TerraNueva

4095 9th Ave, Inwood NYC

Sabin Alam – Columbia GSAPP – Spring 2025

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Columbia M.S. Real Estate Development
Development Case Studies
Spring 2025

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I. Executive Summary

Project Vision

TerraNueva sets the precedent for the future of affordable and sustainable living in NYC by activating the underutilized Inwood waterfront. The project is built with the demands and needs of the community in mind and delivers a state of the art STEM Center in partnership with SolarOne, 517 100% affordable housing units, locally curated retail stores, and beautifully designed public spaces.

The project is at the forefront of cutting edge sustainable design and building standards as it is an all electric, Passive House-certified development.

TerraNueva is designed in alignment with NYC's Climate Resiliency Design Guidelines and Flood Resiliency Planning and targets LEED and Energy Star environmental certifications.

TerraNueva seamlessly integrates high quality standards of residential, commercial, recreational, and educational uses into one urban hub.

Programming

I. Affordable Housing

TerraNueva will deliver 517 residential units that are 100% affordable while maintaining diversity in both income groups and unit mix. 112 studios, 116 one-bedrooms, 157 two-bedrooms, and 132 three bedrooms will be delivered. Of all units, 15% are reserved for formerly homeless households, 10% at the 40% AMI level, 25% at the 50% AMI level, 6% at the 60% AMI level, 24% at the 80% AMI level, and 20% at 100% AMI.

II. Community Centric Commercial Spaces

TerraNueva is anchored by a 10,916 sf full service grocery store, a 6,793 sf pharmacy, 3 local restaurants at 1,134 sf each showcasing the unique cultures and flavors of Inwood, and one 420 sf destination cafe with stunning waterfront views.

III. Waterfront Esplanade

Stokely Carmichael Park, named after prominent civil rights activist and Inwood resident Stokely Carmichael, will feature recreational and green spaces, including biking and walking paths with direct water views.

IV. SolarOne STEM Center

In partnership with SolarOne, a Manhattan-based nonprofit focused on sustainability and resiliency, TerraNueva will deliver a 23, 915 sf STEM center. The center will offer after school programs for K-12 students, summer school programs, and green workforce programs for adults.

Financing & Investment Highlights

TerraNueva is expected to generate $36,634,085 in net cash flow across 15 years. As the project is being built from a RFP presented by NYC HPD, it requires 100% affordable housing. Due to this, TerraNueva is being built via a mix of federal and state Low Income Housing Tax Credits (LIHTC), and various government funding sources. Government funding programs include NYS HFA Affordable Rental Housing Program, NYS HCR New Construction Program, HFA Construction Loan, HPD ELLA, HDC ELLA, NYS HCR MIHP, FHA Green Mortgage Insurance Program and two grants from NYSERDA (Energy Efficiency & Clean Technology) and NYS Workforce Development Capital Grant.

II. Vision & Concept

*TerraNueva transforms Inwood's waterfront into a model for **sustainable, affordable, and resilient urban living**. By integrating **climate-forward housing, a STEM-driven workforce hub, and vibrant public spaces**, we are creating a future where Inwood residents can live, work, and thrive for generations.*

Sustainable Living & Climate Resilience

A 100% electric, Passive House-certified community

Innovation & Green Jobs

STEM education & workforce training for a sustainable economy

Community & Waterfront Revitalization

Public spaces, local businesses, and an activated shoreline

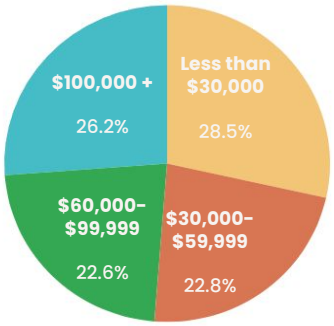
A. Inwood Community Vision Report

In the Spring of 2024, the NYC Department of Housing Preservation and Development hosted a Community Visioning Workshop to hear from the community. Most requested programs included:

"Affordable Housing"

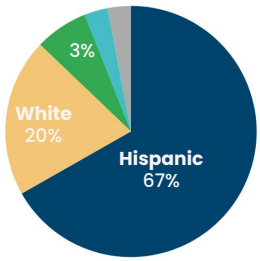
29% of Inwood is considered "severely cost-burdened" (spends 50%+ of income on rent)

68% of Inwood households are below Manhattan median of $101,000



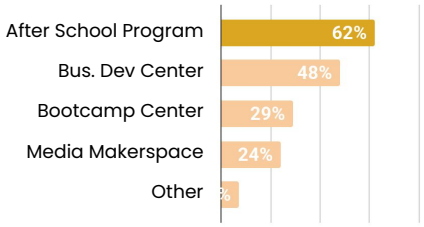
"Commercial Ground Floor"

"What Type of Commercial use would You Like to See on the Site?"



"STEM Center"

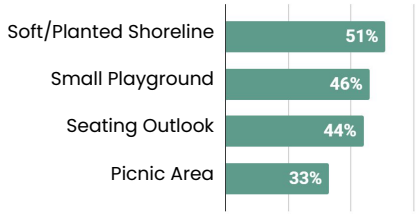
"What type of STEM facility would you like to see on the site?"



Households Fueled By:	Solar Energy	Electricity
NYC	0.1%	14%
Inwood	0.0%	11%

"Relaxing Open Space"

"What type of open space amenities would you like to see?"



The Inwood Community Visioning Report and neighborhood demographics revealed four core priorities. First, the need for affordable housing—a citywide issue that is especially pressing in Inwood, where 29% of households are severely cost-burdened, spending more than half of their income on rent. With a median household income between 40–70% of the Area Median Income (approximately $63,000), Inwood residents fall well below Manhattan's average.

On the commercial front, there was a strong demand for a grocery store, as none exist within a quarter-mile of the site, along with support for more local retail—particularly Hispanic-owned businesses, reflecting the area's predominantly Dominican population.

A key request was for a STEM center offering after-school programming. In exploring relevant STEM topics,a critical gap in renewable energy was realized in which just 0.1% of NYC households are powered by solar, while Inwood has none. Additionally, only 11% of its housing units are electric-powered, slightly below the citywide average.

Lastly, the community stressed the importance of a calm, accessible waterfront space, requesting natural plantings, seating, and a playground to promote relaxation and neighborhood cohesion.

B. TerraNueva Programming

517 Units of Affordable Housing

23,915 SF State of The Art STEM Center

Grocery Store, Pharmacy, & 3 Small Businesses

22,795 SF Waterfront Access with Cafe

Through a value-driven process, TerraNueva proudly delivers 517 fully affordable housing units, addressing one of the community's most pressing needs. The ground floor activates the streetscape with a two-story grocery store, a pharmacy, and three community-based, Hispanic-owned restaurants. Public access to the waterfront is maintained by NYC Parks via 219th Street, leading to a scenic park that features a destination café and honors civil rights activist and former Inwood resident Stokely Carmichael. Just south of the site, a new STEM center—developed in partnership with SolarOne—advances educational equity and sustainability by integrating renewable energy into its programming.

Our Operating Partners:

NYC Parks

SOLARone

C. SolarONE STEM Programming Overview

SolarOne is a 501(c)(3) not-for-profit organization whose mission is “to design and deliver **innovative education**, **training**, and **technical assistance** that fosters sustainability and resiliency in diverse urban environments”

