

**d a n
i e l**

Daniel Louis Hahn

P O R T F O L I O

Columbia University GSAPP Selected Works
2021-2025

EDUCATION	EXPERIENCE
 Columbia University Graduate School of Architecture, Planning, and Preservation ♦2024– 2025 Master’s of Science in Advanced Architectural Design Degree to be awarded in May 2025  New York Institute of Technology ♦2019 – 2024 Bachelor’s of Architecture ♦Summa Cum Laude ★GPA: 3.93 (Ranked top of my class)	 Gensler Design Tech Intern (part-time) February 2025 - Present Support design teams in integrating advanced BIM methodologies, with a primary focus on Revit. Conduct research, develop workflows, and provide training on digital design tools. Manage project templates, model coordination, and BIM execution plans to enhance project efficiency. Facilitate innovation by mentoring teams and optimizing technology-driven design processes.  Bjarke Ingels Group Thesis Student (full-time) September 2023 - May 2024 Collaborated with BIG partners in their Dumbo, NY office on my thesis, exploring innovative designs and presenting detailed concepts. Received invaluable feedback from senior staff, including Bjarke Ingels, deepening my understanding of contemporary practices and design innovation.  H2M Architects + Engineers Architectural Intern (full-time) Febuary 2023 - May 2024 Engaged in client meetings to develop tailored architectural solutions and sustainable designs. Prepared detailed construction drawings, collaborated with interdisciplinary teams to ensure compliance, and utilized AutoCAD/Revit for precise modeling and project efficiency.  Italy Semester Abroad Research Student (full-time) May 2023 - July 2023 Explored architectural heritage in Italy, led urban workshops, collaborated with the mayor and local architects on sustainable design projects.  Bentel & Bentel Architects / Planners AIA Design Assistant (part-time) August 2022 - December 2022 Assisted in construction documents, created hyperrealistic renders, and collaborated on design concepts with Bentel partners and senior architects.  NYC Department of Design & Construction Design-Build Intern (full-time) June 2022 - August 2022 Collaborated on public building renovations, assisting with design review, project scope and hands-on experience through seminars and site visits.
HONORS & AWARDS	
★ Selected Thesis Work Presenter at Prestigious NYCxDesign Week 2024	
★ American Institute of Architects Henry Adams Medal and Certificate for an outstanding architecture student, March 2024	
★ Dean’s Award for Design Excellence , Architecture for achieving Excellence in the program, March 2024	
★ Friends of NYIT School of Architecture and Design Scholarship / 1st Place Award for portfolio, essay, GPA, leadership, and employment, 2024	
★ AIA Long Island Chapter John Notaro Student Scholarship 1st Place Award for architecture vision and portfolio, July 2022	
♦ 14th and 15th NYIT Alumni & Friends Event Dean’s Guest	
♦ Tau Sigma Delta – NYIT, March 2022	
♦ Phi Eta Sigma National Honor Society, Inc. March 2021	
♦ Presidential Honors Dean’s List – NYIT, 2019 – 2024	
♦ T.K. Steele Scholarship for Academic Excellence – NYIT, 2018 – 2024	
PROFESSIONAL MEMBERSHIPS	
♦The American Institute of Architecture Students	
♦National Organization of Minority Architects	
♦Society of American Registered Architects	
♦Architectural League of New York	



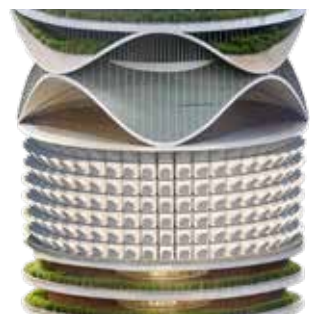
01 RADICAL ENVIRONMENTS



02 O2R + GRAVITY BATTERIES



03 ZAHA HADID



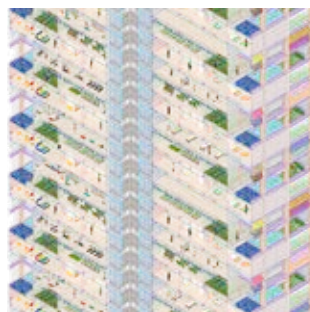
04 SCALED



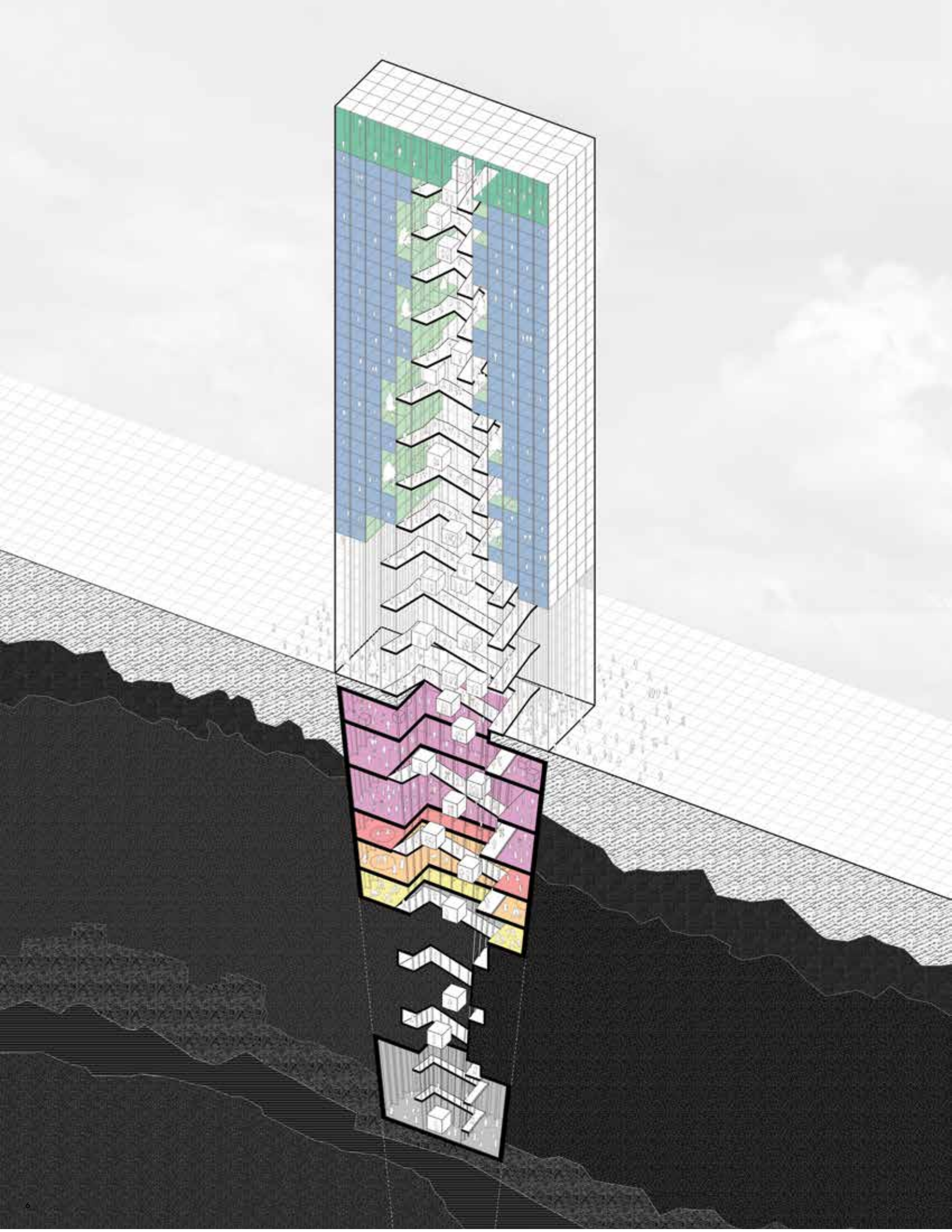
05 CLOUD



06 SERPENTINE



07 SEXY APOCALYPSE



RADICAL ENVIRONMENTS

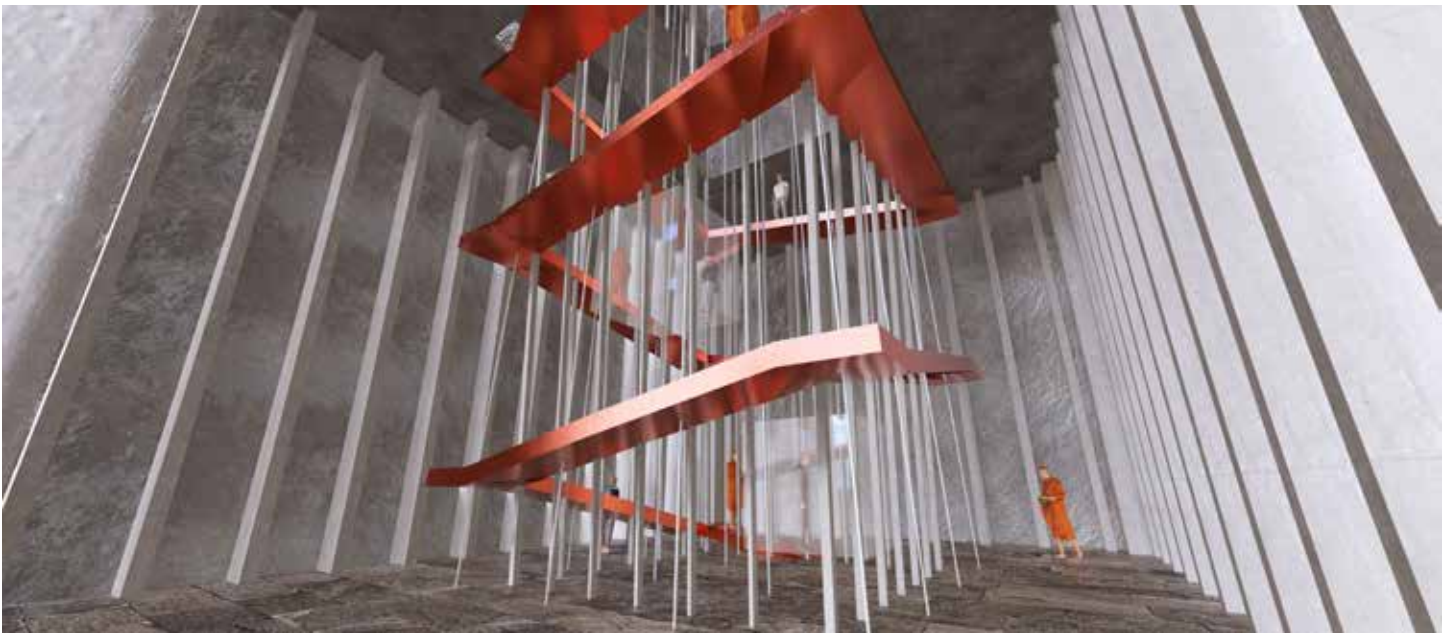
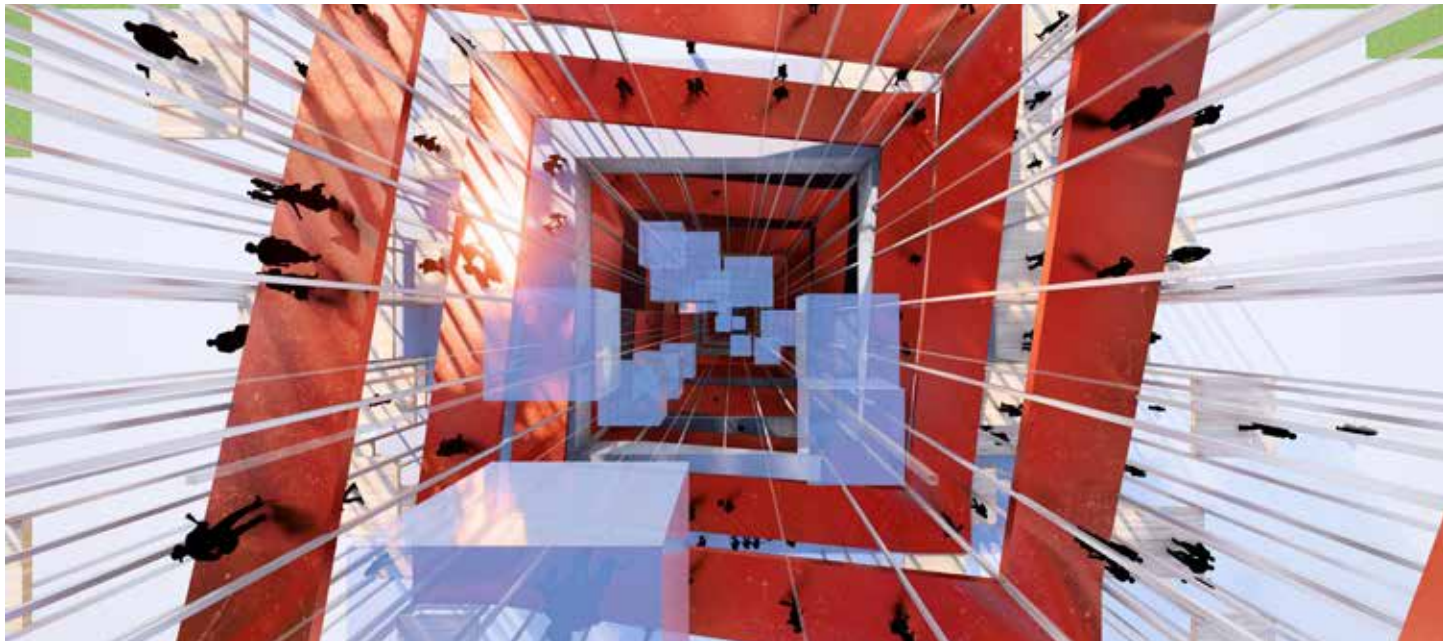
A TOWER OF SOLITUDE, SOUND AND SOLIDARITY — STITCHED TOGETHER BY MOVEMENT.

**Columbia GSAPP, Professor Leonidas Trampoukis and Eleni Petaloti,
Advanced Architecture Studio, Spring 2025**

This studio, shaped by an immersive study abroad experience in Japan, explored how architecture can mediate the boundaries between solitude and collectivity. Observations from Tokyo's layered urban life and the quiet intensity of rural temples informed a deeper investigation into ritual, atmosphere, and spatial identity. These experiences became central to the project's conceptual and formal direction.

