurants, upgraded office spaces, and recreational event spaces. However, under current zoning, no development options can meet the financial standard that could allow the park to be self-sustaining. Also incorporating different uses asked by the community will only further burden the development.

As described in our financial projection under current zoning, desired commercial development options do not yield financial incentives. At 10% interest rate with 15-year period, potential development generate negative net present value with less-than-desirable internal rate of return.

Type of Use - Commercial Breakdown - 2 FAR					
	Space Allocation	NPV (@10%, 15-year)	IRR	Allowed under current zoning	Community Approval
Class A Office Space	100%	-\$133,181,670	6.20%	Yes	Yes
Event Space	100%	-\$27,900,155	8.50%	Yes	Yes
Mixed Use	Class A Office @60% Restaurant @20% Event Space @20%	-\$187,775,544	1.20%	Yes	Yes

As a result, other development opportunities that could satisfy the financial requirements were investigated. Our team not only spoke with several stakeholders, but we also performed our own analysis to find the best suitable development option. From our research and analysis, we found that a hotel would be the only single use commercial development that can justify investment for a developer, and satisfy financial needs of the client. However, development of hotel under current zoning is not permissible. Therefore, in order to accommodate hotel development at the current site, rezoning, or applying for a special district permit is needed. To allow hotel to be built, the current zoning of M2-3 needs to be changed to M1-5.

Although rezoning or applying for a special district may seem appear to be a stretch, there are multiple precedents within Hudson River Park, which rezoning or special district was applied. Pier 57 amended the Hudson River Park Act, and was rezoned to M1-5 to accommodate for office space. Piers 40 and 59 through 62 have become special Hudson River Park Districts in order to satisfy commercial interests. The process may be difficult and time consuming, but as other pier in Hudson River Park did, Pier 76 will also have the potential to be rezoned from M2-3 to M1-5 to allow for additional uses such as a hotel.

2 FAR VS 2.5 FAR

When we look at the financial projections utilizing only half of the allowed 5 FAR under the M1-5 zoning, most of the uses generate a strong cash flow. For instance, the Internal Rate of Return (IRR) of the full event space plan rises from 8.5% with an FAR of 2, to 10.1% with an FAR of 2.5. The Net Present Value also becomes positive with an additional FAR of 0.5. However, it should also be noticed that an IRR of 10.1% fails to sit within the 15% - 20% return rate, which is typical for RFP developments as expressed to us by our stakeholders.

Type of Use - Commercial Breakdown - 2.5 FAR					
	Space Allocation	NPV (@10%, 15-year)	IRR	Allowed under current zoning	Community Approval
Class A Office Space	100%	-\$129,517,179	6.90%	Yes	Yes
Event Space	100%	\$2,675,536	10.10%	Yes	Yes
Hotel	100%	\$607,645,053	21.20%	No	Unlikely
Mixed Use	Class A Office @60% Restaurant @20% Event Space @20%	\$321,216,037	16.90%	No	Potential

Our community-oriented mixed use plan combines hotel, restaurant, event, and office space in a financially feasible breakdown, which provides an IRR of 16.9%.

By comparing the different scenarios between 2 and 2.5 FAR, we can see that a hotel is the only single use scenario one that would maximize profit for the pier. However, based on our interview with stakeholders, there is resistance from the community in adapting a hotel-only approach that limits the possibilities of development as a whole. Therefore, a mixed use proposal aims to incorporate and satisfy the commercial needs of the community, with the hotel generating the majority of the profits, without having to maximize on the buildable FAR. The return value of the mixed-use development will incentivize investment to undertake the cost of reconstructing support piles, rehabilitate the pier, and maintain the park as a whole; a process that would not be feasible without the hotel.



Transportation and Accessibility

Pier 76 is geographically close to multiple transportation modes. Within a 10-minute walking radius, there is the Hudson Yards 7-line subway station, the M34 crosstown bus stops, as well as a ferry terminal carrying passengers to and from New Jersey daily. There is also convenient access to Citibikes, as a large numbers of locals cycle to work from this part of Hudson Yards. Furthermore, the area has more bike lanes than in other parts of the city.