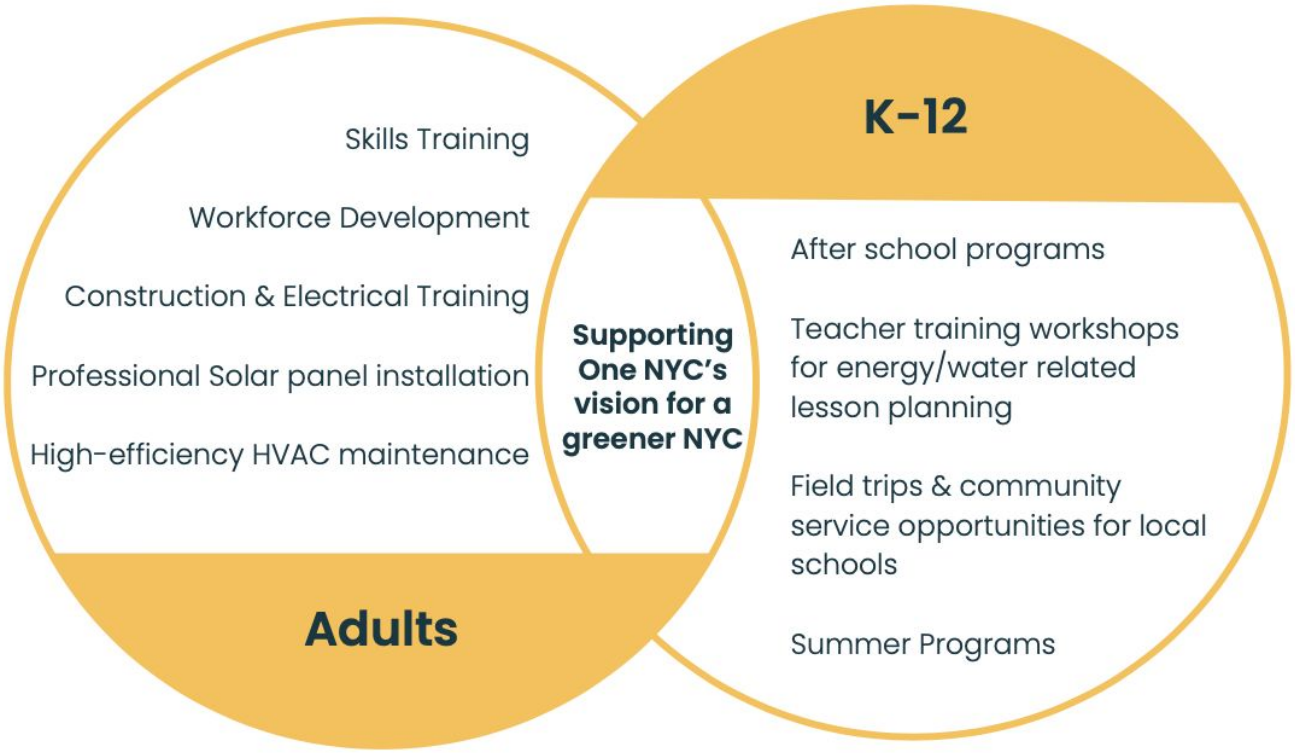
TerraNueva’s partnership with SolarOne will allow for the creation of a STEM center that bridges education, equity, and sustainability. The STEM center will offer after-school and summer programs for K–12 students, including field trips and community service opportunities. For adults, it will provide job training in solar panel installation, HVAC maintenance, and green construction techniques. By equipping local residents with these essential green skills, the initiative directly supports Mayor Adams’ ONE NYC vision to create 400,000 green jobs by 2050.

Leveraging the site’s unique waterfront location, the center will also host hands-on training opportunities. More than just a STEM center, this space will serve as a launchpad for community engagement, environmental justice, and long-term economic opportunity.

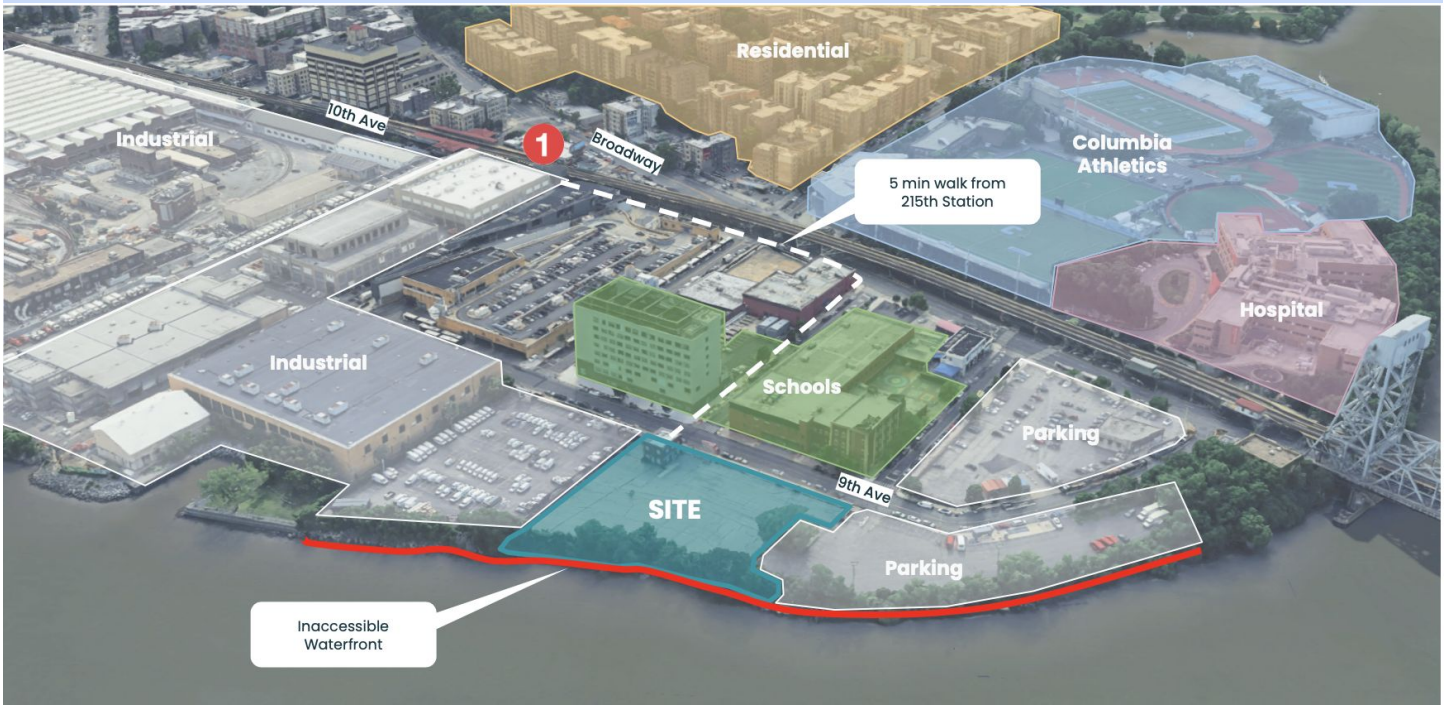
Green Design Lab

Workforce Training

Summer Programs



III. Site Context



4095 9th Avenue is an RFP site that is being acquired from the City of New York for $1. The site offers an unique opportunity to transform the Inwood waterfront which is located east of Broadway—an area currently dominated by industrial uses.

The site contrasts with the more residential character found west of Broadway. It is strategically located just a five-minute walk from the 1 train, directly across from Zeta Charter School and PS 18, and in close proximity to New York Presbyterian Hospital.

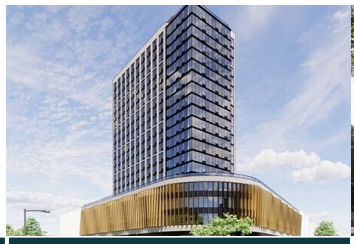
Despite this prime location, the site is currently underutilized as a parking lot in a part of the neighborhood that lacks a diverse retail offering, highlighting its strong potential for community-serving redevelopment.

A. Market Comparables

Mixed Use Multifamily

(with Affordable Housing)

Upper Manhattan



Address	4650 Broadway (Forty-Six Fifty)	4790 Broadway (The Eliza)	375 West 207th St (North Cove Apartments)
Units	222	174	611
Affordable Units | AMI	67 130% AMI	174 (100% affordable) 60% of AMI and below	484 30-110% AMI
Stories	22	14	30
Area	351,000 SF	TBA	544,000 square feet
Mixed-Use	School on the Square charter school and Grocery Store	Public Library, First Robotics (STEM Classrooms), pre-kindergarten facility, training center	60,000 square feet of retail on the lower levels, and 120 parking spaces
Rent (Market or Affordable?)	Market Rents Starting: Studios from $2,800 1 BR from $3,050 2 BR from $4,600	Rents according to HPD's Extremely Low and Low-Income Affordability (ELLA) Program	Affordable Rents: Studios $555-1,727 1 BR $702-$2,168 2 BR from $834-$2,592

Other new developments in Inwood have been able to achieve deep levels of affordability as well as meet commercial needs. TerraNueva can help address community needs and wants at a large scale.