Radical Environments is a vertical architecture that reimagines how we live together by stacking distinct spatial conditions—private, semi-public, and public—into a single unified framework. At the top, modular homes provide space for personal ritual and reflection, designed for one yet always in silent dialogue with the world below. Beneath ground, a sequence of subcultural arenas unfolds, including nightclubs, kendo halls, sumo rings, judo spaces, and a monastery. Each layer carries its own rhythm, atmosphere, and form of expression. Between these poles floats a porous pavilion—an adaptable, shifting public interface that circulates people, light, and energy throughout the system.

The architecture resists static separation. Instead, it is held together by voids—active thresholds that are never empty, but charged with movement, tension, and possibility. Rather than assigning fixed function to space, the project orchestrates relationships between people, programs, and experiences. It is both scaffold and stage—a tower of reflection, intensity, and radical coexistence.



GRAVITY BATTERIES + OFFICE TO RESIDENTIAL CONVERSIONS:

A DUAL URBAN SOLUTION

HOUSING AND ELECTRICITY

Columbia GSAPP, Professor's Sean Gallagher, Emerging Optimism, Spring 2025
Professor's Alejandra Zapata Soveranez & John Scheeler, Computational Urbanism, Spring 2025

This project proposes a hybrid architectural and infrastructural intervention to address two converging urban crises in New York City: the sharp rise in vacant office towers and the urgent need for sustainable energy storage. By converting underutilized office buildings into residential housing and integrating gravity battery systems within their existing cores, the project explores how architecture can reprogram the verticality of cities for both social and ecological resilience.

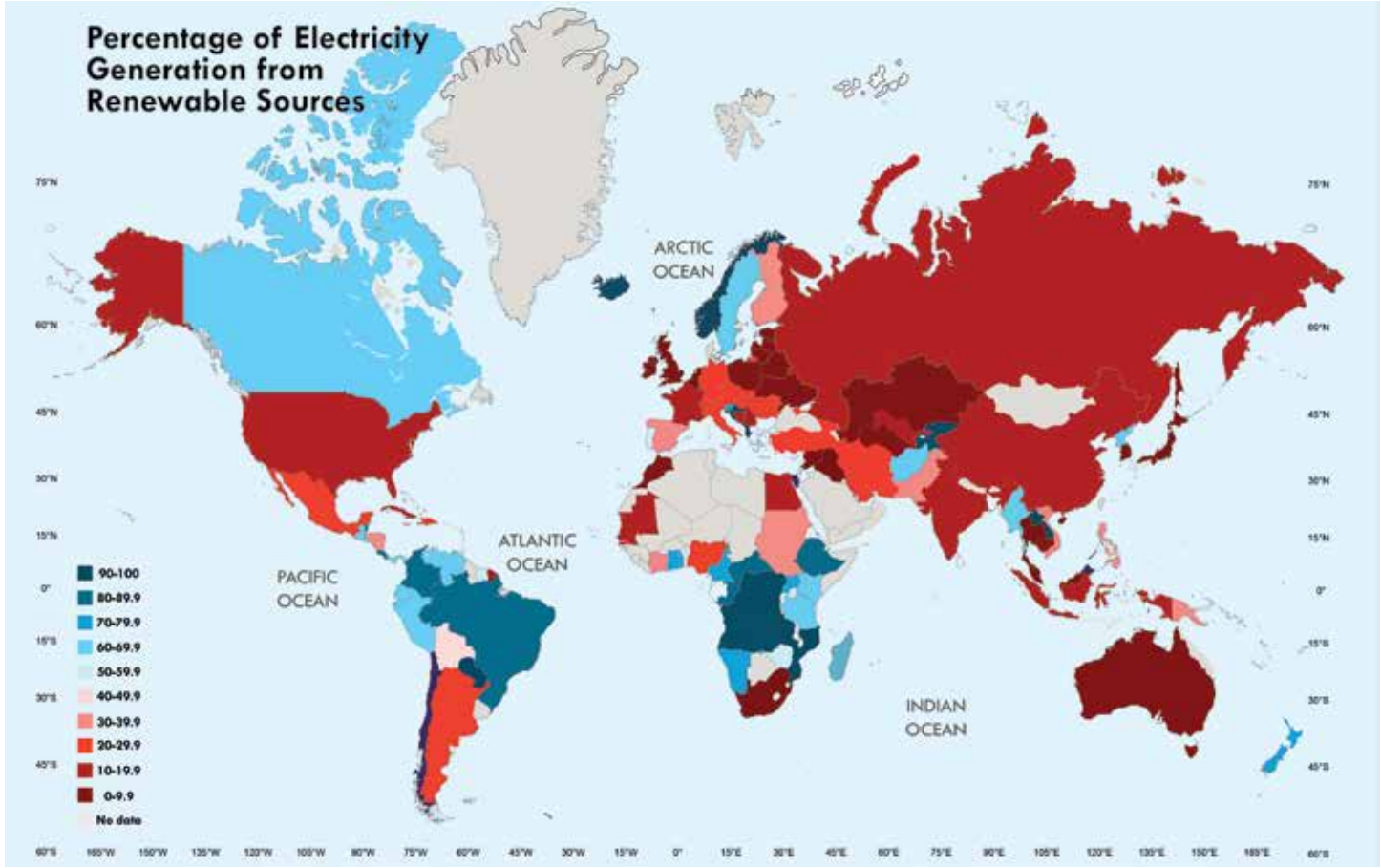
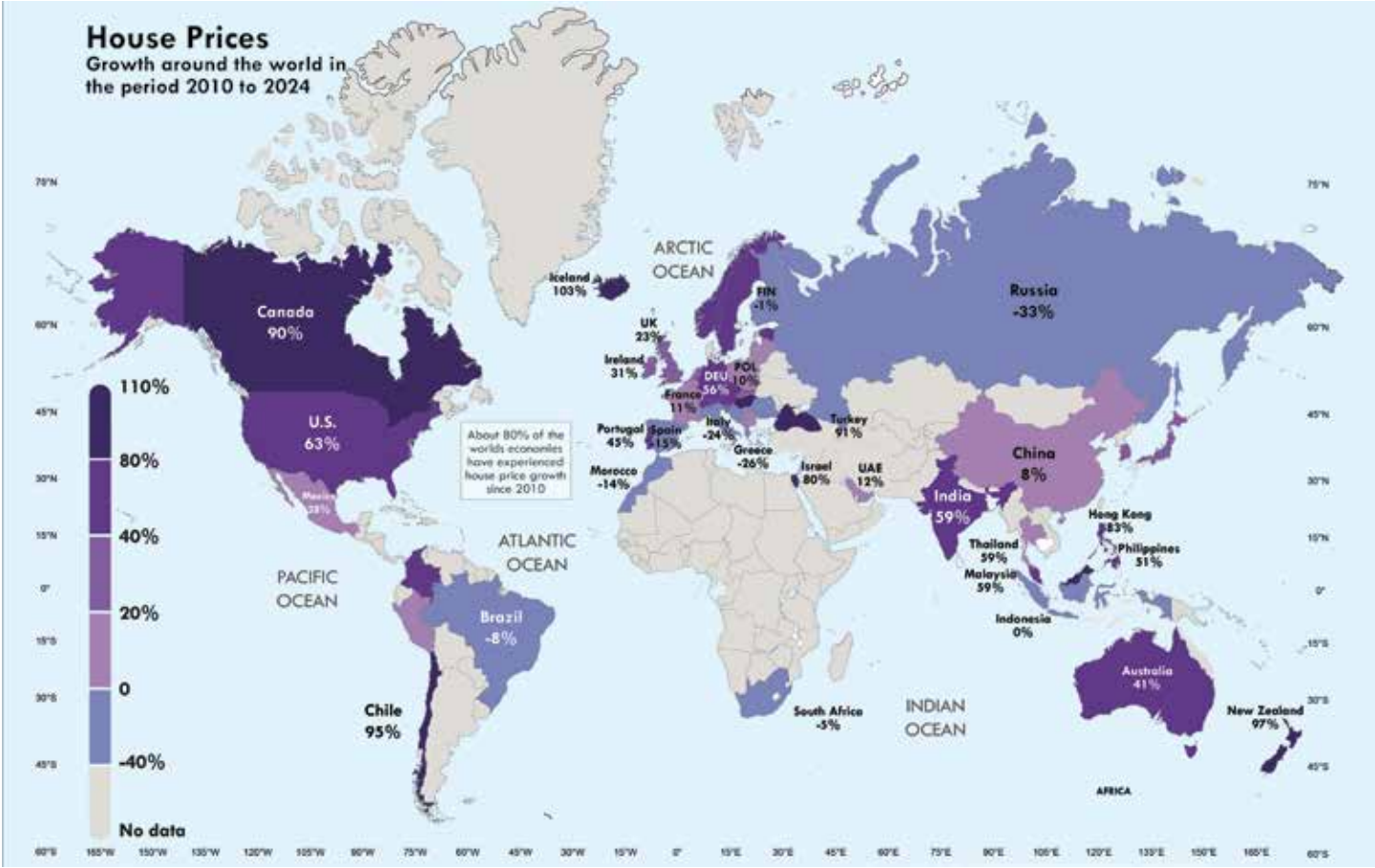
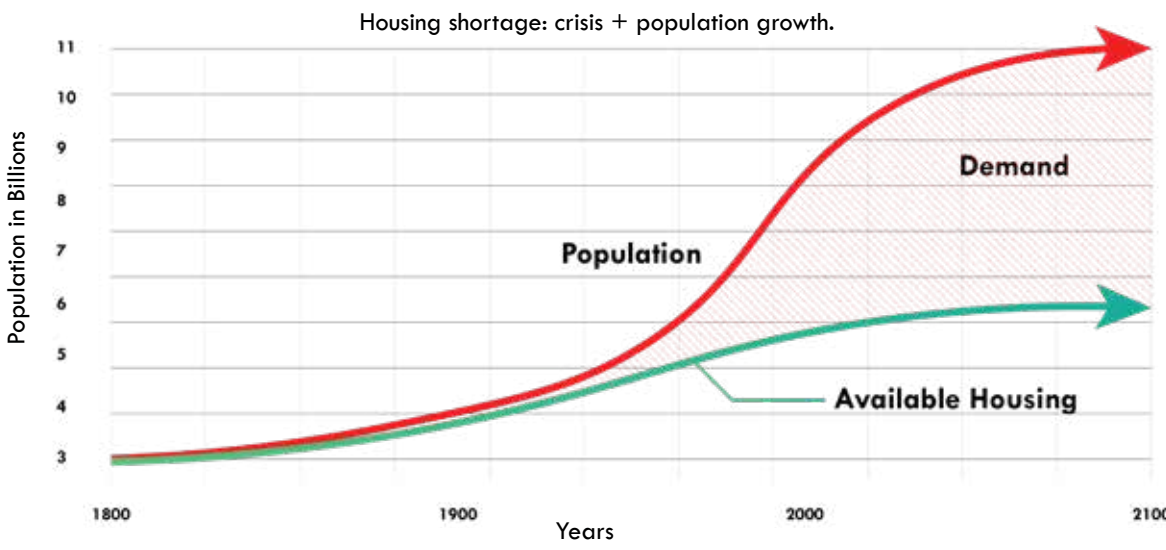
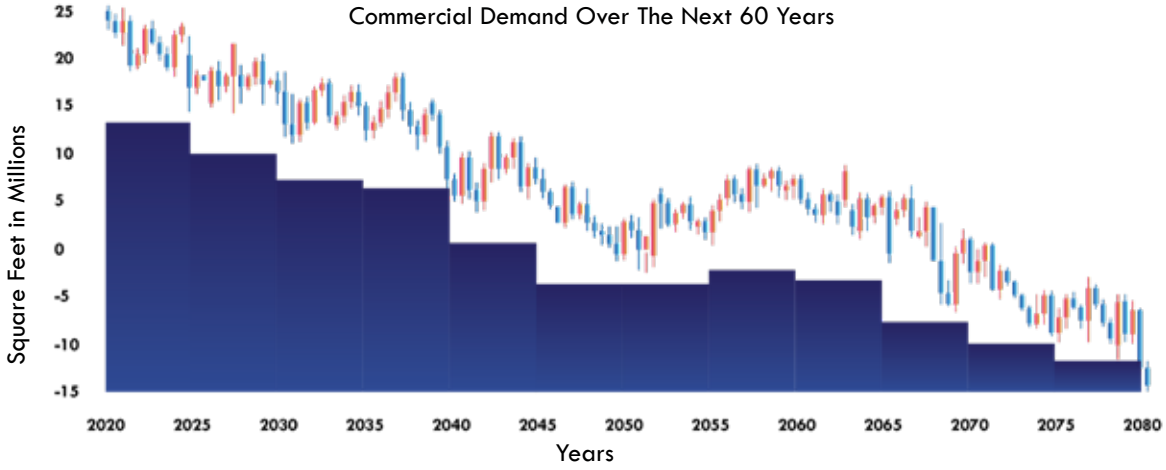
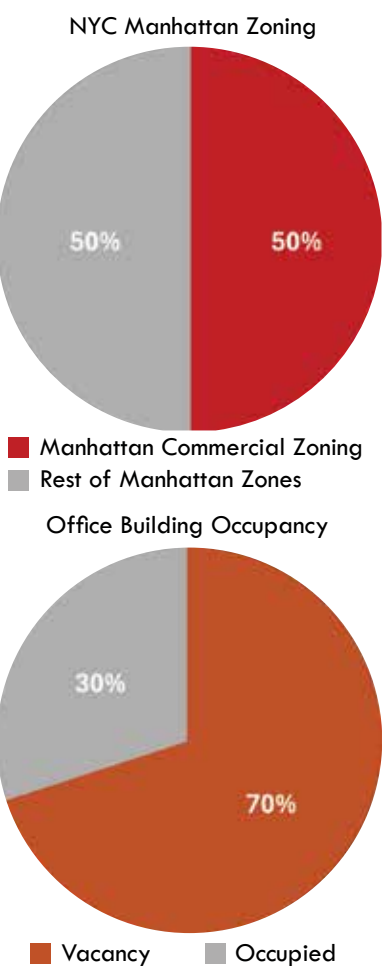
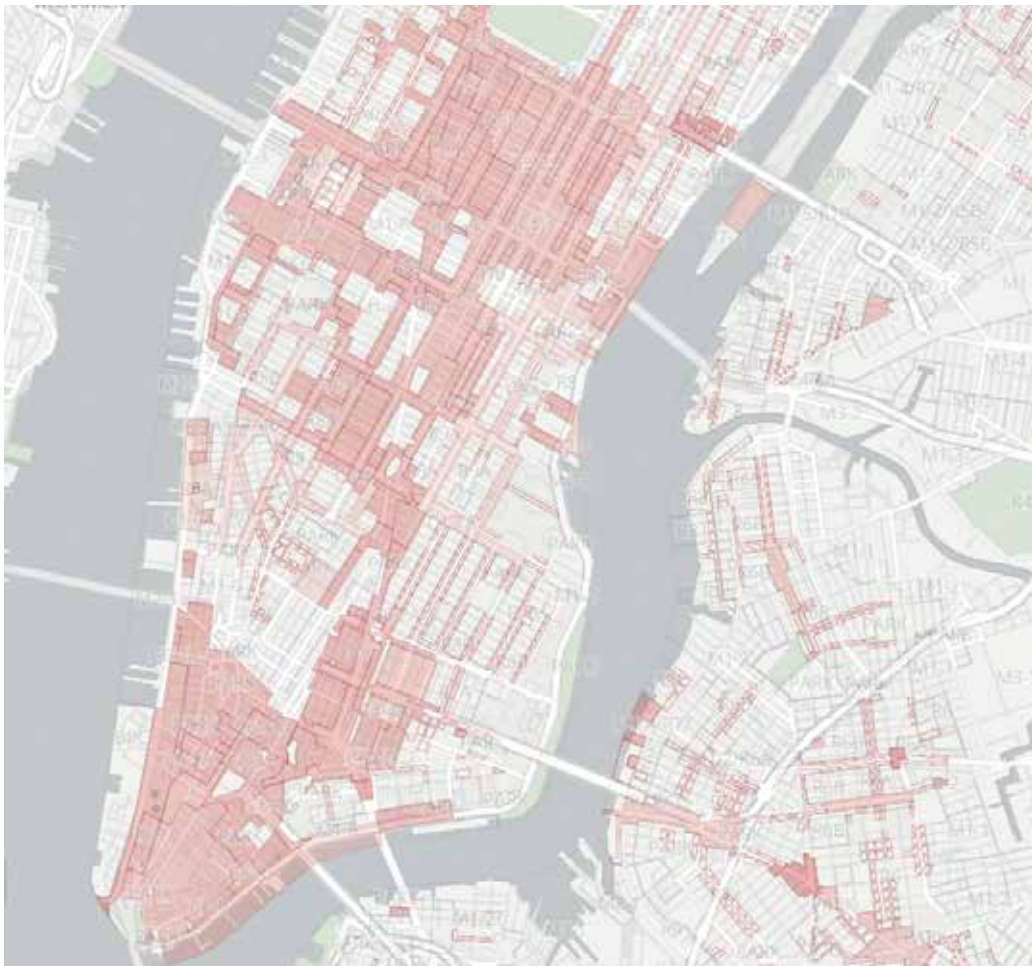
Developed through computational urbanism methods, the study employed layered GIS data, zoning analysis, and a custom scoring system to identify ideal buildings for conversion. Using parameters such as roof height, building age, proximity to transit, and floor plate area, the system scored hundreds of buildings across Midtown and the Financial District, revealing not only feasibility but scalable opportunity.