However, the site presents challenges with physical accessibility for pedestrians. More than 100,000 vehicles per day pass through the Lincoln Tunnel, making it one of the busiest arteries in the country. Dyer Ave. is a major access point to the tunnel and can often back up on nearby streets as well, even as far from the tunnel as W. 30th St. The area has also faced the most noise complaints in NYC and experiences potentially harmful pollution levels. According to the NYC Department of Health, air pollution levels in the community were the third-highest in the city in 2015. The community suffers the second highest incidents of chronic lung disease of any neighborhood in Manhattan south of Harlem.



*Dangerous Intersection at 34th st
Google Street View*



*The West Side Highway
Savannah Wu*

Currently, the Javits Center and the West Side Highway block access to the pier. Lack of sidewalks and unpleasant road conditions on 34th Street along with dangerous intersections between 11th Avenue and 34th Streets define the physical environment and pose great limitations. There is a poor grade crossing at the Ferry Terminal due to exiting buses. Vehicle crashes in the immediate vicinity have resulted in hundreds of cyclist and pedestrian injuries and four fatalities since 2011, as there is a high number of tour buses, delivery trucks, taxis and private vehicles.

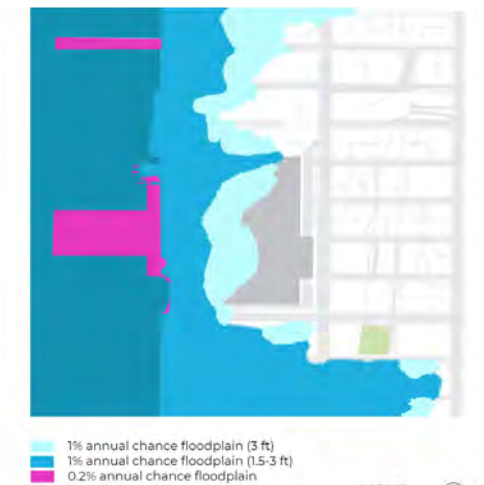
Sustainability and Resiliency

Sustainability and resiliency of the pier are also considered as important aspects to be integrated into the pier's development as the pier lies within the 100 and 500-year floodplain and has a 1% chance of facing an eight-feet of sea level rise by 2020. It is estimated by the Hudson River Park Trust that storm damage from Hurricane Sandy cost approximately \$10 million to repair. To prepare for future storm damage, the City has worked diligently to support resilient design and sustainability. These documents informed our physical development and the following recommendations:

- Repair piles and consider ecological pile encapsulation substitutes such as EConcrete, which creates habitat for marine plants and animals such as fish, crabs, and oysters. It has been used for Brooklyn Bridge Park in 2013-2016.
- Wet/dry floodproof buildings.
- Incorporate hard edges that include enhancements or designs that are supportive of biodiversity.
- Minimize disturbance to Significant Habitats.
- Support native rare, biodiverse ecosystems.
- Provide lower-impact, renewable energy systems.
- Reduce environmental impact of construction practices.
- Reduce the overall volume of stormwater quantity (retain, infiltrate, evapotranspire, reuse, or detain stormwater).
- Improve stormwater discharge quality.
- Reduce water use.
- Reduce contribution to urban heat through creating high albedo or green surfaces.
- Consider environmentally friendly materials and components.
- Consider increased heat, precipitation, wave action, and sea level rise.