In retail programming, TerraNueva will provide market rate and discount to market rate rents for local businesses.

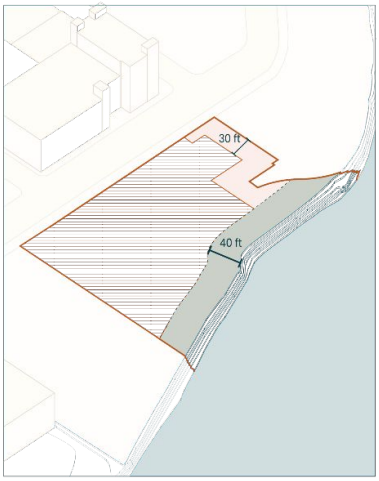
Retail Type	SF	NER	Lease Type	Escalation	Comp Address	Comp NER	Comp Picture
Pharmacy	6,793.06	$100	NNN	2%	4197 Broadway *Washington Heights Pharmacy*	$132.96	
Grocery	10,916	$70	NNN	2%	4901 Broadway *C-TOWN*	$69	
STEM Center	23,915	$80	NNN	2%	*233 Broadway Manhattan Clinical Research*	$55	Direct comps unavailable, premium charge based on quality of build out, hard costs
Anchor Restaurant #1	1,134.1	$90	NNN	2%	1 W Fordham Road *Qdoba*	$110	
Restaurant #2	1,134.1	$85	NNN	2%	4055 Broadway Jersey Mike's Subs	$91	
Restaurant #3	1,134.1	$85	NNN	2%			
Destination Cafe	452	$130	NNN	2%	2461 Broadway *Blank Street Coffee*	$137.50	

IV. Design

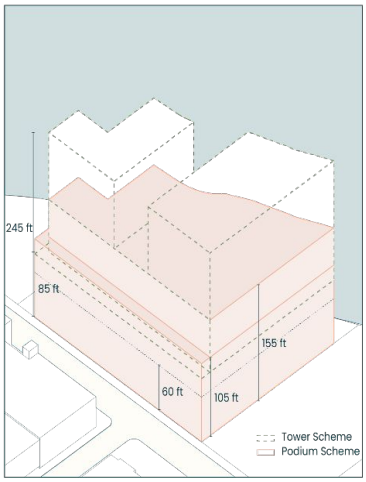
A. Zoning Analysis

Zoning & Buildable Calculations		
Total Lot SF (from shoreline)	70,942.00	
	Base FAR	SF
Buildable Residential	7.20	510,782.40
Actual Residential	6.69	**474,549.00**
Buildable Commercial	6.00	425,652.00
Actual Commercial	0.63	**45,027.00**
Total Buildable SF	7.20	510,782.40
FRESH Zone SF (min 6000 - max 20000)	0.15	10,916.24
Buildable + FRESH	7.35	**521,698.64**
Actual Total Built	7.32	**519,576.00**

B. Special Inwood District Considerations



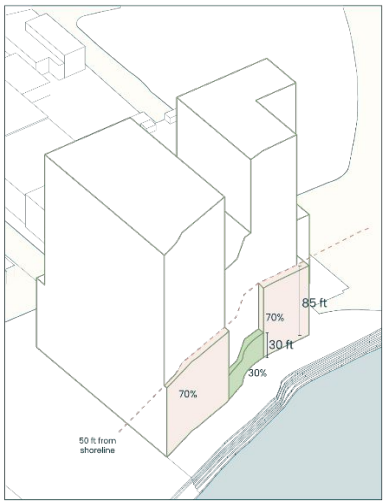
Provide a **40-foot-wide shorewalk** (open 24/7) and a **30-foot upland connection** linking streets to the river.



Minimum base height: 60 ft

Podium: Max 105 ft base / 155 ft total

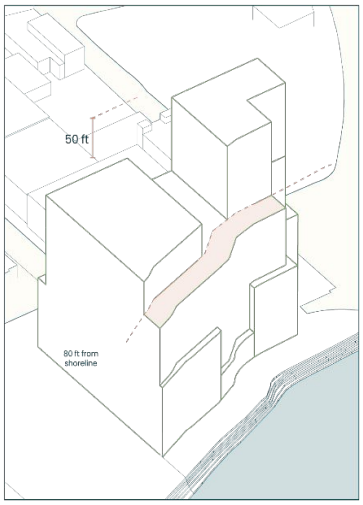
Tower: Max 85 ft base / 245 ft total



Within 50 ft of shoreline:

30% of frontage: Max 30 ft height

70%: Up to 85 ft before setbacks



Towers must be **80 ft from shoreline** and have a **50 ft height difference**

C. Buildable Square Footage Breakdown

Residential Unit Mix Count by Floor				
Floor	Studio	1 BD	2 BD	3 BD
1st	x	x	x	x
2nd	3	2	3	2
3rd	15	11	6	6
4th	8	11	9	9
5th	8	11	9	9
6th	8	11	9	9
7th	8	11	9	9
8th	12	3	10	7
9th	12	3	10	7
10th	12	3	10	7
11th	12	3	10	7
12th	1	4	8	7
13th	1	4	8	7
14th	1	4	8	7
15th	1	4	8	7
16th	1	4	8	7
17th	1	4	8	7
18th	1	4	8	7
19th	1	3	4	3
20th	2	4	3	2
21st	2	4	3	2
22nd	2	4	3	2
23rd	2	4	3	2
Total	114	116	157	132

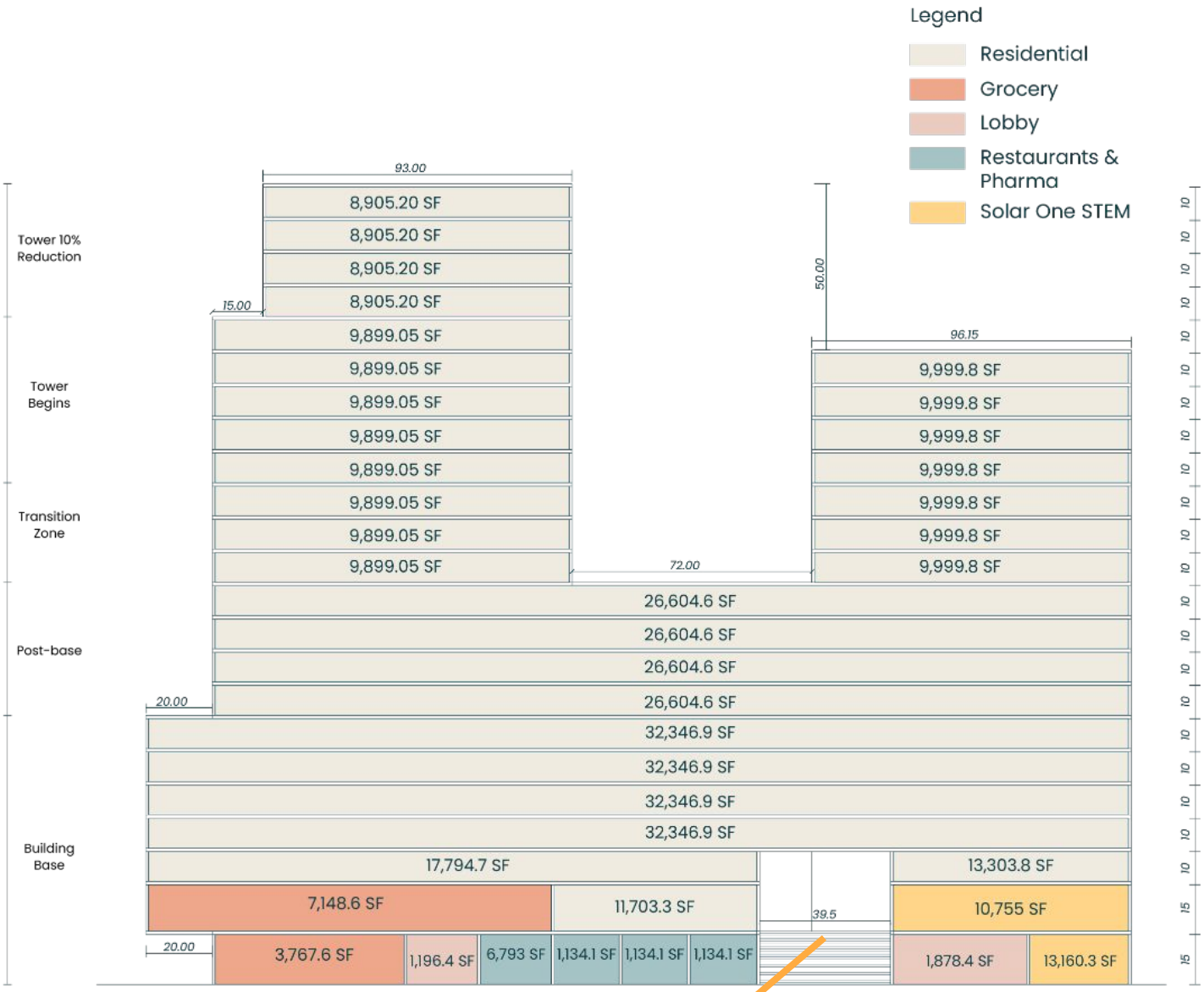
Square Footage by Floor			
Floor	SF	Floor	SF
1st Floor	32,705.80	13th	19,898.87
2nd Floor	35,152.98	14th	19,898.87
3rd Floor	31,098.60	15th	19,898.87
4th Floor	32,346.97	16th	19,898.87
5th Floor	32,346.97	17th	19,898.87
6th Floor	32,346.97	18th	19,898.87
7th Floor	32,346.97	19th	9,899.05
8th Floor	26,604.68	20th	8,905.20
9th Floor	26,604.68	21st	8,905.20
10th Floor	26,604.68	22nd	8,905.20
11th Floor	26,604.68	23rd	8,905.20
12th Floor	19,898.87	24th	
Total	**519,576**		