Gravity batteries—energy systems that lift and lower heavy weights to store and release power—are strategically placed in former elevator shafts and mechanical voids. These systems extend building functionality while reducing reliance on lithium-based storage, making use of vertical real estate to store renewable energy locally.

More than a retrofit strategy, the project positions architecture as a tool to harmonize housing, energy, and policy. The analytical rigor of the project is grounded in visual clarity, from Grasshopper scripting to performance mapping, making a case for adaptive reuse not just as necessity, but as design innovation.

FEASIBILITY GRADE PERFORMANCE (Office-to-Residential + Gravity Battery Potential)

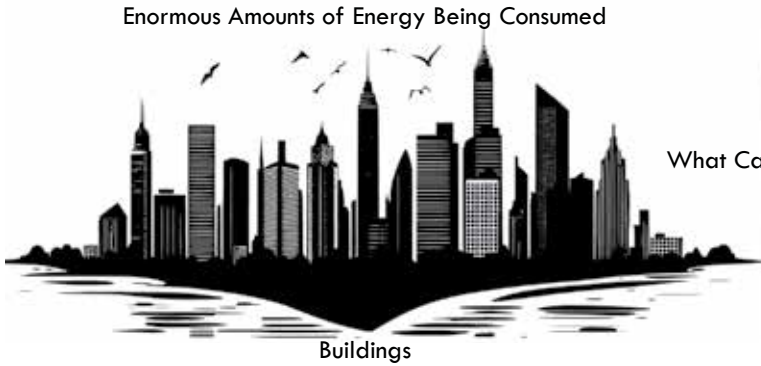
- A** (Score ≥ 45): 3.4% (129)
- B** (35–44): 18.8% (716)
- C** (25–34): 54.9% (2093)
- D** (< 25): 22.9% (871)



Enormous Amounts of Energy Being Consumed

Even Greater Amounts of CO2 Emitted

What Can We Do?

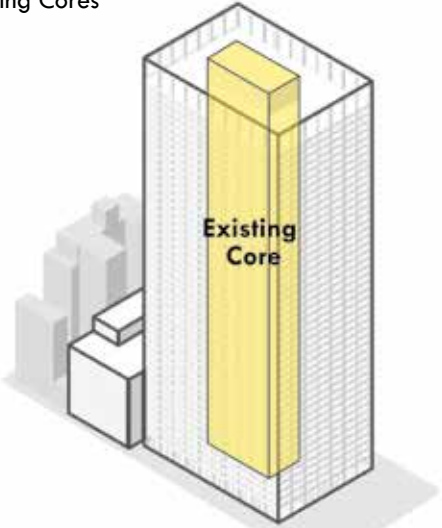
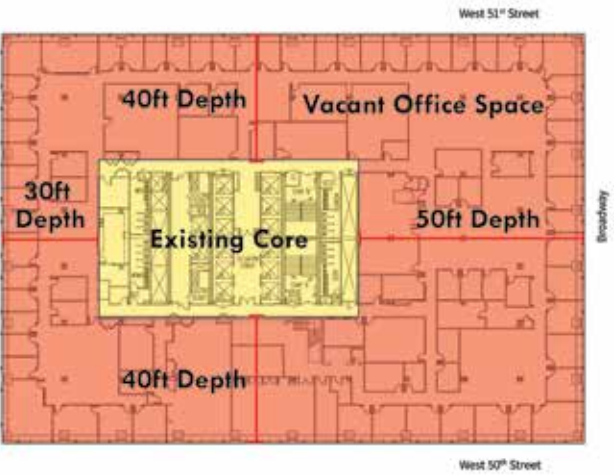


Buildings

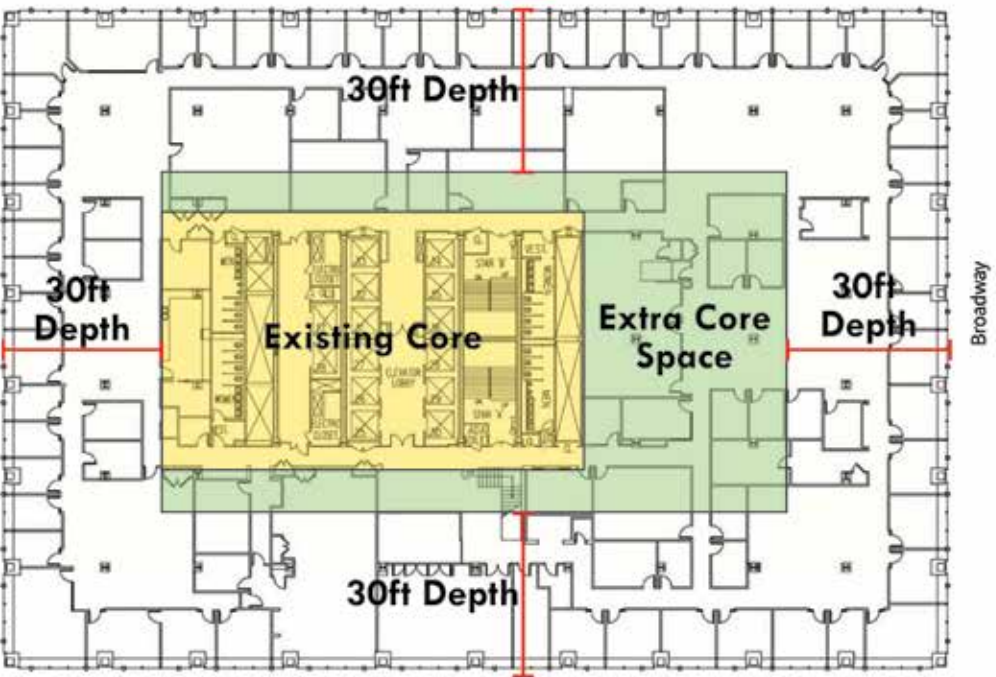


Non-Renewable Energy Sources

Hidden Potential in Building Cores

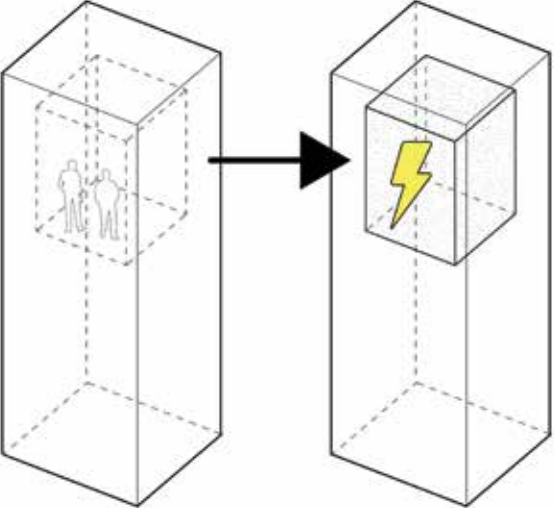
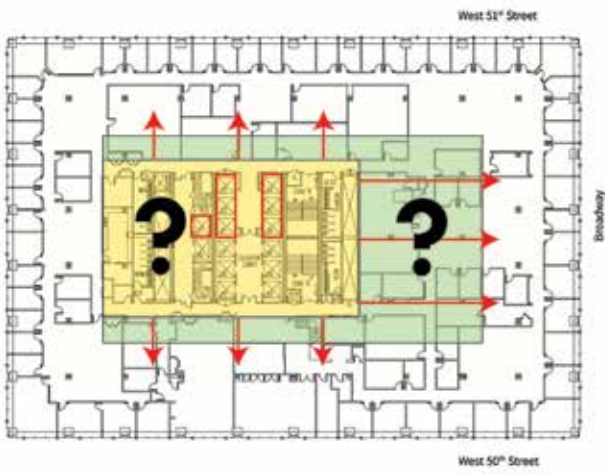


Vacant office buildings have deep cores and structural systems that are ideal for gravity battery integration.

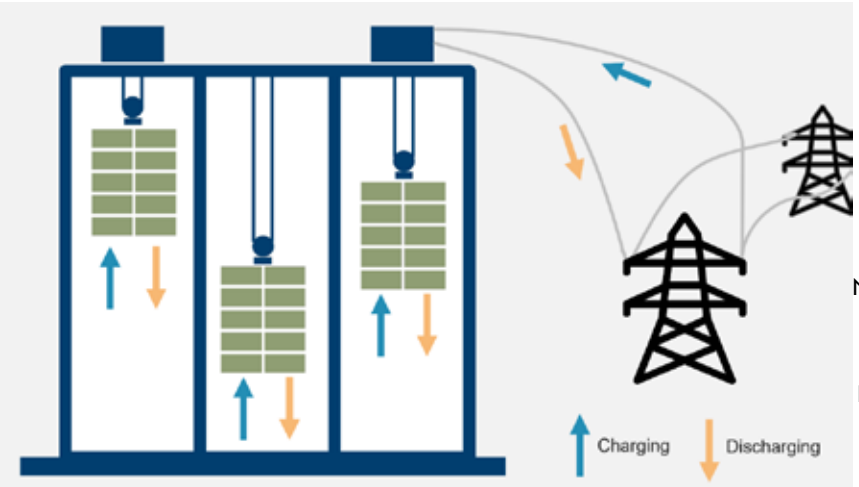


The core can increase in size as the NYC code limits residential unit depth to 30 feet.

What can we use the extra core space for?



Convert Elevator Shaft and Space That Receives No Day Light and Air to a Gravity Battery



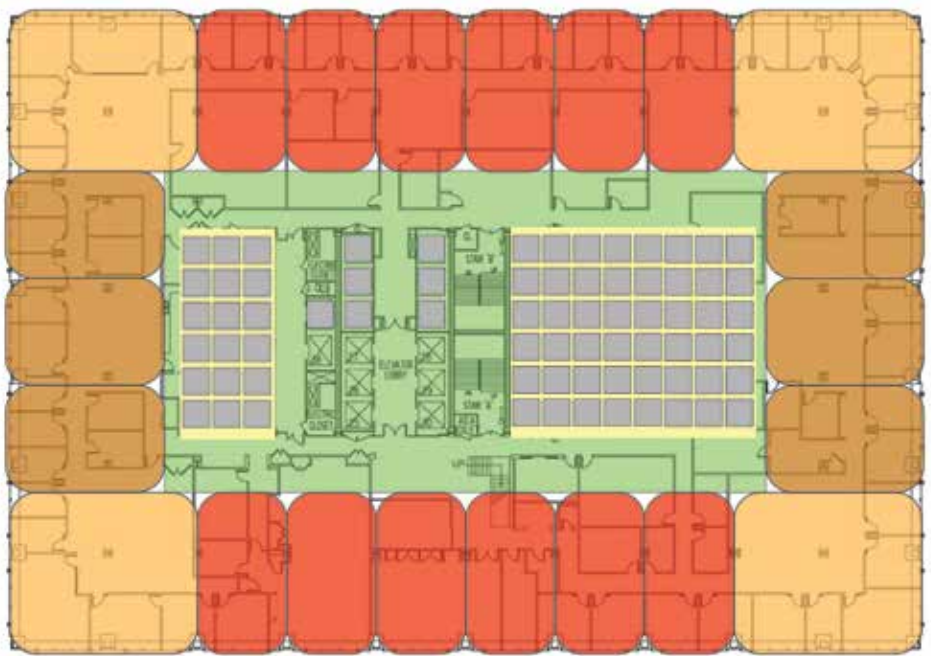
Gravity Batteries in Urban Buildings

How It Works:
Excess renewable energy lifts heavy weights; during peak demand, weights are lowered to generate electricity—offering a sustainable, long-term storage solution.