*Superstorm Sandy Damage
Hudson River Park*



*FEMA Flood Zones
FEMA, Department of City Planning*



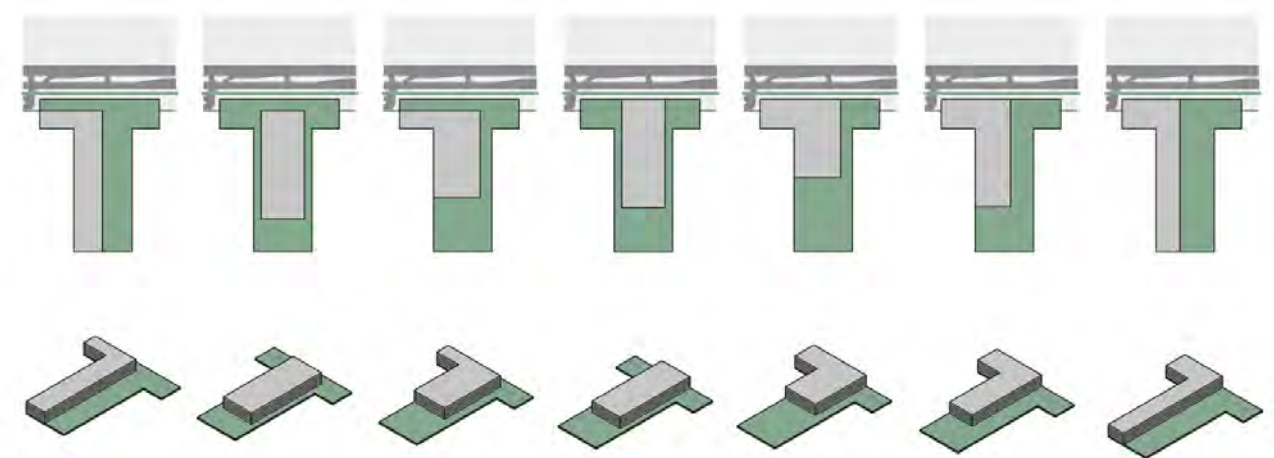
PART II: DEVELOPMENT PROPOSAL

RFP Design Guidelines

Taking all of the aforementioned considerations into account, this section will introduce our development proposal for Pier 76, including a massing scenario and a series of design guidelines that are expected to inform future development and design of Pier 76.

Massing Scenario

As described before, pier 76 has an area of around 245,000 square feet, which is about 5.5 acres, and is roughly the same size as Union Square Park or about half of Bryant Park. This size is the second largest one in Hudson River Park (the largest one being pier 40) and thus gives us much flexibility in terms of building configuration and massing options as shown below. These different massing options optimize different factors such as southern exposure, seaward waterfront access, or perimeter access etc. Via iterating through these options and evaluating the advantages and disadvantages, we propose the massing scenario shown at left.



Massing options

In this massing scenario, the commercial development is located in the northern half of the pier in order to ensure the park's exposure to sunlight, access to waterfront, and connection to the small beach in the future. Meanwhile, placing the development in a single footprint can also minimize the impact of the proposed commercial uses on the park area and prevents the park from being simply ancillary to the commercial development, which is one of the community's primary concerns with uses including hotels and offices. Furthermore, the landward edge of the pier is also preserved to provide spaces for street activation and sidewalk improvement that increase attractiveness and vibrancy of the site.

Design Guidelines

In addition to a massing scenario, we also suggest a series of design guidelines to future development of pier 76 that incorporate financial and community needs, and take transportation and resiliency concerns into consideration. The guidelines consist of three parts: commercial development, park area, and upland connection.

1) Mixed-use Commercial Development

As discussed above, a mix of programs including restaurants, offices, hotels, and event spaces are recommended at this site which can generate sufficient revenue and profit and meet the community's demand for more dining services. In terms of the design, due to environmental resiliency concern, the development is proposed to have a floodable, elevated structure, as required by the building code. Spaces underneath the structure can be utilized as sitting and dining spaces as well as small cafés with deployable flood shields that make the spaces accessible to the public. Beyond this, a green rooftop is suggested which will help reduce runoff and mitigate the urban heat island effect, while also providing the public with more green spaces at this site that the community desires.



Javits Center Green Roof
Greenroofs.com



Raised floodable building
OMA

2) Recreational Park Area

In terms of the park portion, both active and passive recreation are suggested. Active recreation may include ball fields and small playgrounds, as well as water-related activities such as kayak launches. These activities are recommended on the landward half of the pier, which would make the entrance area much more vibrant and welcoming to pedestrians. Meanwhile, passive recreation with beautifully designed sitting spaces and lawns are proposed on the seaward portion of the pier for daily park users to enjoy waterfront views, insulated from noise and pollution from road traffic. Boardwalks along the pier edges can be built as well for walkers, joggers, and bikers in the park.