Commercial Use Square Footage			
	1st	2nd	Total
Grocery	3,767	7,148	10,916
Pharmacy	6,793		
Business 1	1,134		
Business 2	1,134		
Business 3	1,134		
STEM	13,160	10,755	23,915

D. Ground Floor Activation

The project design prioritizes community connection and accessibility, with all storefronts oriented toward 9th Avenue to maintain a continuous, active commercial corridor. Larger retailers also open directly onto the waterfront, encouraging public movement throughout the site. To balance delivery needs with pedestrian walkability, a loading dock has been discreetly integrated and screened from the upland pedestrian connection using a vegetative barrier. As part of the shorewalk intervention, neighborhood recreation amenities have been introduced, including a new boathouse for the local rowing community and a shaded playground for families—both of which were highly requested during community engagement. These features are complemented by a seasonal, floodable café that brings added vibrancy to the area. Altogether, the ground floor has been thoughtfully designed to welcome not only residents but the broader Inwood community.

E. Building Section



TerraNueva rises 24 stories, with the first two floors—each 15 feet high—dedicated to community and commercial uses, creating a welcoming and open atmosphere at street level. Above, the residential floors maintain a 10-foot height, balancing comfort with efficiency. To preserve a human scale along the street, setbacks are introduced at the base, while a second-floor courtyard provides shared outdoor space for residents. A public stair links this courtyard to the shoreline, enhancing circulation and establishing a clear visual connection from the street to the river.

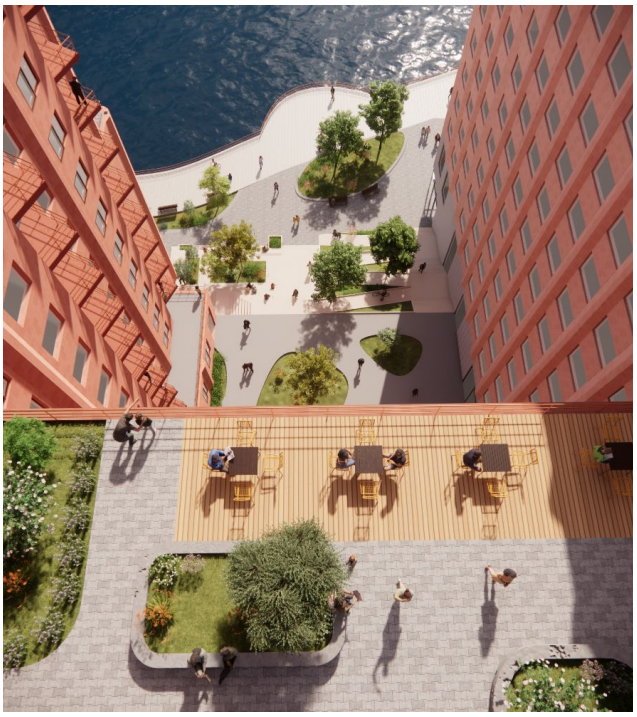
F. Floorplans

Residential Floor Plan Before Setback:

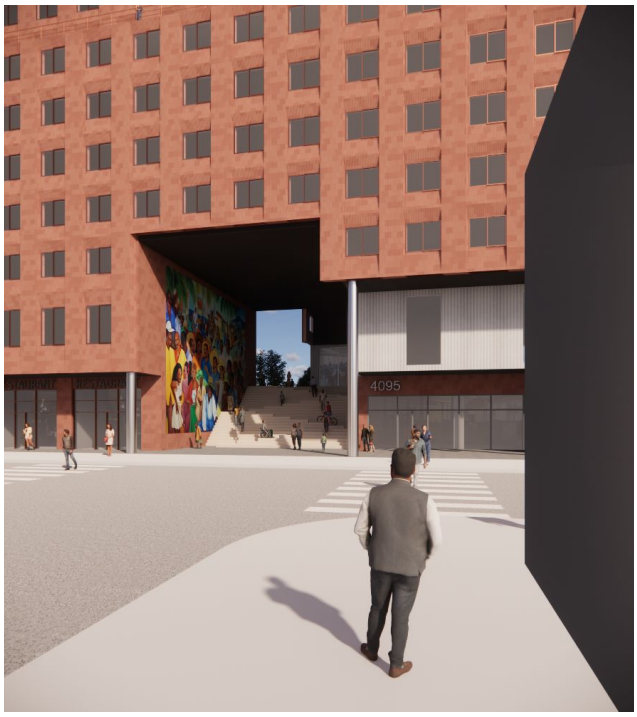
Residential Floor Plan After Setback:

G. Seamless Connectivity, Experience, and Identity

Connectivity is thoughtfully layered throughout the site, with residents overlooking green spaces that seamlessly blend public and semi-private uses. A framed passage guides pedestrians from 219th Street to the waterfront, reinforcing both physical access and visual sightlines. Architectural identity is conveyed through distinctive form and materiality. For example, the STEM Center's sawtooth roof not only introduces natural daylight into its learning spaces but also signals its civic importance. Subtle contrasts in materials across the site further clarify programmatic uses and enhance spatial legibility.



Interconnected green spaces, viewed from the residential terrace.