Why Cities?
No rare earth metals, long lifespan, and ideal for high-rise cores and unused shafts.

In Converted Buildings:
Install in elevator shafts, mechanical voids, or structural cores to cut resident energy costs, create revenue for developers, and ease grid strain.

A Dual Solution: Profitable, Scalable, Sustainable
Pairing Two Crises to Solve Both



By converting office towers to mixed-use residential + energy storage, developers can tap into two massive growth markets.

Opportunity for immense financial return and public benefit.

- One Bedroom
- Two Bedroom
- Three Bedroom
- Gravity Batteries
- Core

Metric	Description	Why It Matters
1. Location	Building Parcels	Determines relevance based on city policy, current development focus, and housing demand
2. Roof Height	Categorizes buildings by their height and capacity for housing units and gravity batteries	Helps estimate housing capacity. High-rise buildings can accommodate more units and gravity batteries can supply more energy.
4. Year Built	Proxy for building obsolescence (older = more likely to be vacant or underused)	Older office buildings are more likely to be available and easier to convert.
5. Floorplate Area	Measures area of building parcel	Larger floorplates allow for extra core space to implement more gravity batteries into the areas with no access to light and air.
6. Proximity to Transit	Distance from major subway station (supports sustainable residential density)	Encourages transit-oriented development and aligns with city goals for accessibility.
7. Conversion Feasibility Score	Aggregate of the above metrics calculated using a weighted index (can assign a scale)	Used to compare buildings side-by-side and rank them for prioritization.

Data Sources



NYC Subway Points

https://data.ny.gov/Transportation/MTA-Subway-Stations/39hk-dx4f/about_data



NYC Building Grid / Parcels

https://data.cityofnewyork.us/City-Government/Building-Footprints/5zhs-2iue/about_data



Zola NYC Zoning

<https://zola.planning.nyc.gov/about#9.72/40.6733/-73.7337>

Scoring System for O2R + Gravity Batteries

1. Roof Height (Max 15 pts)
High-rise 500ft+: 15 pts
Mid-rise 499-300ft: 10 pts
Low-rise 300ft and below: 5 pts
2. Year Built (Max 15 pts)
1950–1967: 15 pts
1968–1984: 10 pts
1985–2000: 5 pts

3. Proximity to Transit (Max 10 pts)
Within 150m of a subway station: 10 pts
Within 300m of a subway station: 5 pts
Beyond 300m: 0 pts
4. Average Floor Plate Area
Greater than or equal to 2000m: 15 pts
2000m - 1200m: 10pts
Less than 1200m: 5pts

Score Summary:
Max: 55
Min: 15

NYC Zoning and Building Grid / Parcels



Information Extracted
Commercial Zones Only
Buildings Built Between 1950-2000
Locations
Floor Plate Areas

Layering In The NYC Subway
Points For Walkability



Information Extracted
Subway Stations
Radius For Walkability

Conversion Feasibility: Merging the Data



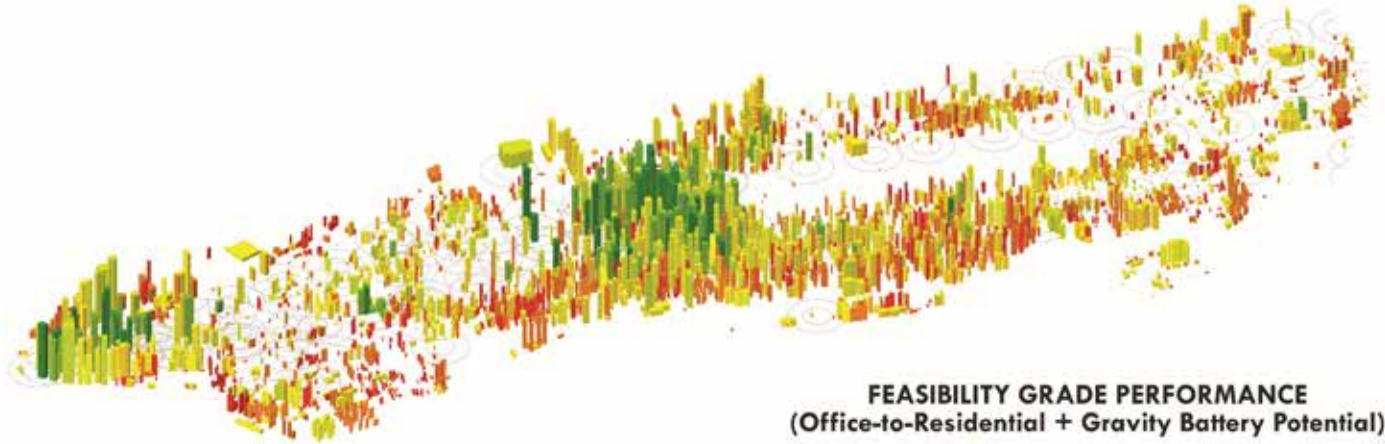
- Zola NYC Zoning**
 - Commercial Zones Only
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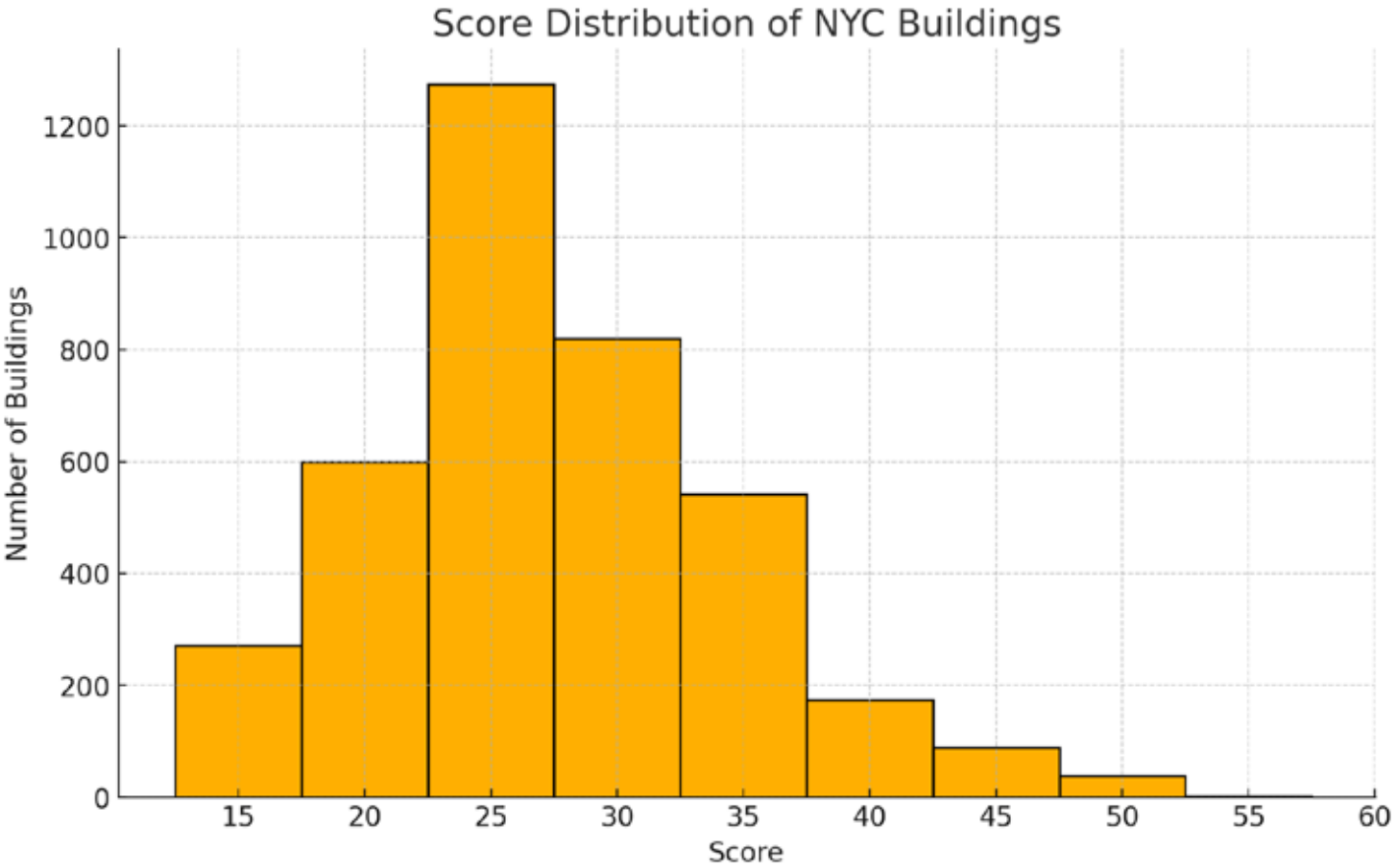
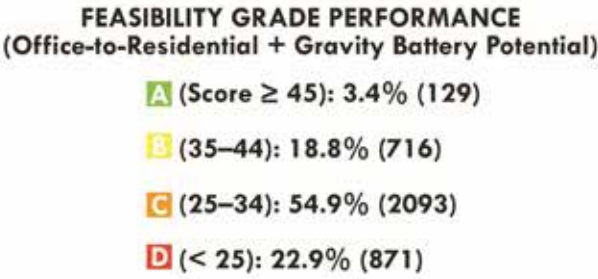
- NYC Building Grid / Parcels**
 - Locations
 - Roof Heights
 - Floor Plate Area



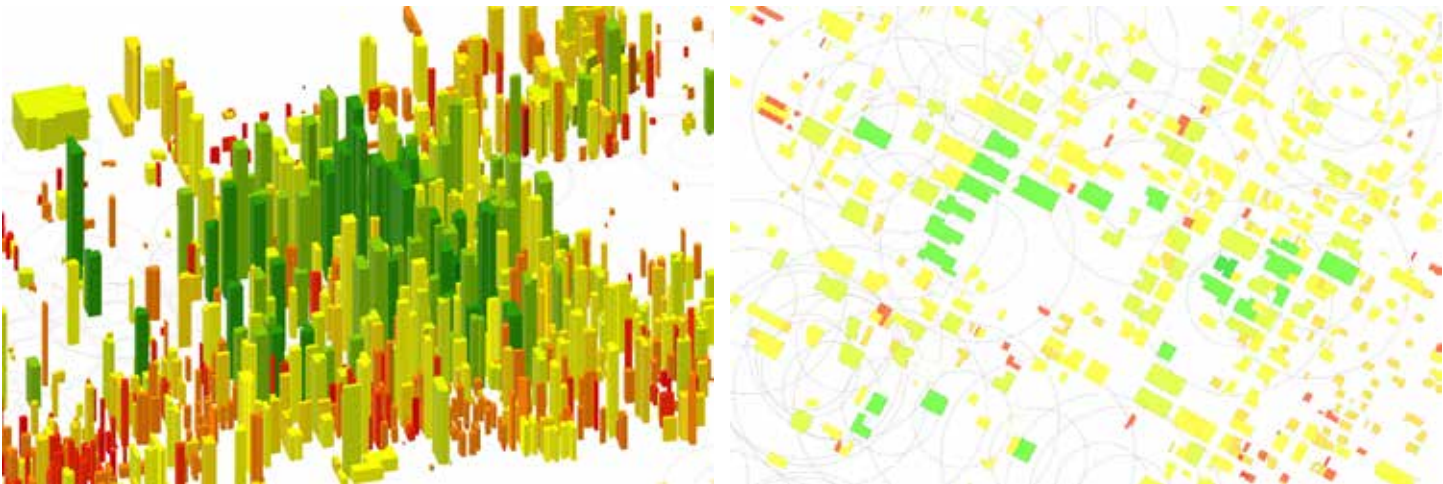
- NYC Subway Points**
 - Subway Stations
 - Radius For Walkability



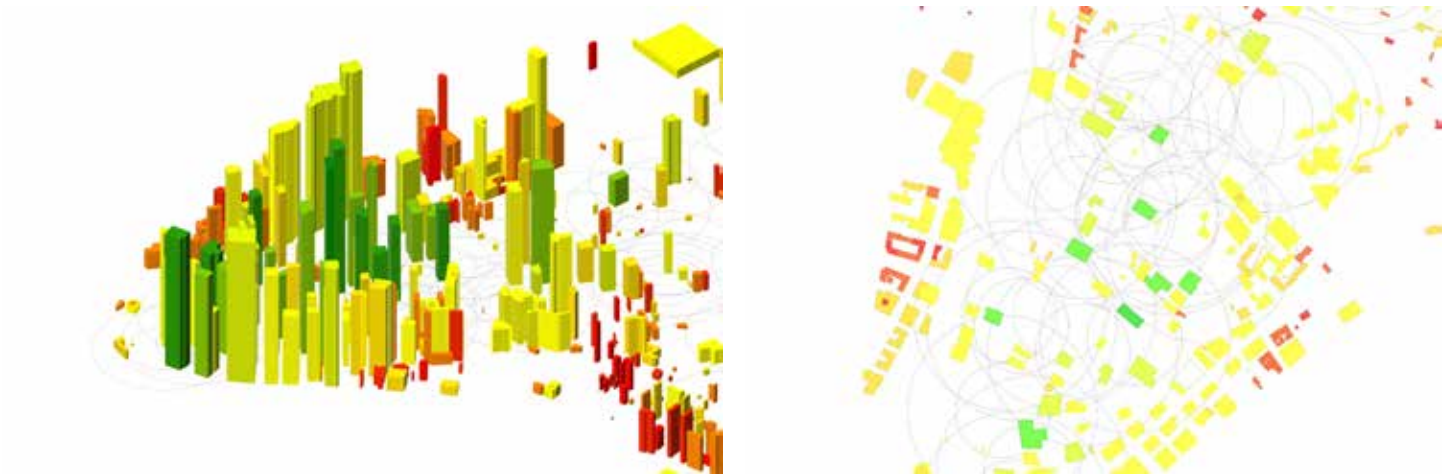
NYC has hundreds of similar buildings.
Call to action: This is not a one-time fix — it's a systemic opportunity across the world.