Active Recreation
Martha Schwartz Partners



Passive Recreation
James Corner Field Operation

3) Upland Connection

Accessibility, as illustrated before, is another challenge for Pier 76 which we hope to resolve. For pedestrian accessibility, wayfinding maps are proposed in the area around the Ferry Terminal, along Hudson River Park, along 34th street, especially around the end of High Line Park. Besides, a crosswalk on West Side Highway should be added with smart signage to improve pedestrian safety. This will allow pedestrians to easily approach the site from many directions. Bicycle racks may also be installed at this site to serve cyclists along the park. A suggestion we have received from our interviews is to build an overpass crossing the West Side Highway. However, there are a number of concerns about the associated costs, space efficiency, and the effectiveness of such an overpass to create a safe crossing for pedestrians. It, nevertheless, has been recognized that there already exist some plans to connect different neighborhoods and green spaces in this area. Therefore, we suggest for our client to consider cooperating and connecting with stakeholders in the vicinity. As for vehicular access, the existing entrance to the north of the crosswalk will be used as a drop-off spot, limiting traffic to the northern half of the pier and separating vehicles from park users.



Hotel dropoff
Marina View Hotel, Behance



Passive Recreation
Highly visible crosswalk
Here LA



A possible future for Pier 76

Pier Visioning

We hope that our proposals and recommendations may serve as guidelines for future development of pier 76 that should consider all the factors discussed, and truly promote financial and environmental sustainability, incorporate the community's needs and help expand public access to the waterfront. The rendering on the left, not intended to be prescriptive, depicts one of the possible futures and visions for Pier 76.

Conclusion & Recommendations

From this studio's work, we have a series of possible next steps the client and stakeholders can pursue to realize the goal of moving the tow pound and converting Pier 76 into a park.

First, we suggest the client to investigate pile conditions, audit the tow pound's space requirements, and engage with the NYPD to create a tow pound task force and explore the relocation sites suggested in this presentation.

Next, we recommend the client to coordinate with the Department of City Planning to rezone the pier similar to the other revenue generating piers within the Hudson River Park to support financial self sufficiency and work with elected officials to amend the Hudson River Park Act to allow office and hotel use.

Once the needed amendments to the act and the required rezoning are achieved, the client can move forward with an EIS and finally issue an RFP for Pier 76's development and conversion to a mixed use park. Throughout this semester, our studio has learned much of the process necessary to move Pier 76 forward to realize its full potential. We've witnessed growing momentum and excitement regarding the pier's future. Our hope, is with this studio's work, our client can capitalize on the renewed energy to support the park's development and community needs.

ACKNOWLEDGEMENTS

Hudson River Park Trust

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Classic Car Club

Our studio would like to give thanks to our instructors, Maxine Griffith, and Anthony Borelli, for their guidance and support over the past semester.

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APPENDIX

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Financial Assumptions

Basic Information

Footprint of Pier 76		245,865 SF
Park Footprint	50% Footprint	122,933 SF
Total Buildable Area	M2-3 (FAR=2)	491,730 SF
Total Buildable Area	FAR = 2.5	614,665 SF

Cost Assumptions - Commercial

	Unit Cost Before Contingency		Contingency Costs		Total Unit Costs Including Contingency
Class A Office	\$ 575.00	per SF	\$ 57.50	per SF	\$ 632.50 per SF
Restaurant/Food Marketplace	\$ 216.00	per SF	\$ 21.60	per SF	\$ 237.60 per SF
Hotel	\$ 244,000.00	per room	\$ 24,400.00	per room	\$ 268,400.00 per room
Event Space	\$ 152.00	per SF	\$ 15.20	per SF	\$ 167.20 per SF