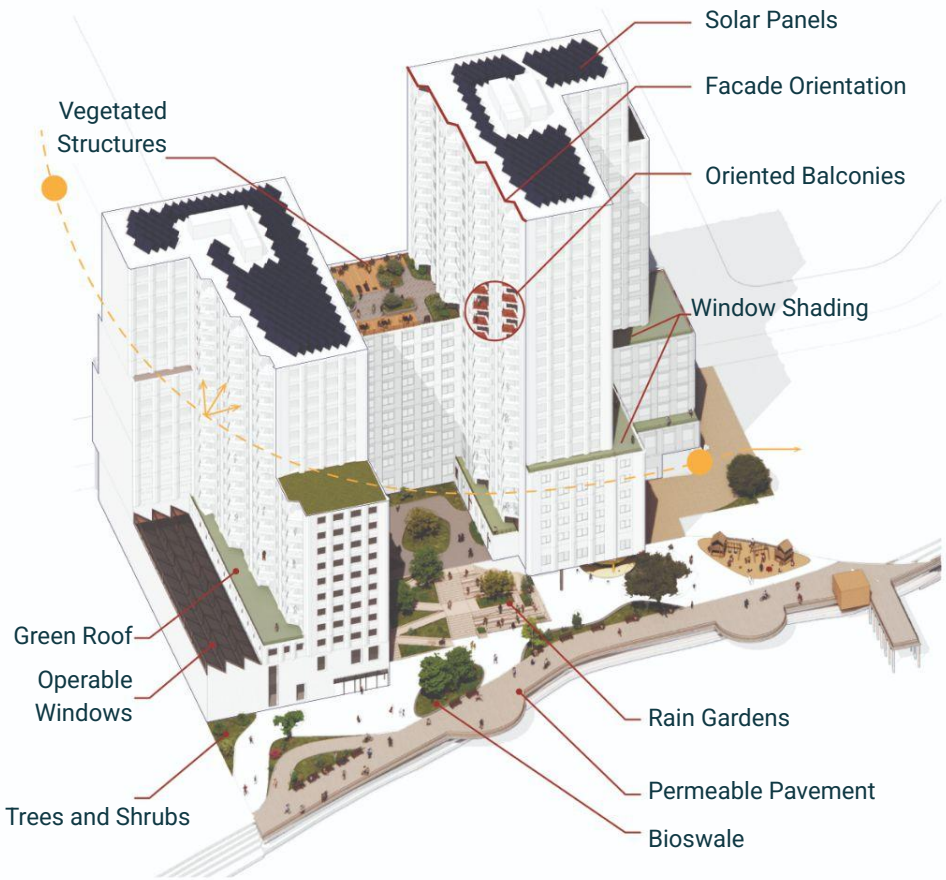


A seamless transition from 219th Street to the waterfront, framed by an inviting passageway.

The STEM Center's sawtooth roof maximizes daylight for workshops while defining a bold architectural identity.

Contrasting textures emphasize key program elements.

H. Sustainability



TerraNueva confronts climate risk directly, recognizing that by 2050 the site will fall within the 100-year floodplain and that Inwood currently ranks 3 out of 5 on the city's heat vulnerability index—signaling an urgent need for resilient design.

In response, the project embraces Passive House principles, with façades oriented and shifted to maximize southern sunlight while preserving views of the waterfront.

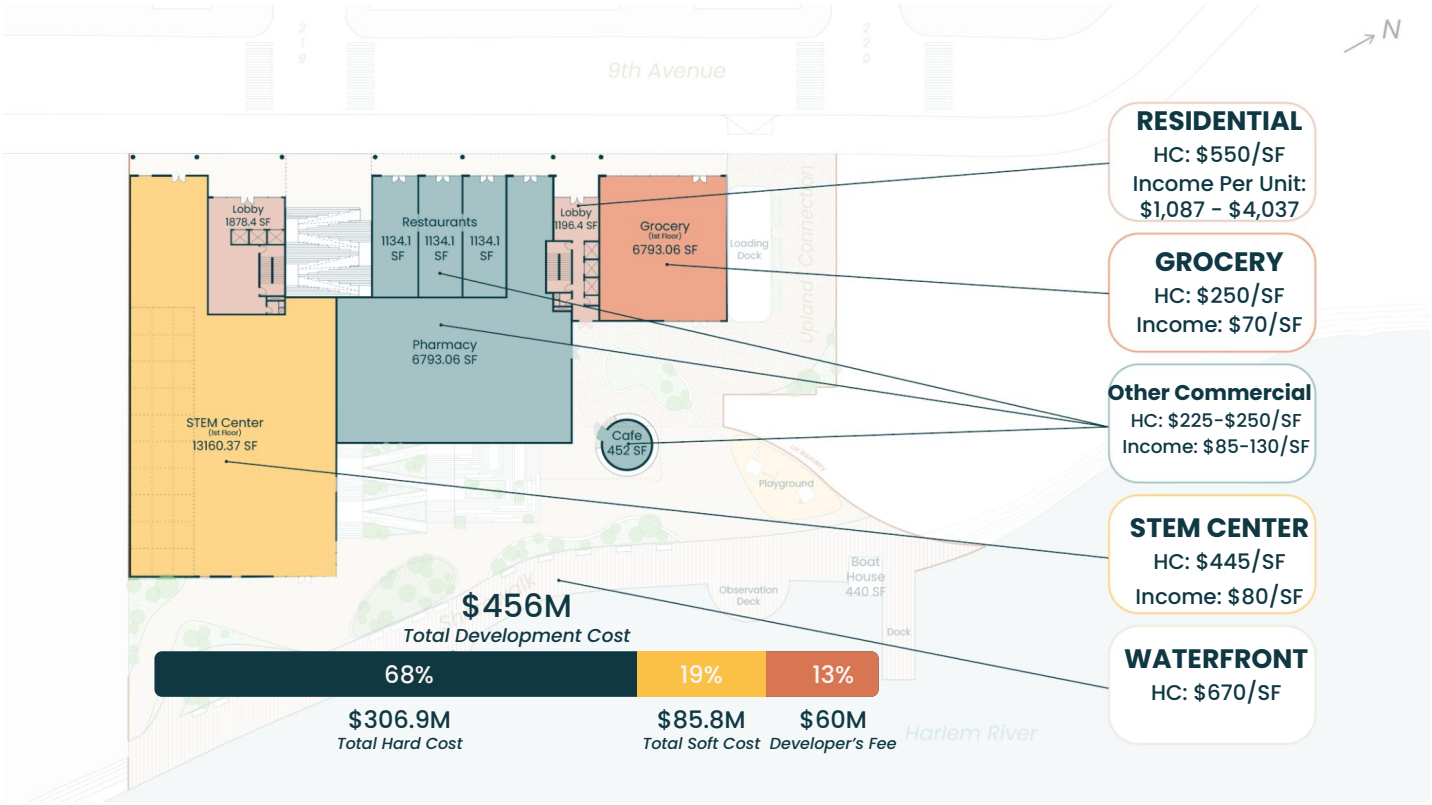
The building incorporates all-electric systems and integrates green infrastructure such as rain gardens, bioswales, shaded seating, and permeable surfaces.

TerraNueva is also pursuing LEED, Energy Star, and wet floodproofing certifications to ensure long-term environmental and operational resilience.

Together, these strategies position TerraNueva not just as housing, but as a forward-thinking model for climate-adaptive, community-centered urban design.

V. Financial Analysis

A. Development Budget



STEM Center Costs

The cost to build TerraNueva's SolarOne STEM Center is based on taking a discount to the cost to build the $1.6B, 1.5M sqft SPARC Kips Bay Stem Center. At roughly $746/sf in hard costs to build SPARC Kips Bay, a 40% discount due to quality of build and amenities, brings TerraNueva's STEM Center to $445/ sf in hard costs.

Waterfront Costs

Waterfront Esplanade buildout costs were determined by examining the costs to build the new East River Greenway running from East 53rd st to East 60th. The project spans 3 acres, costs $197.6M, and estimated $1134/sf in hard costs. A 40% discount to these numbers due to quality of build, amount of green spaces, open road work, etc brings TerraNueva's waterfront to $670/sf in hard costs.

Residential & Commercial

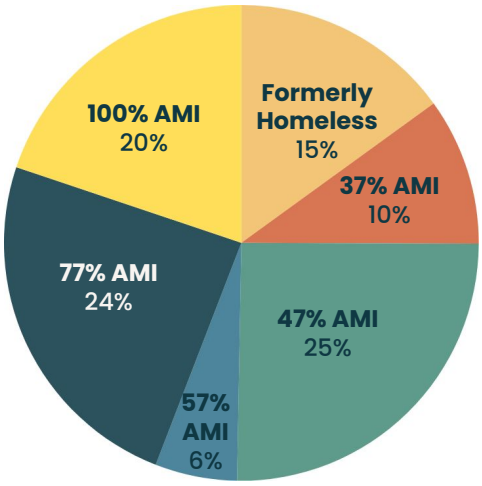
Residential hard costs were determined by analyzing other affordable housing projects. Due to the nature of TerraNueva being built with both prevailing wages and passive house standards, a 30% premium was applied, leading to all in residential hard costs at $550/ft.

Commercial hard costs were determined by analyzing the costs to build similar white box retail spaces in neighboring projects.