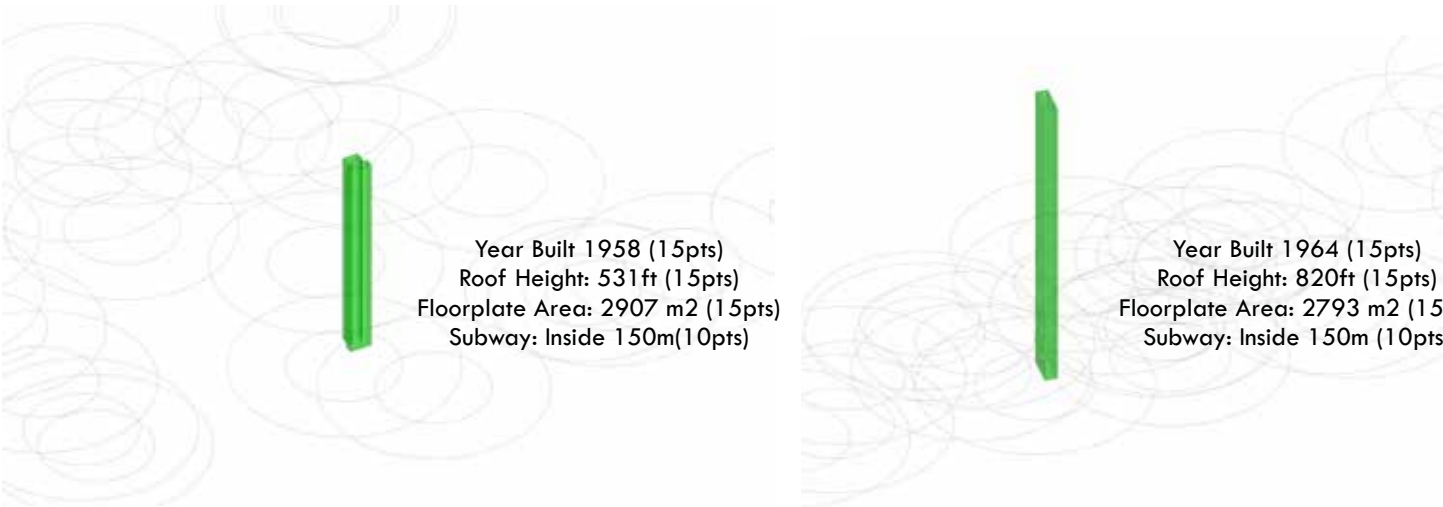
High Performance: Midtown



High Performance: Financial District



Only Two Perfect Scores (55pts)



ZAHA HADID

RADICAL GEOMETRY AND THE URBAN REALM

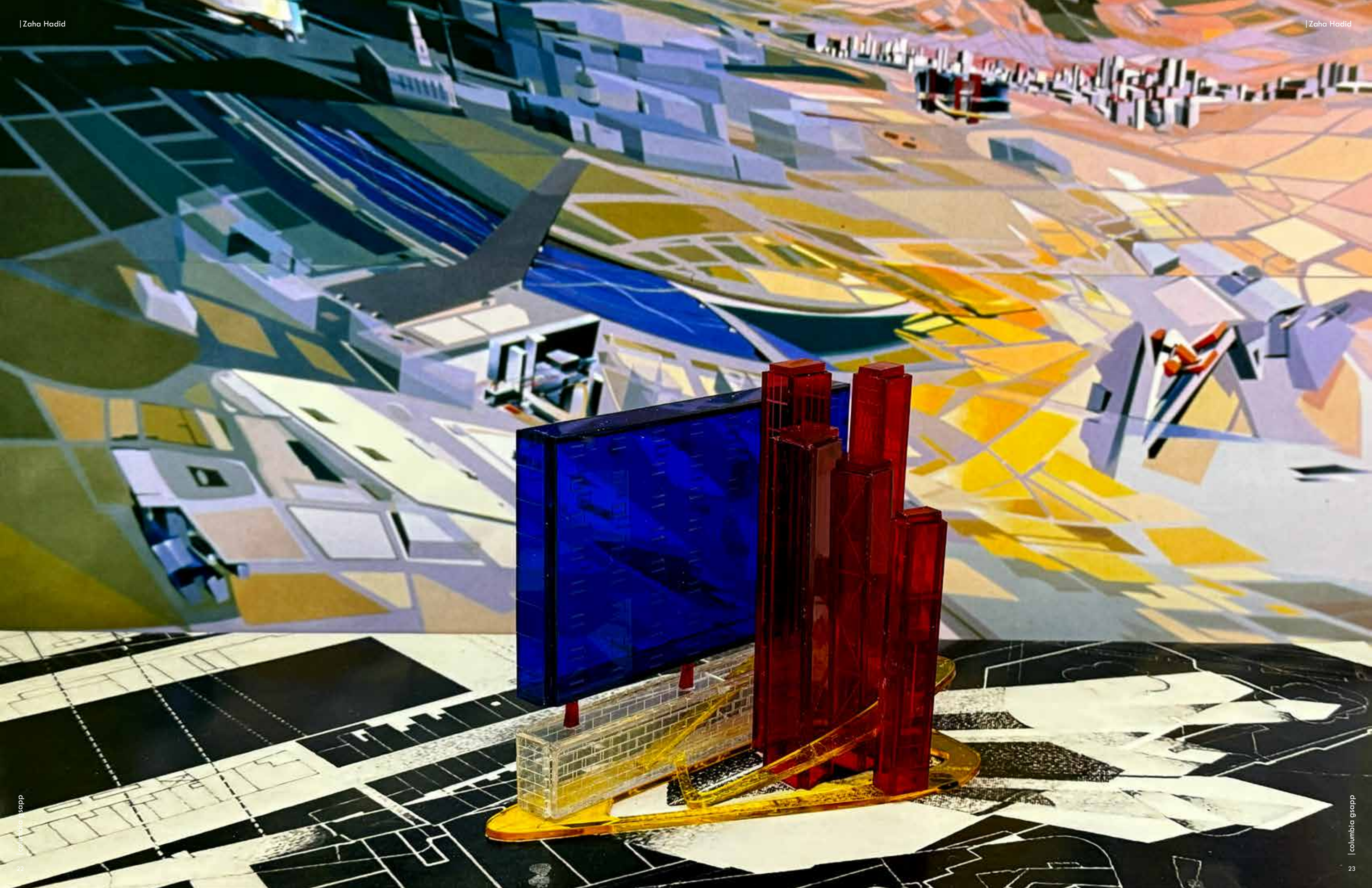
RESEARCH STUDY

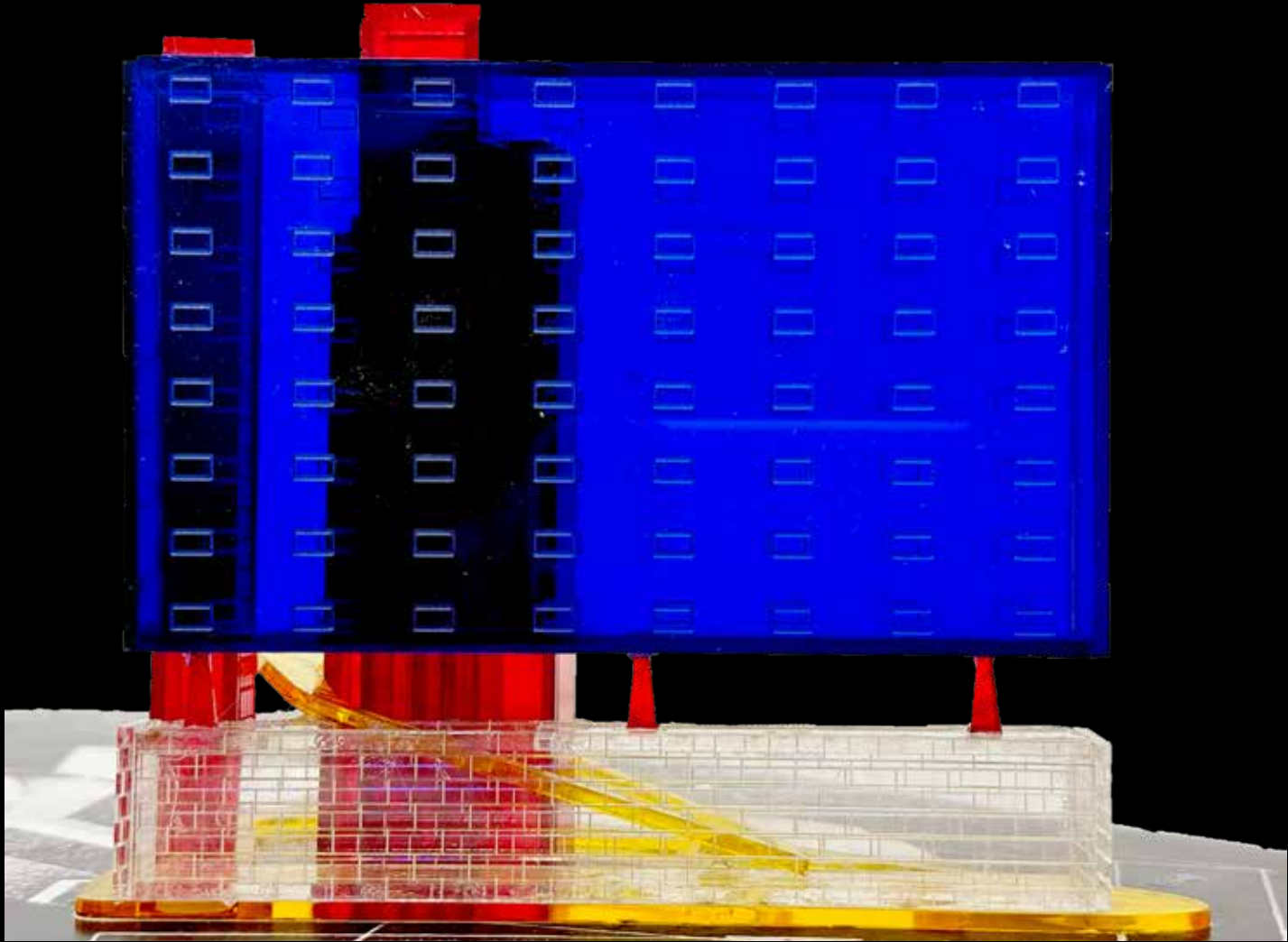
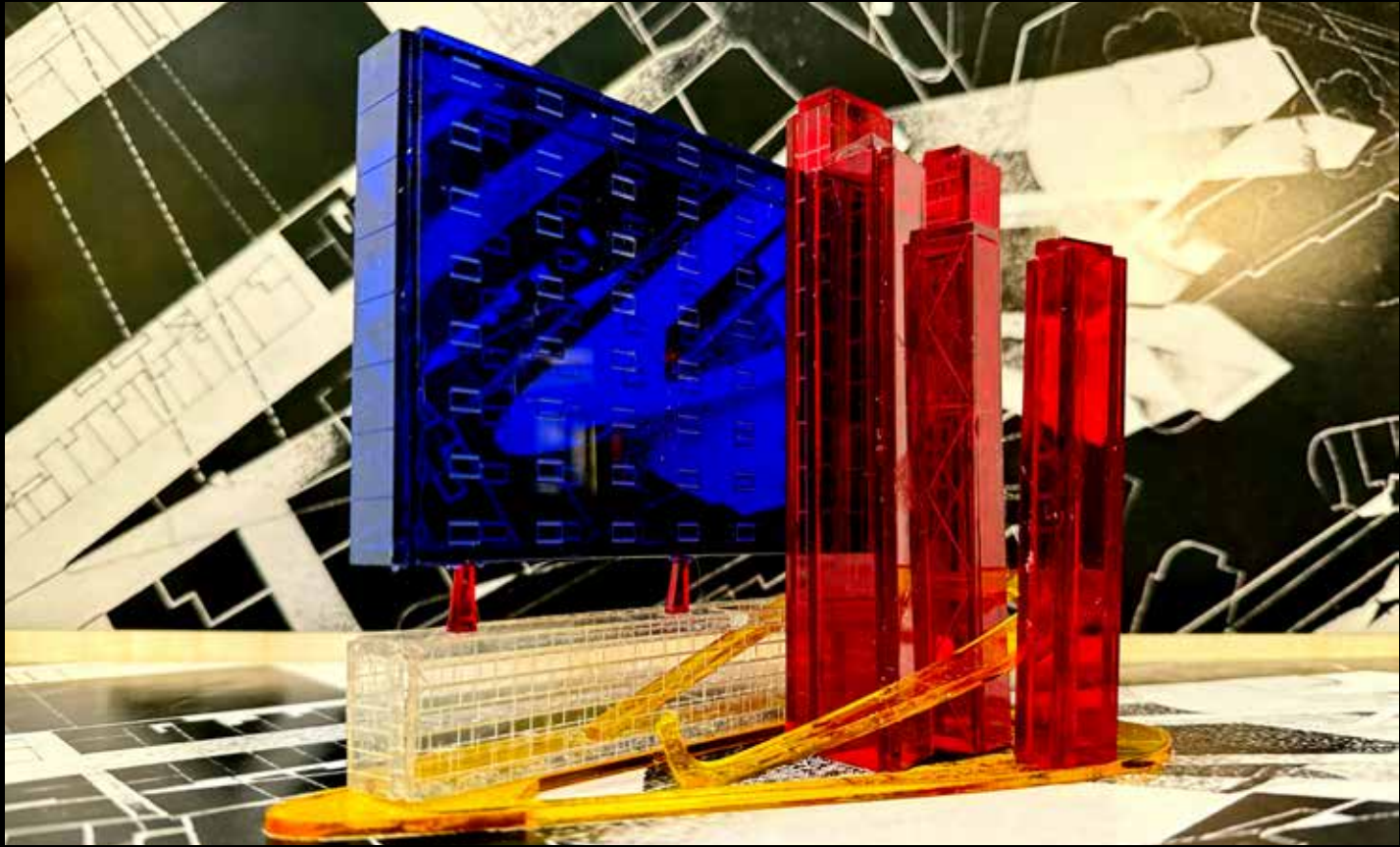
Columbia GSAPP, Professor's Steven Holl and Dimitra Tsachrelia, Architecture Apropos Art, Spring 2025

This project transforms Zaha Hadid's 1985 unbuilt Grand Buildings proposal into a contemporary urban intervention. Using her original plan as a base geometry, the design extracts and manipulates voids and solids to create a new spatial language—one that responds to the pressures of Trafalgar Square while honoring Hadid's radical vision.