*Contingency Costs = 10% Development Costs

Cost Assumptions - Park

	Cost per SF	Total SF	Total Costs
Structure Demolition	\$ 10	220,000	\$ 2,200,000
Timber Pile Reconstruction	\$ 290	245,865	71384299
Pier Deck Reconstruction	\$ 64	245,865	\$ 15,785,152
Park Construction	\$ 307	122,933	\$ 37,725,331
Park Renovation			\$ 127,094,782

Revenue

	Annual Rent per SF	Vacancy Rate	Op. & Maint. Expenses
Class A Office Space	\$ 87.00	5%	\$ 13.13/SF
Event Space	\$ 86.50	20%	47% of GEI
Restaurant	50.92	5%	\$20.00/SF
	Average Daily Room Rate	Vacancy Rate	Op. & Maint. Expenses
Hotel	\$ 569.82	10%	62% of GEI

*hotel room = 115/48000*SF

Pier 76 Contextualizing Scale



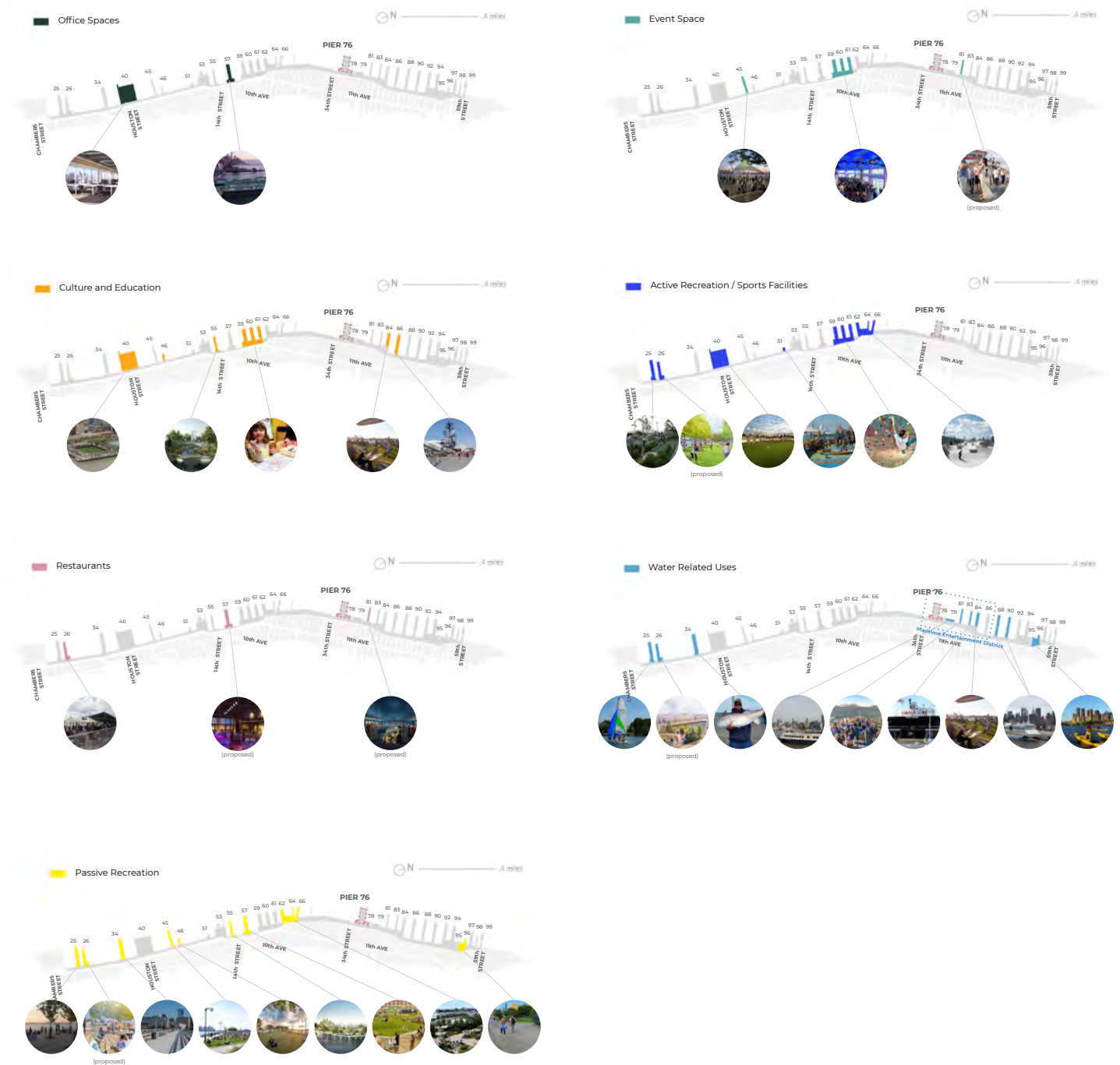
Hudson River Park Rezoning Context



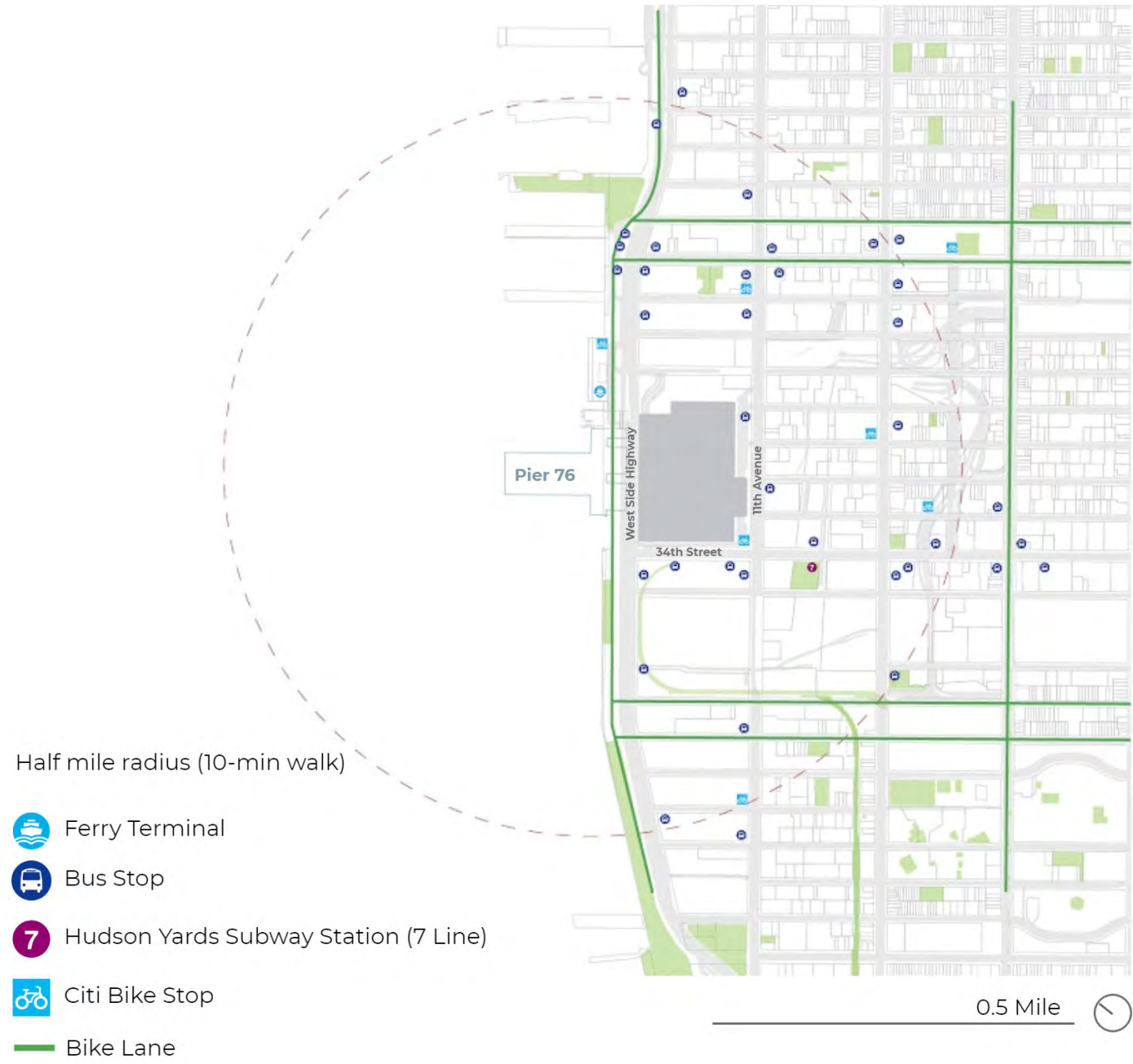
Source: Hudson River Park Trust

Pier	Year	Previous Zoning	Current Zoning
57	2013	M2-3	M1-5
40, 59, 60, 61, 62	2016 - 2018	M2-3	Special HRP District
76	-	M2-3	Proposed M1-5