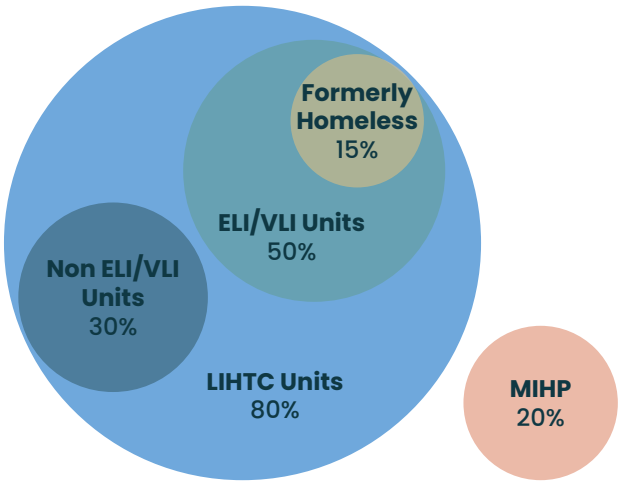
All residential incomes are set based on NYC HPD AMI bands, and all commercial programming rents are determined by looking at commercial lease comps.

B. Residential Unit Mix by Income

AMI Breakdown in Units



Unit Mix by Affordability/Funding Sources



Unit Type	Avg Market Rent	37% AMI	47% AMI	57% AMI	77% AMI	100% AMI
Studio	$2,200	$1,087	$ 1,358	$ 1,630	$ 2,174	$ 2,717
1 BD	$2,700	$1,165	$ 1,456	$ 1,747	$ 2,330	$ 2,912
2 BD	$3,500	$1,389	$ 1,747	$ 2,097	$ 2,796	$ 3,495
3 BD	$4,200	$1,615	$ 2,018	$ 2,422	$ 3,230	$ 4,037

** NOTE** For purposes of underwriting, HPD allows 37% AMI to represent 40% AMI, 47% AMI to represent 50% AMI, etc

15% of all TerraNueva units are reserved for formerly homeless households. 10% of all units are reserved for 40% AMI households, 25% of all units are reserved for 50% AMI households, 6% of all units are reserved for 60% AMI households, 24% of all units are reserved for 80% AMI households, and 20% of all units are reserved for 100% AMI households.

80% of all TerraNueva units are LIHTC funded units. Of these 80%, 50% of the units are reserved for extremely low income (ELI) or very low income (VLI) households – these are households making under 30% AMI if an ELI household and between 31%-50% AMI for a VLI household. 15% of these 50% ELI/VLI units are reserved for formerly homeless households, underwritten at 40% AMI as per HPD guidelines. The remaining 30% of the LIHTC units are non ELI/VLI units with household AMI between 50%- 80%. The 20% non LIHTC funded units are funded by the HCR Middle Income Housing Program (MIHP). These units are for households with 80%-130% AMI but TerraNueva caps at 100% AMI overall to allow for complete affordability.

Average rents in Inwood start at $2,200/month for a studio and upwards of $4,200/month for a 3 bedroom apartment. TerraNueva provides for deep affordability with starting prices of $1,087/ month for a studio apartment and not exceeding $4,037/ month for a 3 bedroom apartment at 100% AMI.

C. Maintenance, Operating Expenses, and Taxes

MAINTENANCE & OPERATING EXPENSE GUIDELINES
NEW CONSTRUCTION
2024

Revised: 3/13/2024

	M&O Electric Heat (VRF)/Gas Water		M&O All Electric (assumes VRF)[4]		Passive House(assumes VRF)[4]		
	PW/Union Building Staff	Per	PW/Union Building Staff	Per	PW/Union Building Staff	Per	Per/
ADMINISTRATIVE							
Legal	$24,000	$240	$24,000	$240	$24,000	$240	/du
Accounting	$19,000	$19,000	$19,000	$19,000	$19,000	$19,000	/project
Management Fee[1]	$123,613	6.5%	$123,613	6.5%	$123,613	6.5%	of ERI
Fire and Liability Insurance[2]	$150,000	$1,500	$150,000	$1,500	$150,000	$1,500	/du
Tax Credit Monitoring[3]	$12,600	$126	$12,600	$126	$12,600	$126	*See footnote*
Benchmarking Expense	$600	$600	$600	$600	$600	$600	/bldg
UTILITIES							
Heating[4]	$58,905	$165	$58,905	$165	$35,700	$100	/rm (assumes VRF)[4]
Owner Paid Cooling (if applicable)[5]		*$85*		*$85*		*$68*	/rm (assumes VRF)[4]
Hot Water[6]							
Gas Hot Water	$39,984	$112					/rm
Electric Heat Pump Hot Water			$66,045	$185	$66,045	$185	/rm
Electric (common areas)	$71,400	$200	$71,400	$200	$71,400	$200	/rm
Water & Sewer	$107,100	$300	$107,100	$300	$107,100	$300	/rm
Broadband[7]							
MAINTENANCE							
Supplies/Cleaning/Exterminating	$49,980	$140	$49,980	$140	$49,980	$140	/rm
Repairs/Replacement	$100,000	$1,000	$110,000	$1,100	$110,000	$1,100	/du
Super & Maintenance Salaries[8]	$260,981	$2,610	$260,981	$2,610	$260,981	$2,610	/1 Super 1 Porter
Elevator Maintenance & Repairs [Assumes 2]	$20,000	$10,000	$20,000	$10,000	$20,000	$10,000	/elev
Bldg Reserve	$40,000	$400	$40,000	$400	$40,000	$400	/du
HDC Servicing Fee[9]							
M&O Before Taxes and Debt Service	**$1,078,163**	**$10,782** **$3,020**	**$1,114,224**	**$11,142** **$3,121**	**$1,091,019**	**$10,910** **$3,056**	/du /rm

NOTES

1. MANAGEMENT FEE: 8% for Supportive Housing Loan Program

2. INSURANCE: Project Managers are directed to underwrite to an actual quote whenever possible.

3. TAX CREDIT MONITORING: This fee is a combination of the building fee ($100 per building), plus the unit fee (0.75% of the maximum annual tax credit rent for all LIHTC units). The unit fee is capped at $12,600 for buildings of 150 units or less, and $17,500 for buildings over 150 units.

4. HEATING: Project Managers are directed to underwrite to the method of heating utilized, typically VRF at $165/rm. If Packaged Terminal Heat Pump (PTHP), standard will be set at $195/rm for heating. PTHP units are a type of Cold Climate Heat Pumps.
Passive House: For all PH buildings, heating can be discounted by 40% (For VRF, this equates to $100. For PTHP, this equates to $117).

5. OWNER PAID COOLING: Allowed only for VRF, Owner Paid Cooling is NOT allowed for PTHP systems except in PH. If PH, Owner Paid Cooling should be discounted by 20%.

6. HOT WATER: Project Managers are directed to underwrite according to project type (gas/electric).

7. BROADBAND: Project Managers are directed to include broadband and underwrite to an actual quote whenever broadband is incorporated into construction.

8. SUPER & MAINTENANCE SALARIES: 1 staff member for every 65 units. Additional staff may be added per 65 units of housing. This schedule assumes 1 super + 1 porter for a 100 unit building at prevailing wage/union. In addition, use a 1.15 multiple to account for overtime/vacation assumptions. Handyperson will be considered on a case-by-case basis.

Salary Assumptions:

	Prevailing Wage	With Multiplier	Non-Union	With Multiplier
FT Super	$126,483	$145,455	$79,456	$91,374
FT Porter	$100,458	$115,526	$73,476	$84,497
FT Super + FT Porter		**$260,981**		**$175,871**
FT Handyperson	$107,084	$123,146		

**Salaries are estimated based on an hourly wage, 40 hour workweek, 52 weeks/year plus assumptions for payroll taxes, benefits, and workers comp.*

9. HDC SERVICING FEE: Servicing fee set at 0.25% of senior permanent loan.

All underwriting for operating expenses were sized on the guidelines as outlined in the NYC HDC 2024 Maintenance and Operating Expense Guidelines for new construction projects as shown above. Given that TerraNueva is a passive house building, all passive house guidelines were followed as outlined in the passive house underwriting assumptions.

The project is also over 120 units, therefore prevailing wages are being paid in both construction costs and in operating costs. Prevailing wage salaries are being paid to all supers and porters, and increased overall hard costs by nearly 30% to account for increased labor costs.

TAX CODE 420-c:

No property taxes are being paid in accordance with tax code 420-c. The project will receive a full tax abatement for up to 60 years subject to HPD approvals, LIHTC financing, and a minimum 30 year hold period.