Instead of preserving the original as artifact, the proposal mirrors and fragments its forms to generate public podiums, lifted terraces, and vertical cuts that reshape circulation and view. The result is a structure that folds into the city and pulls the city into itself—blurring boundaries between monument and movement.

Set against London's historical core, the building provokes a dialogue between past and possible futures. It repositions Hadid's deconstructivist legacy as a tool for urban transformation—one that invites rupture, interaction, and reinterpretation.







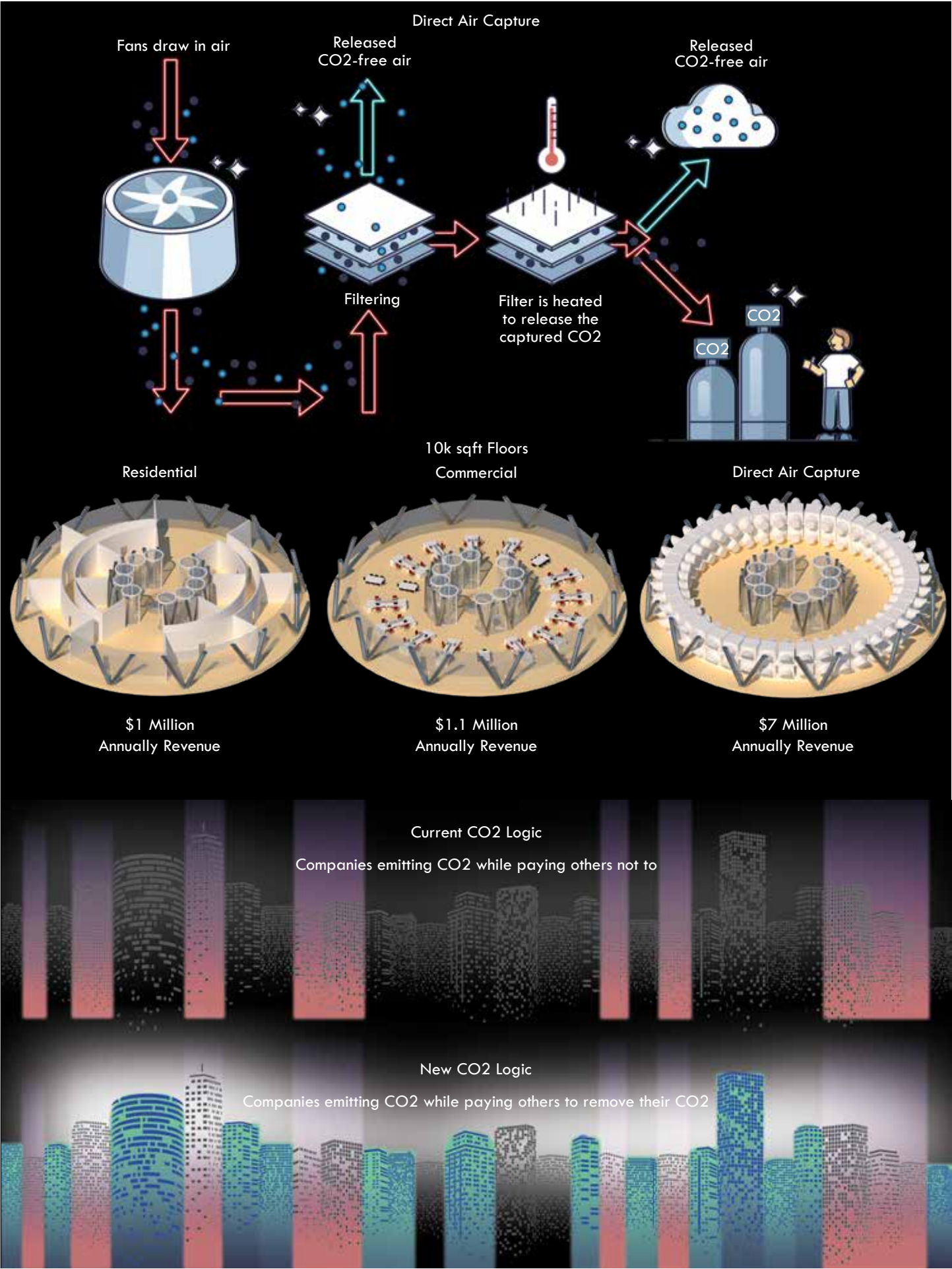
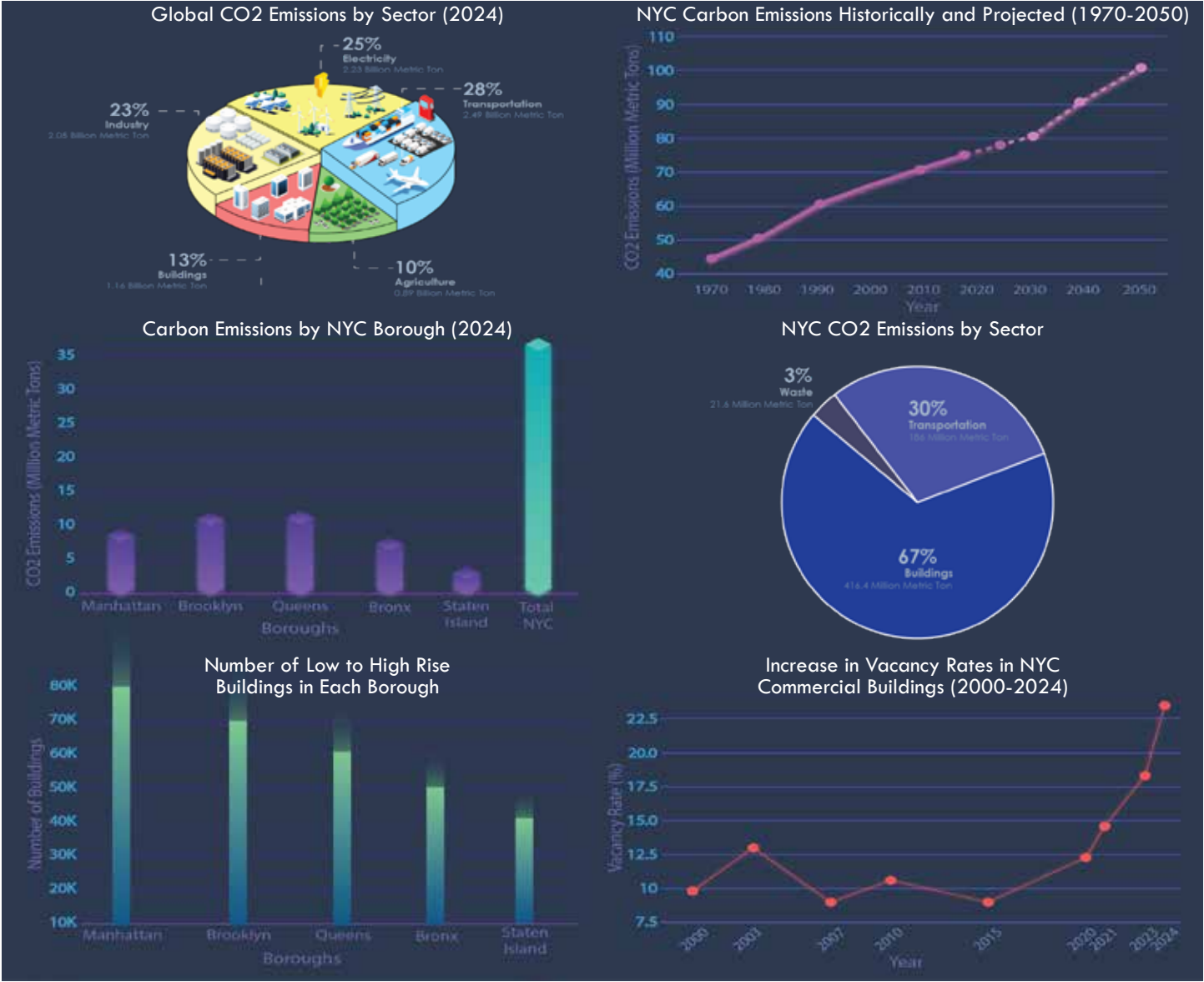
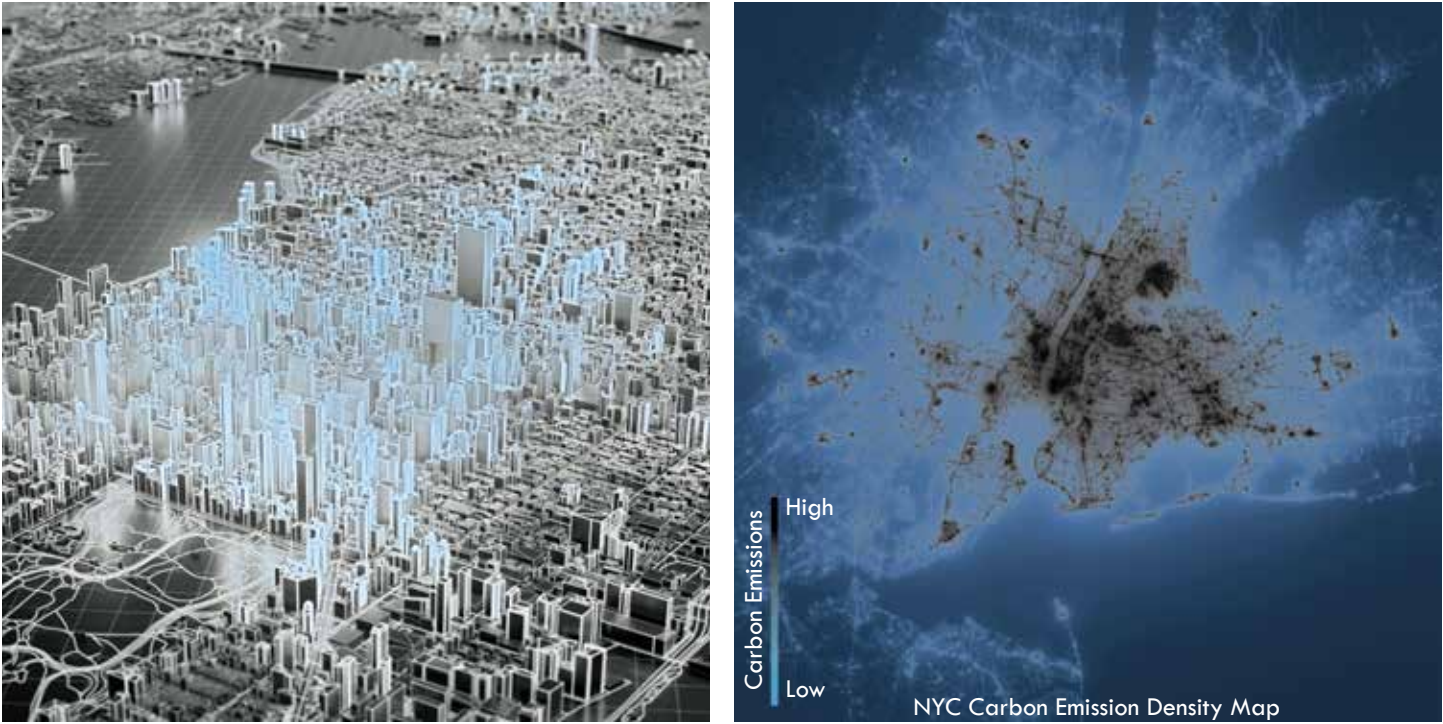
BUILDINGS AS BREATHING MACHINES

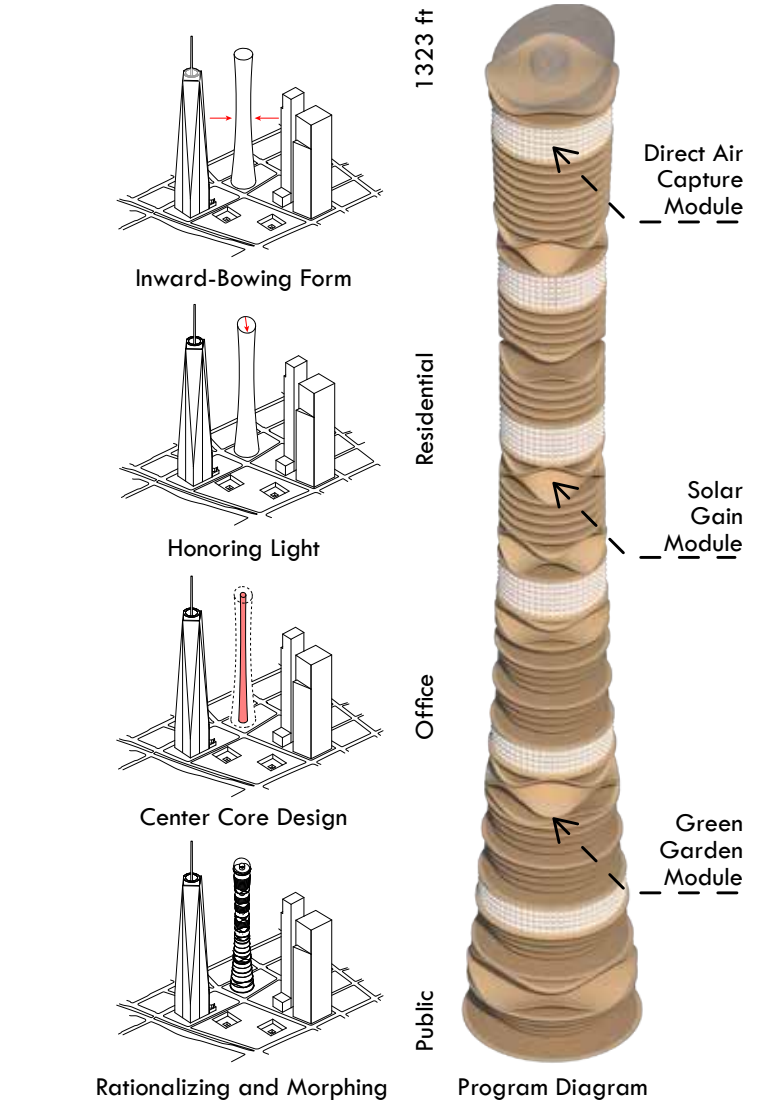
WORLD TRADE CENTER PLAZA

SCALED CARBON REMOVAL ARCHITECTURE

**Columbia GSAPP, Professor David Benjamin,
Advanced Architecture Studio, Fall 2024**

Buildings as Breathing Machines reimagines World Trade Center Plaza as a vertical ecosystem actively addressing climate change. By transforming the tower's vacant commercial floors into hubs for Direct Air Capture (DAC) technology, the project integrates carbon removal directly into the urban fabric. These spaces house DAC systems alongside public and commercial uses, demonstrating how buildings can function as tools in the fight against rising CO₂ levels. The design incorporates undulating green terraces, modular timber platforms, and mixed-use spaces, fostering biodiversity and human connection. DAC units embedded throughout the structure work in harmony with its rhythmic form, which enhances airflow and maximizes the efficiency of carbon removal. Natural light and energy systems are optimized to reduce the building's environmental footprint, exemplifying principles of regenerative design. World Trade Center Plaza not only contributes to ecological balance but also inspires a new vision for urban architecture—one where structures become active participants in environmental restoration. The project envisions a future where cities integrate technological and ecological systems, transforming buildings into living, adaptive machines. By redefining vacant spaces as climate-positive assets, Buildings as Breathing Machines offers a model for how architecture can address global challenges and promote collective well-being.