Hudson River Park Program Context



Transportation Context



Land Use Context

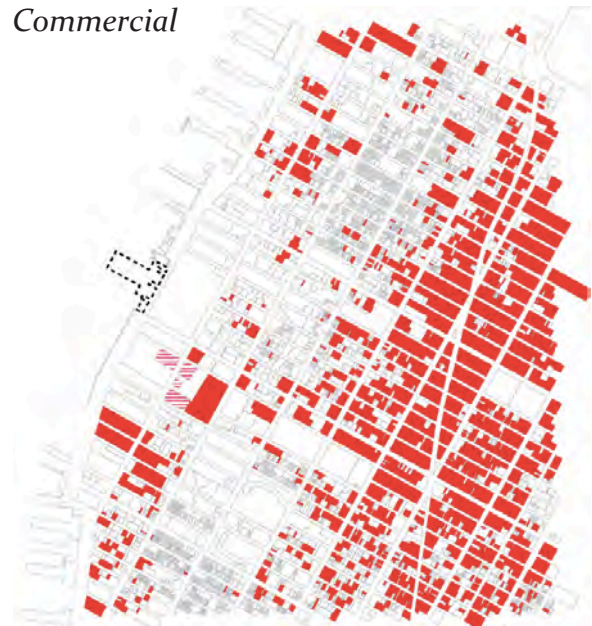


Land Use Context

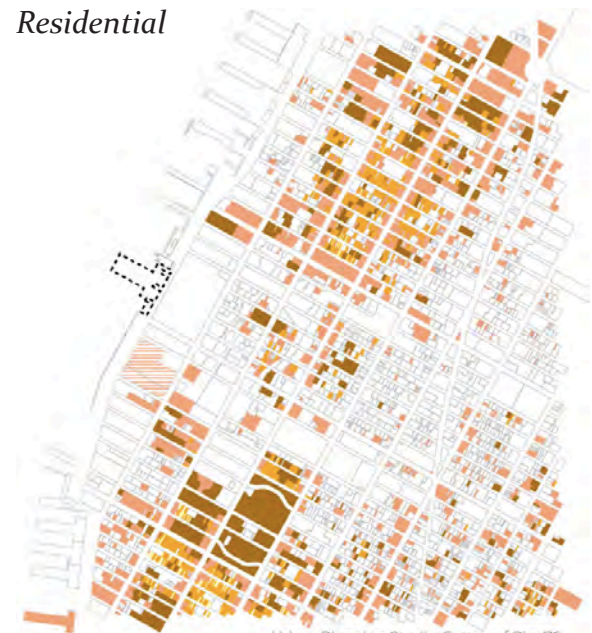
Green space



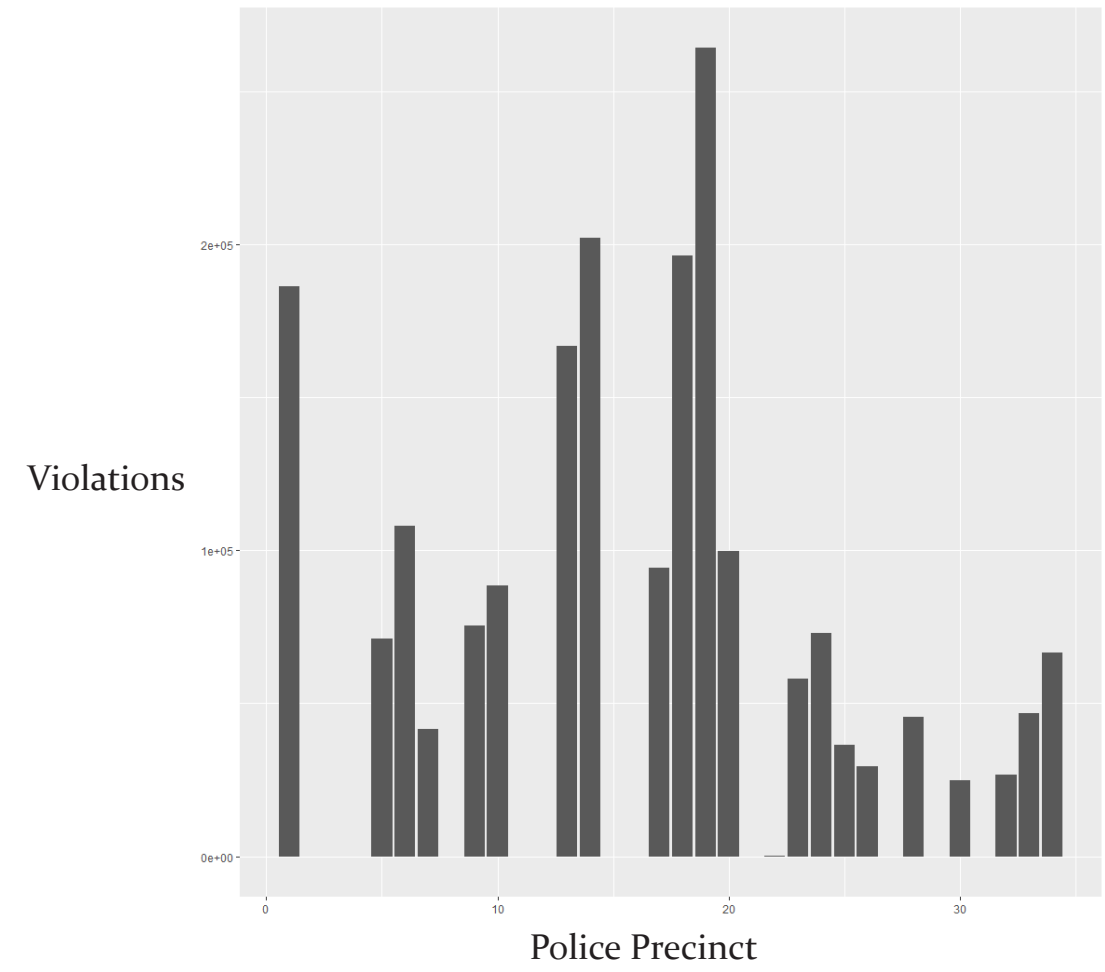
Commercial



Residential



Violations by Police Precinct



Multiple Criteria Decision Layers

Parcel Land Use



Lot Area of Blocks Zoned Manufacturing



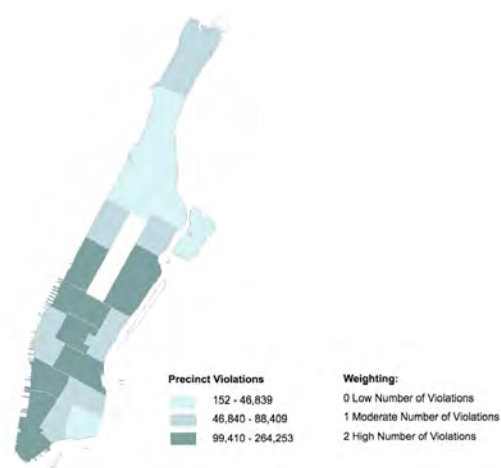
Parcel Bordering Critical Roads



Parcel Ownership



Precinct Violations



Subway Access



Suggested Relocation Sites