D. Government Funding Sources

	HFA 1st Mortgage	HCR New Construction	HPD ELLA	HDC ELLA	HCR MIHP	FHA GMIP	TerraNueva
Affordability Mix	- Min. 50% units at ≤60% AMI	- Max. 80% AMI (LIHTC Income Averaging)	-Min 80% units up to 80% AMI - 20% units can be 90-100% AMI	LIHTC units ≤80% AMI, averaging <60% AMI Eligible up to 120% AMI	- Min 10%, max 30% of units between 80%-130% AMI	N/A	**80% LIHTC units ≤80% AMI, 20% units at 100% AMI (MIHP)**
Subsidy Per Unit	- Sized on LTV, LTC, DSCR	$140,000/du	-$122,500/du if 100% LIHTC -$137,500/ du if 80% LIHTC	$65,000/du Max $20M/Project	$200,000/ MIHP unit	No Min/Max Loan Amount Average Loan Size: $16M	**Utilized max subsidy per source, excluding FHA GMIP. Used 20% of FHA GMIP average loan size.**
Cash Flow Targets	-1.15 DSCR -1.05 I-E Ratio	-1.15 DSCR	-1.15 DSCR -1.05 I-E Ratio	-1.15 DSCR -1.05 I-E Ratio	-1.15 DSCR -1.05 I-E Ratio	N/A	**-1.15 DSCR -1.09 I-E Ratio**
Pro- Forma Requirements/Guidelines	-No capital reserves -15% Max Developer fee -5% Hard & Soft Costs contingencies	-Max Subsidy Amount awarded for using Prevailing Wages	-Can't exceed 90% Total Development Costs -Follow HPD growth & vacancy standards	-Can't exceed 90% Total Development Costs	- LIHTC & SLIHTC can't apply to MIHP units	N/A	**- 13% Developer Fee - 5% contingencies - Prevailing wages - Follows 2024 HDC Maintenance & Opex Standards**
Regulatory Terms	- Hold for minimum 30 years - **60 year tax abatement under 420-c	40-Year Regulatory Agreement	- Weighted average AMI 53-54% -15% formerly homeless units -50% at least ELI/VLI units -Max 25% studios, min 20% 2 bed+	-15% formerly homeless units -Follow First Mortgage HDC Guidelines	-MIHP must be only source of financing in unit - 30 year hold, coterminous with LIHTC	-Must Achieve ENERGY STAR score of 75 -Often used in conjunction with other Equity or grant funds (LIHTC)	**-Holding for 40 years min - 60 year tax abatement - 54% Weighted Average LIHTC units -15% formerly homeless units - 50% ELI/VLI units - 22% studios, 55% 2 bed+ -ENERGY STAR**

A breakdown of each government funding source to be used in developing TerraNueva can be found in the table above. The table makes clear the different terms and requirements across each source while also showing that the project is in full compliance with all terms. Below is a more detailed look at each respective funding source with notes regarding the project's financials:

HFA 1st Mortgage

The first mortgage is a HFA first mortgage sized on 1.15 DSCR, 1.05 Income to Expense, 80% LTV and 80% LTC. Ultimately the loan was sized on a 1.15 DSCR with an all-in rate of 5.9% in guidelines with the construction and permanent loan sizing parameters as outlined in Appendix D of the 4095 9th Ave RFP. TerraNueva achieves a 1.15 DSCR and 1.09 I-E ratio in year 1.

HCR New Construction Loan

Primary subordinate debt includes a loan from New York State Homes and Community Renewal (NYSHCR). To qualify, the building must achieve a max blended AMI of 60% if using LIHTC average blending (allows to go up to 80% AMI as long as 60% blended is achieved), making the project eligible for $140,000 per income-restricted unit. Compliance with prevailing wage requirements is mandatory. The loan carries a 0.25% interest-only rate and a 0.25% servicing fee, applicable during both the construction and permanent phases. TerraNueva qualifies with an AMI mix spread between 40%, 50%, 60%, 80%, and 100% AMI bands.

HPD ELLA

HPD ELLA is the secondary subordinate debt used in the development of TerraNueva. Under HPD ELLA, a minimum of 80% of all units have to be at 80% AMI or below and a maximum of 20% of all units can be at 80% -130% AMI. If 80% of the project is LIHTC funded, the project is eligible to receive $137,500/ du and if the project is 100% LIHTC funded, the program awards $122,500/ du with a LTC of 90%. 15% of all units must be reserved for formerly homeless households, the project must maintain a weight average AMI between 53%-54%, at least 50% of all units must be ELI/VLI units, and design standards must include a maximum of 25% studios and a minimum 20% of all units being 2 bedrooms or more. The developer fee cannot exceed 15% of total development costs.

TerraNueva adheres to all of these guidelines with 80% LIHTC funded units at 80% AMI or below and 20% non- LIHTC units at 100% AMI allowing for $137,500/ du in subsidy. The project maintains a 54% weighted average AMI across all LIHTC units while adhering to design and affordability standards.

HDC ELLA

HDC ELLA maintains similar regulatory guidelines and term sheets as the HCR New Construction loan. However, as it is subordinate debt to be used for gap financing, the program awards $65,000/du with a maximum amount of $20M. TerraNueva utilizes the complete $20M amount.

HCR MIHP

The HCR Middle Income Housing Program (MIHP) covers the funding for the 20% non- LIHTC units that TerraNueva will deliver. A minimum of 10% and a maximum of 30% of all units have to be between 80%-130% AMI. TerraNueva delivers 20% of all units at 100% AMI. The project provides $200,000/ MIHP and must be the only source of financing in the unit with a 30 year hold coterminous with LIHTC, although neither LIHTC nor SLIHC can be applied to MIHP units.

FHA GMIP

The FHA Green Mortgage Insurance Program provides gap financing for projects using LIHTC and achieving an ENERGY STAR score of 75. TerraNueva is a passive house building meeting all sustainable and energy efficiency standards and utilizes a $3,528,068 award at a 0.25% servicing fee to meet gap financing.

NYS Grants

Energy Efficiency and Clean Technology Training Program

NYSERDA provides $1M to support programs that provide technical training, hands-on learning, job placement, and support services to build a skilled workforce to achieve New York's goals under New York's Climate Act.

TerraNueva utilizes this grant as a part of permanent financing.

NEW YORK STATE OF OPPORTUNITY. Empire State Development

NYS Workforce Development Capital Grant Program provides $3M to support growing industries and increase capacity of workforce, addressing all racial, socioeconomic, ethnic, and gender groups.

TerraNueva utilizes this grant as a part of construction financing.

E. LIHTC, Developer's Fee, and Cash Flow

LIHTC

Calculation of Annual Tax Credit	LIHTC	SLIHC
Annual Credit Rate	4%	4%
Amount Raised per Credit	$1.00	$0.70
Applicable Fraction	79.03%	79.03%
Eligible Basis	$338,721,856	$338,721,856
Per Unit Max Eligible Basis	$575,000	$575,000
Restricted Per Unit Eligible Basis x Units in Project	$299,000,000	$299,000,000
Eligible Basis x Applicable Fraction	$236,312,334	$236,312,334
Qualified Basis with 30% DDA Boost	$307,206,034	$307,206,034
One Year Credit - (Qualified Basis x Credit Rate)	$12,288,241	$750,000
Total Eligible Raise	**$122,870,125**	**$5,249,475**
Closing Distribution (15%)	$18,430,519	$787,421

Developer's Fee

Developer Fee Breakout	
Total Developer Fee (13% of TDC)	$60,000,000
Deferred Developer Fee at Construction	$49,610,305
Paid Developer Fee at Construction	$10,389,695
Deferred Developer Fee at Permanent Conversion (Paid over 15-Year CF)	$36,634,085
Paid Developer Fee at Permanent Conversion	$12,976,220
Net Paid Developer Fee	$23,365,915
Total Developer Fee	**$60,000,000**