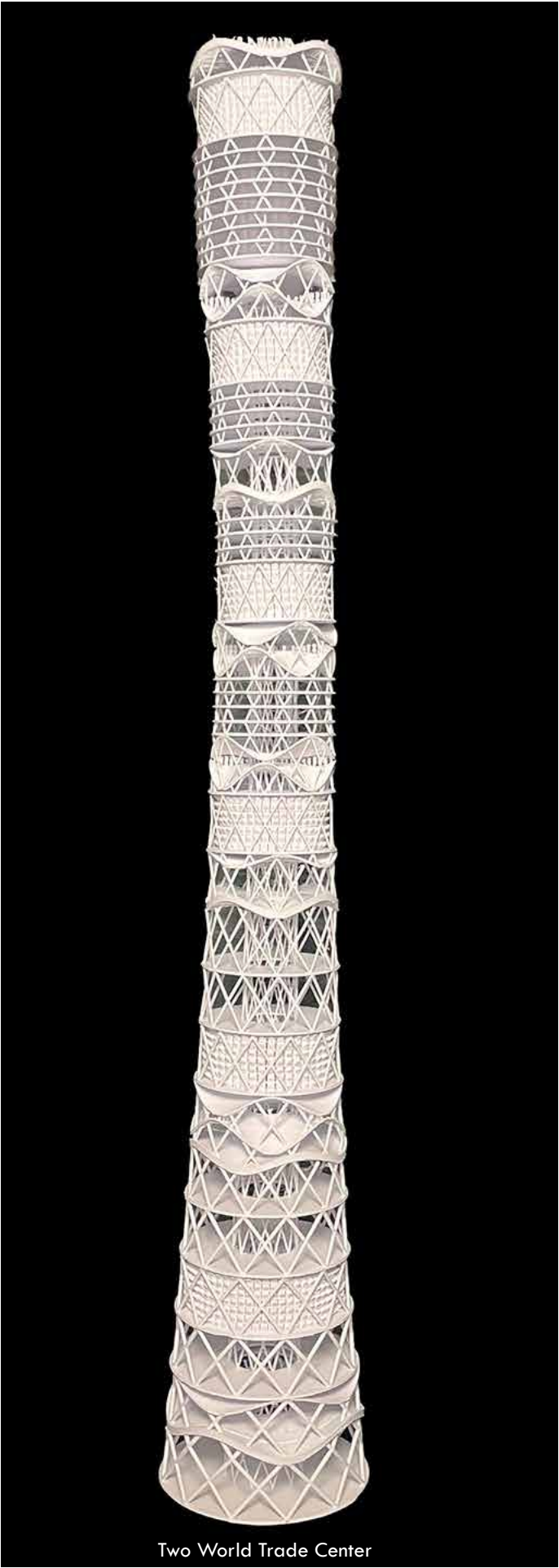
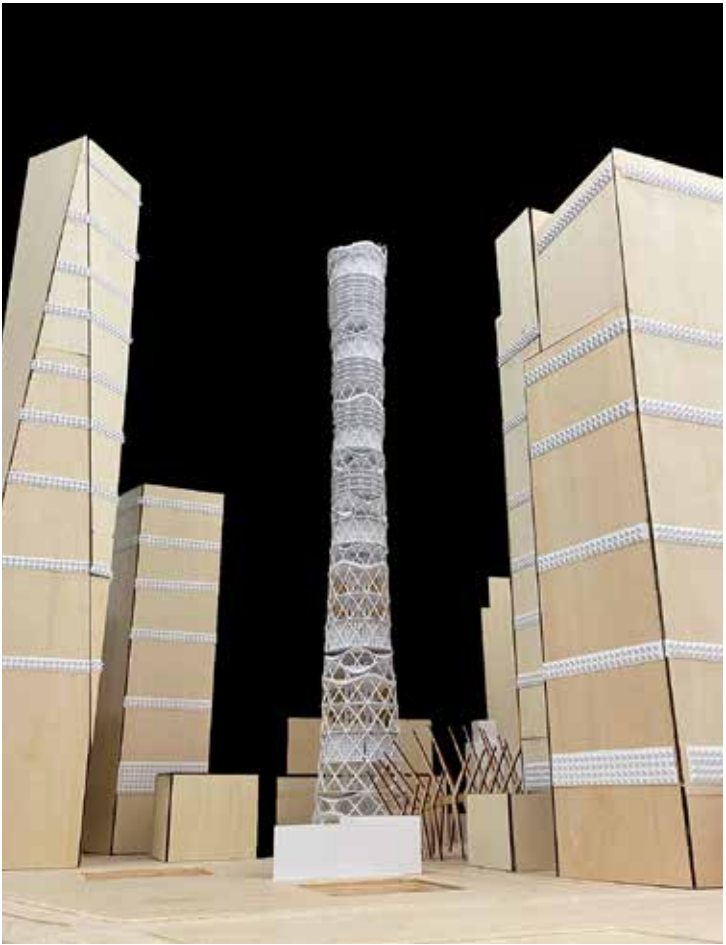






Buildings as Breathing Machines Site Model

This 4ft x4 ft wooden model represents a visionary integration of Direct Air Capture (DAC) systems into the World Trade Center complex. Highlighting 2 World Trade Center and vacant office floors in neighboring towers, it reimagines these structures as “breathing machines,” actively capturing carbon dioxide to address climate change. The model envisions a future where urban architecture becomes a critical tool for environmental sustainability.



Two World Trade Center



CLOUD

VERY PLAZA

INFLATABLE PAVILION

**Columbia GSAPP, Professor Laurie Hawkinson and
Galia Solomonoff, Outside In Project II Fall 2024**

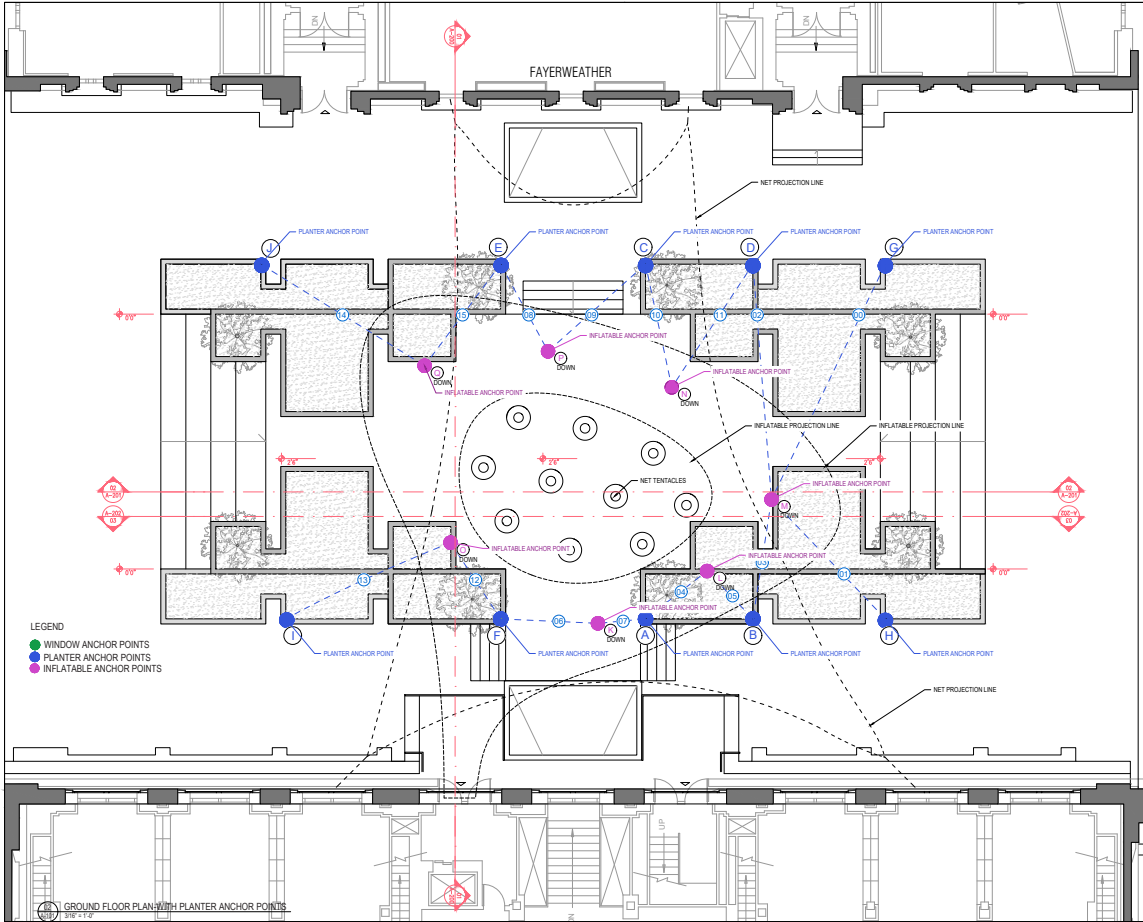
The Cloud is an inflatable structure that redefines the relationship between interior and exterior spaces on Columbia University's campus. Spanning 66 feet and suspended 25 feet above Avery Plaza, this collaborative project emphasizes the interconnectedness of shared spaces and actions. Designed as part of a two-semester design-build course led by professors Laurie Hawkinson and Galia Solomonoff, the pavilion was supported by Hubert Chang, Silman Structural Engineers, and Àrea Cúbica.

The pavilion invites playful interaction, with a metallic inflatable form powered by four electric blowers. A central net descends into the plaza, creating dynamic seating that encourages visitors to curate and modify the space. Stretching from the 400-500 level classrooms of Avery and Fayerweather Hall, the Cloud Pavilion serves as both a contemplative interior and a public statement, hosting events that unite the Columbia and GSAPP communities.

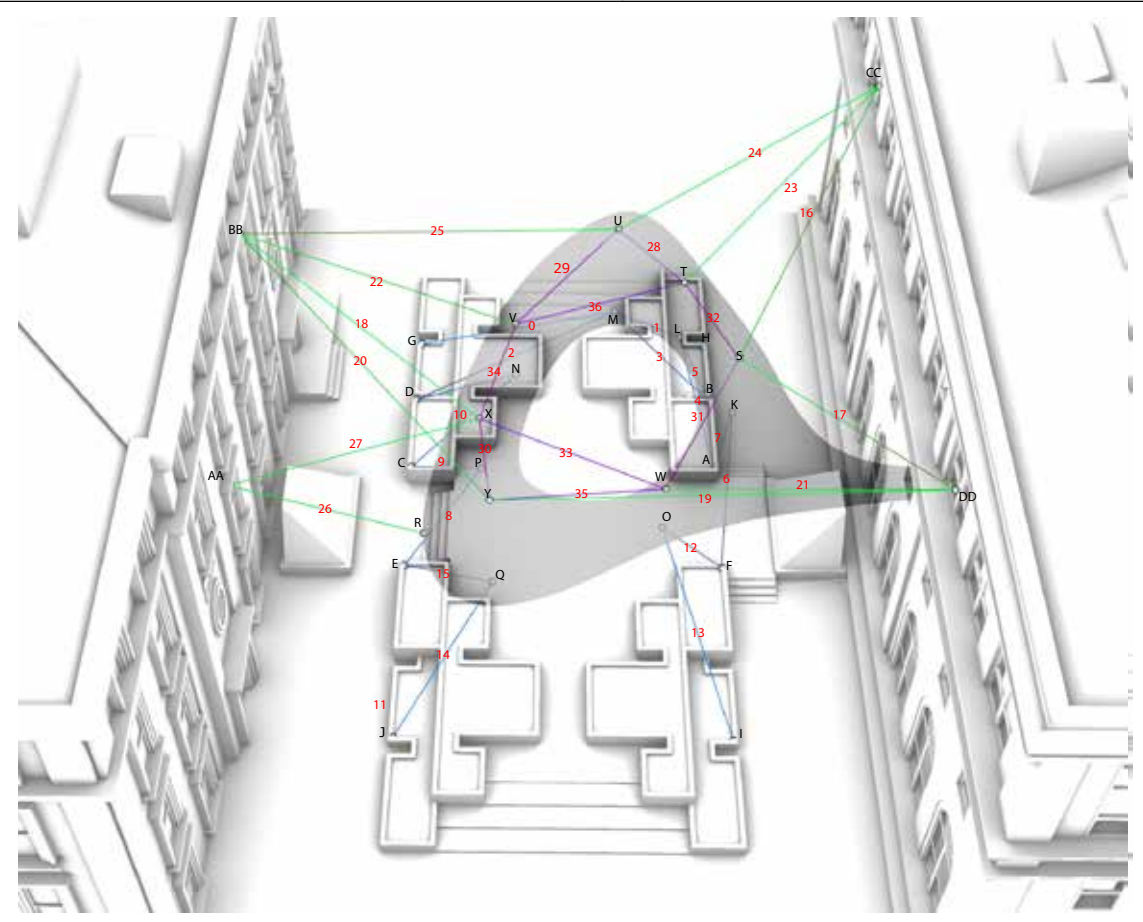
As part of the Structural and Construction Drawing Team, I contributed to the technical detailing and coordination necessary to bring the design to life. My role extended beyond documentation—I was one of the leaders in the physical installation process. From unloading equipment and organizing deliveries to leading teams at each anchor beam, I instructed when to pull and secure the structure to ensure precise placement. This hands-on leadership continued through the breakdown and packing of all components, ensuring an efficient and organized completion of the project.