Consolidated 15 Yr Cash Flow

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15
Effective Gross Income:	$15,593,724	$15,905,599	$16,223,711	$16,548,185	$16,879,148	$18,635,944	$20,575,588
Operating Expenses & Reserves:	-$5,410,319	-$5,572,629	-$5,739,807	-$5,912,002	-$6,089,362	-$7,059,239	-$8,183,593
Net Operating Income	**$10,183,405**	**$10,332,970**	**$10,483,903**	**$10,636,183**	**$10,789,787**	**$11,576,705**	**$12,391,995**
First Mortgage Debt Service (5.90%):	-$8,026,197	-$8,019,858	-$8,013,162	-$8,006,089	-$7,998,616	-$7,954,434	-$7,896,304
Total Subordinate Debt Service (2.25%):	-$858,345	-$858,345	-$858,345	-$858,345	-$858,345	-$858,345	-$858,345
Net Cash Flow	**$1,298,863**	**$1,454,766**	**$1,612,395**	**$1,771,749**	**$1,932,825**	**$2,763,925**	**$3,637,346**
Income to Expense Ratio:	*1.09*	*1.1*	*1.11*	*1.12*	*1.13*	*1.17*	*1.22*
Debt Coverage Ratio:	*1.15*	*1.16*	*1.18*	*1.2*	*1.22*	*1.31*	*1.42*

Net Cash Flow in 15 years: **$36,634,085**

F. Sources & Uses

Construction Sources	Amount	% of total
NYS HFA Affordable Rental Housing Program	$111,350,000	24.40%
NYS HCR New Construction Program	$68,761,000	15.07%
HFA Construction Loan (Short-Term Bonds)	$99,025,803	21.70%
HPD ELLA	$54,078,750	11.85%
HDC ELLA	$19,000,000	4.16%
NYS HCR MIHP	$19,570,000	4.29%
FHA Green Mortgage Insurance Program	$3,351,665	0.73%
HCR Accrued Interest during Construction	$5,788,792	1.27%
Federal Low Income Housing Tax Credits	$18,430,299	4.04%
State Low Income Housing Tax Credits	$787,421	0.17%
NYS Workforce Development Capital Grant	$3,000,000	0.66%
Deferred Operating Reserves	$3,571,510	0.78%
Deferred Developer Fee	$49,610,305	10.87%
Total Construction Sources	$456,325,545	100%
GAP	$0	

Permanent Sources	Amount	% of total
NYS HFA Affordable Rental Housing Program	$111,350,000	24.40%
NYS HCR New Construction Program	$72,380,000	15.86%
HPD ELLA	$56,925,000	12.47%
HDC ELLA	$20,000,000	4.38%
NYS HCR MIHP	$20,600,000	4.51%
FHA Green Mortgage Insurance Program	$3,528,068	0.77%
HCR Accrued Interest during Construction	$5,809,326	1.27%
Federal Low Income Housing Tax Credits	$122,958,754	26.94%
State Low Income Housing Tax Credits	$5,788,792	1.27%
NYSERDA Energy Efficiency & Clean Technology	$1,000,000	0.22%
Deferred Developer Fee	$36,634,085	8.03%
Total Permanent Sources	$456,325,545	100%
GAP	$0	

Uses	Amount	Per Unit	% of total
Acquisition Costs	$1	$0	0%
Hard Construction Costs	$306,911,344	$590,214	67%
Soft Costs	$85,842,690	$165,082	19%
Reserves and Escrows	$3,571,510	$6,868	1%
Developer Fee	$60,000,000	$115,385	13%
Total Uses	$456,325,545	$877,549	100%

G. Risks, Mitigants, & Alternate Exits

Risks

1. The project is heavily being funded by LIHTC at both the federal and state level with roughly $122M and $5.2M across a 10 year period respectively. Given the current political state and this administration's policies, there is a strong chance that LIHTC could be removed overall or severely impacted which would take away roughly more than 25% of total financing sources.

2. Project is being financed 100% by federal, state, and city agencies such as HPD, HUD, etc. Given the extent of government layoffs taking place and the attack on HPD as well that is occuring with the current administration, there could also be a chance that these financing sources are severely cut or eliminated overall. This would be a tremendous blow to TerraNueva as the project is being financed by a total of 6 different government sources, 2 government grants, and LIHTC federal and state funding– making the project seamlessly impossible to develop.

3. The continuous growing cost of labor, construction, insurance policy requirements, etc is a big worry. These costs have largely been accounted for through the use of prevailing wages, doing a deep analysis of the costs to build a passive house building, getting accurate construction numbers and more, but NYC policy and the overall concerns for the cost to build is ever so prevalent.

Mitigants

In order to account for these risks moving forward, there are 2 revisions/ different approaches to consider.

1. Overall design has to be severely minimized in order to meet the costs to build while dealing with a lack of financing sources. This means losing a passive house building, not incorporating all sustainable strategies described, using lower quality materials and products, and overall building a much less exciting building. While this is not ideal in any way, the macroeconomic environment may force the project to make these changes or there will be no way to actually build.

2. In the case that financing mechanisms disappear and significantly decrease in funding amounts, deeper commitments have to be made with nonprofit partners, bringing in private equity through foundations and philanthropic organizations, and de-risking the project away from any sort of government funding.

   Overall, policy legislation is largely uncontrollable, but severely affects the buildout of a project like TerraNueva. It is important to stay vigilant on all political issues that could affect development but also be creative and strategic in order to come up with ways to still make the project buildable without such strong government involvement.

Alternative Exit Strategy

As mentioned above, the property will be held for a minimum of 40 years in order to receive a 60 year tax abatement, bringing yearly operating expenses down to a minimum and allowing for a more financially sound project. If however for any reason it is not possible to hold for a 40 year period, the project will be sold to a large institutional investor that can continue to operate the property and receive steady cash flows along the way. It may also be worthwhile to look at ways of refinancing both government funding sources as well as LIHTC tax credits depending on the economic conditions of doing one or the other in case the project goes below DSCR coverage and/ or income to expense ratio guidelines.

H. Sensitivity Analysis

1. **Development timeline-** The project is expected to take 2 years to build with a 1 year lease up and short-term and long term bonds are affected strongly in case the development timeline exceeds this period. The construction short term bonds rate is 4.05% in accordance with HPD guidelines but should the project take longer than expected, additional short term bonds will need to be raised and more interest will be accrued. A 1 year lease up period is also a conservative number as all units will be under the NYC housing lottery and leased up very quickly, but should it take longer than expected, the first year DSCR coverage and income to expense ratios could take a hit which would impact the overall ability to use some of the government programs as they have strict coverages that have to be adhered to. A 3 year development timeline and an 18 month lease up period for instance would lead to a $20,382,846 gap in both construction and permanent financing.

2. **Operating Costs-** The building is passive house so much less is paid for overall utilities and prevailing wages are paid to all supers, porters, etc. The biggest operating cost is the maintenance of the waterfront which is in partnership with NYC Parks to be maintained as a public-private partnership. While simple landscaping and snow removal costs are covered, the Parks department is in charge of daily maintenance. Should this partnership take a hit, overall yearly maintenance is expected to go up significantly and other partners would need to be seeked out if this occurs in the early years of the project. The DSCR coverage exponentially increases across the years and so in a later year these costs could be paid for but in an early year, another partnership would need to be seeked out. If operating costs go up by $3M for instance, there would be a $51M gap in permanent financing and the DSCR coverage ratio would fall to 0.84 from 1.15 in year 1.

3. **Hold Period-** The hold period is for a minimum of 40 years as this allows for a 60 year tax abatement under code 420c. Should the hold period change for any reason, the yearly tax obligations would be far more than the project could handle which would significantly affect financing strategies and alternative funding sources would need to be seeked out. A yearly tax amount of $5M for instance would lead to a $94M gap in permanent financing and the DSCR coverage ratio would fall to 0.58 from 1.15 in year 1.

NOTE- Project is modelled using HPD Affordable Housing Model & therefore standard sensitivity tables cannot be utilized

VI. Conclusion

TerraNueva provides the model for the future of sustainable, affordable, and innovative development. While directly addressing the needs of the Inwood community by providing deeply affordable housing, a waterfront esplanade to relax and recover, a STEM center to advance education and job training, a grocery store for fresh food right at residents' footsteps, and local retail restaurants, TerraNueva is a necessity for the future of Inwood living.

This project will be made possible from the help of equity LIHTC partners and government offices including but not limited to HUD, NYC HDC, NYC HPD, NYS HCR, HFA, and more. Waterfront and STEM center maintenance would not be possible without the help of NYC Parks and SolarONE.

TerraNueva is set to break ground this summer with an expected two year construction period and delivery during summer 2027.