Raising the pavilion was a feat of teamwork and determination, involving over 30 students and faculty collaborating to lift the structure into place using ropes anchored across Avery and Fayerweather Halls.

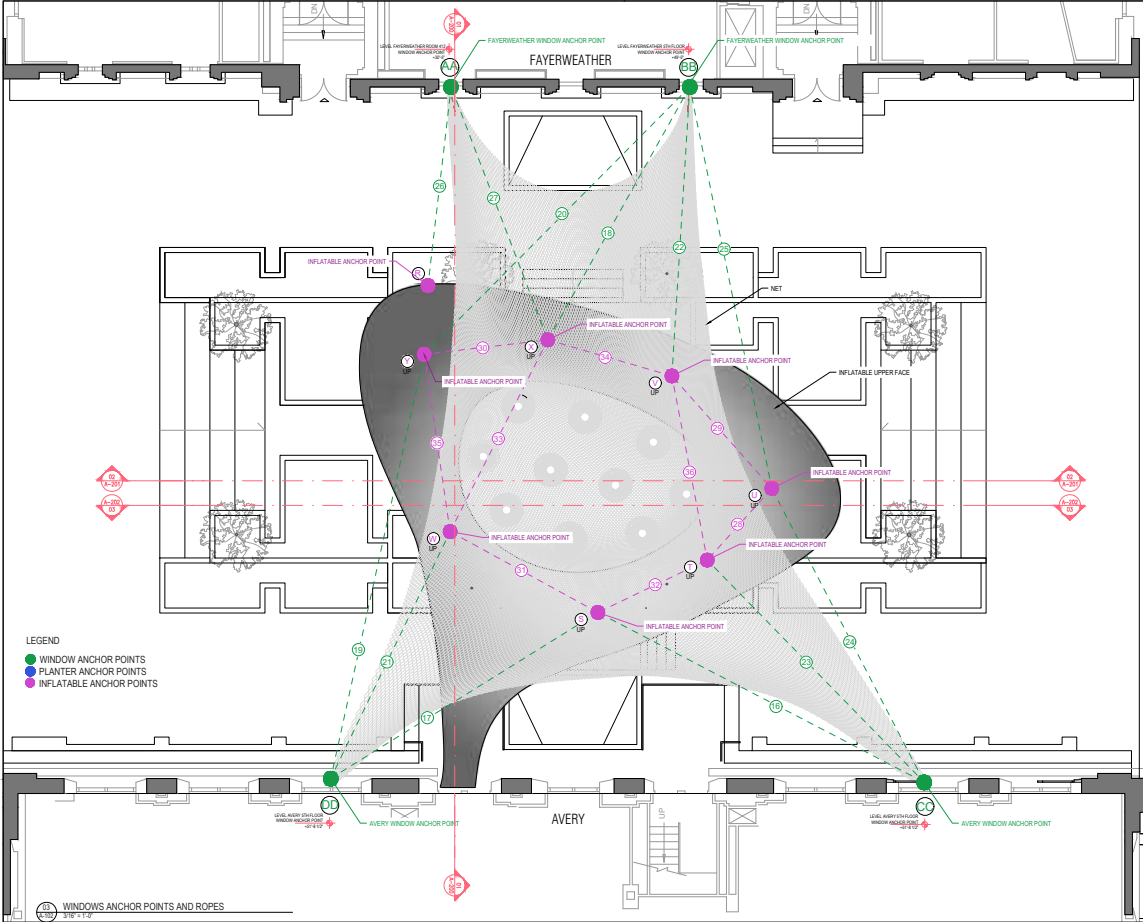
Featured on Dezeen, Archinect, The Architect's Newspaper, and Columbia Architecture's news outlets, the Cloud Pavilion showcases innovative design and the power of collaboration, transforming perspectives on shared spaces and fostering creativity on campus.



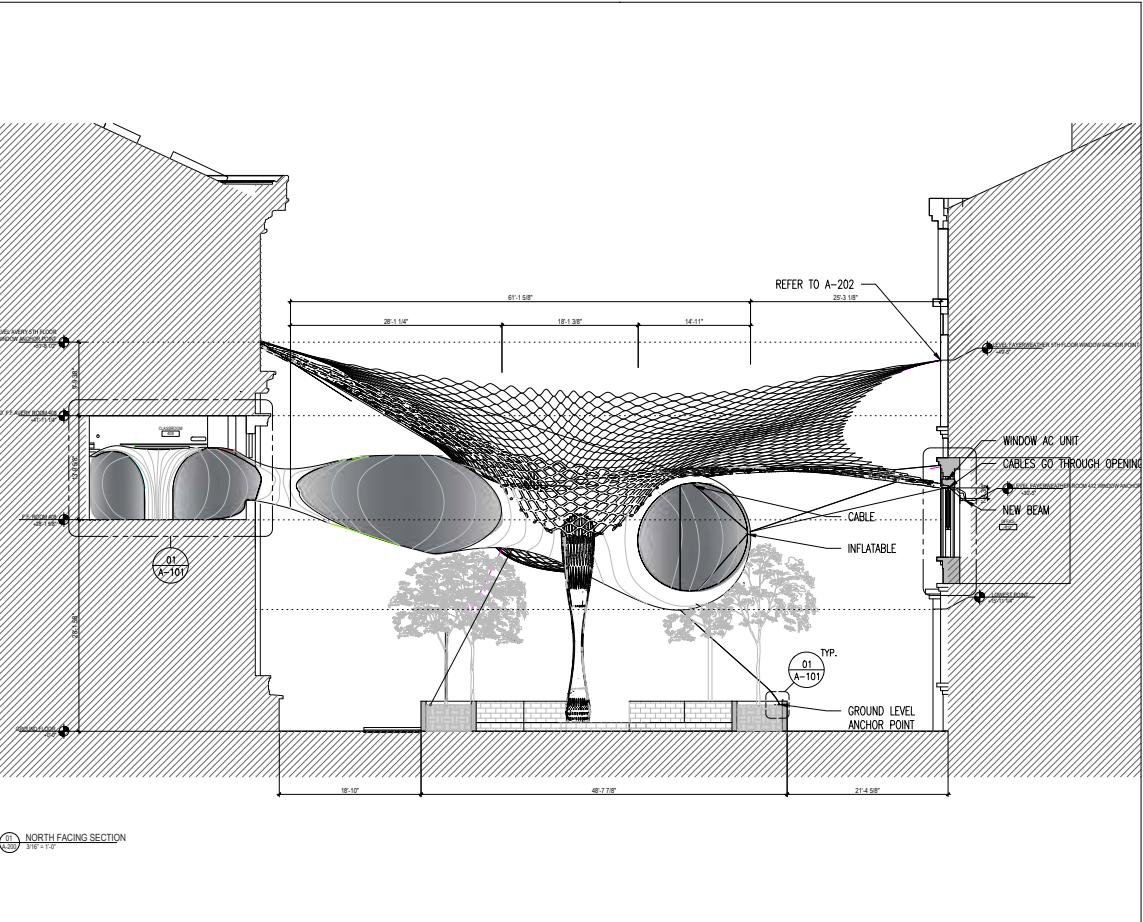
Avery Plaza Ground Anchor Points Plan



Axon of Anchor Points Attached to Avery Plaza, Fayerweather and Avery Hall



Anchor Points Plan Attached to Fayerweather and Avery Hall



Section of Anchor Points Attached to Avery Plaza, Fayerweather and Avery Hall



Installation Process

Final



SERPENTINE

NEW YORK CITY

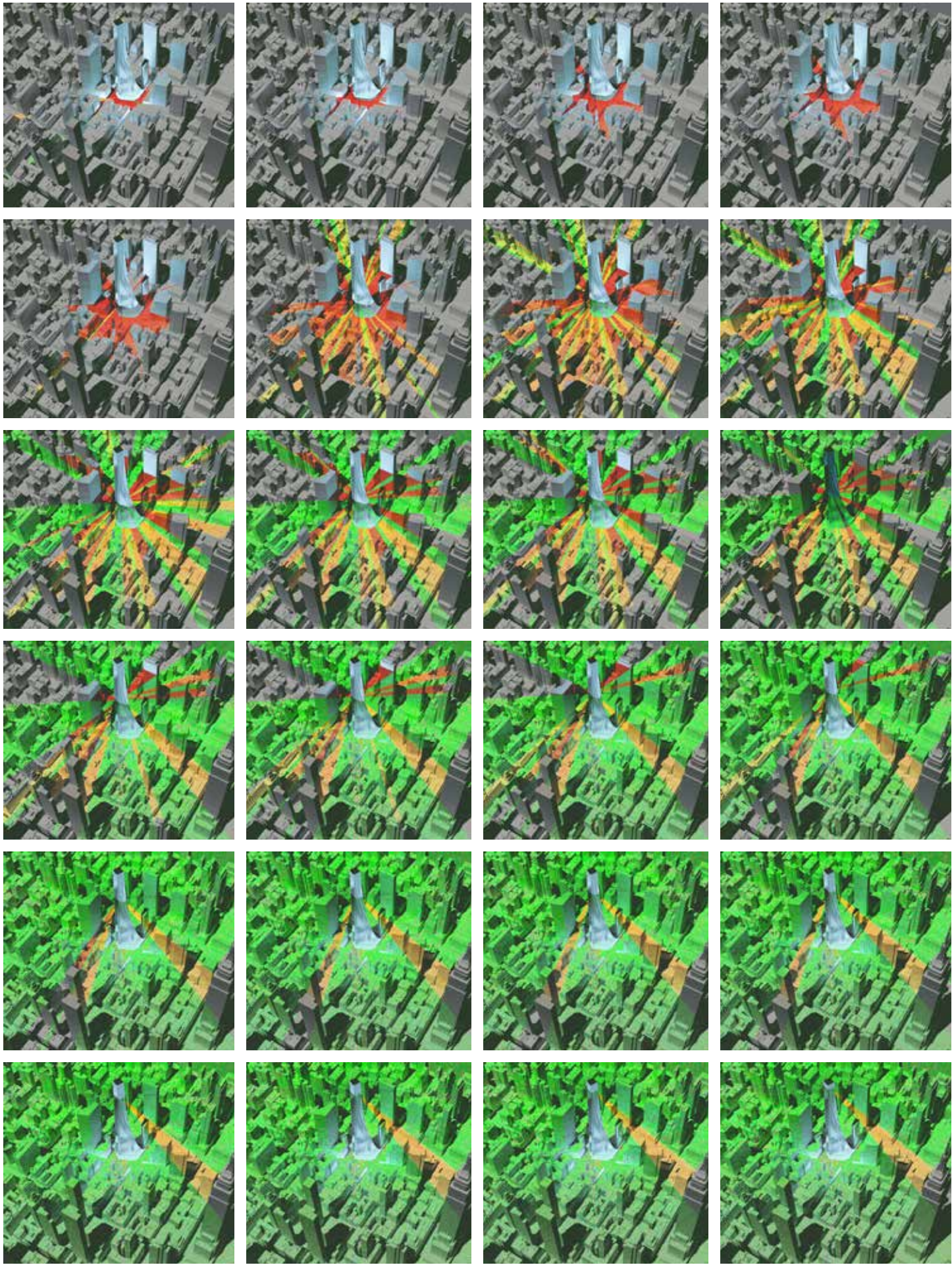
SKYSCRAPER

**Columbia GSAPP, Professor Joe Brennan,
Re-Thinking BIM Fall 2024**

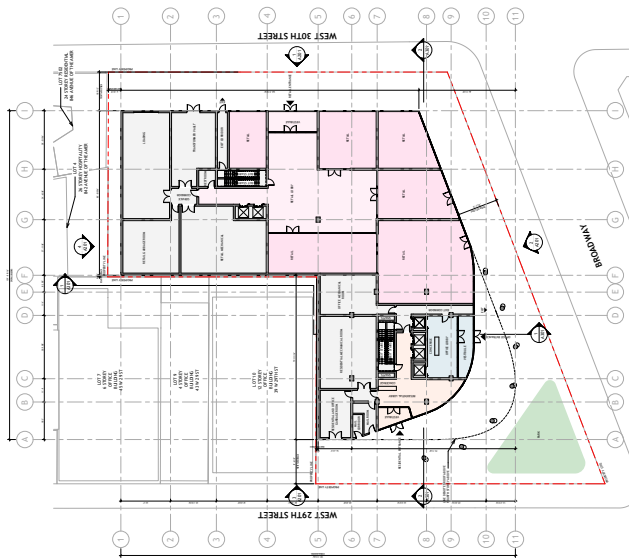
Serpentine 84, located at 1227 Broadway in New York City, is a visionary mixed-use skyscraper. Inspired by the fluid elegance of a snake, its serpentine podium transitions into an 84-story tower that houses state-of-the-art office spaces and luxurious residential units. The podium features retail spaces, and an amenity plaza. The tower offers flexible office layouts on lower levels and high-end residential units, including sky penthouses with panoramic views, on upper floors. Serpentine 84 will redefine urban excellence and serve as an iconic landmark in Manhattan's skyline.

As part of this group project, my contributions included:

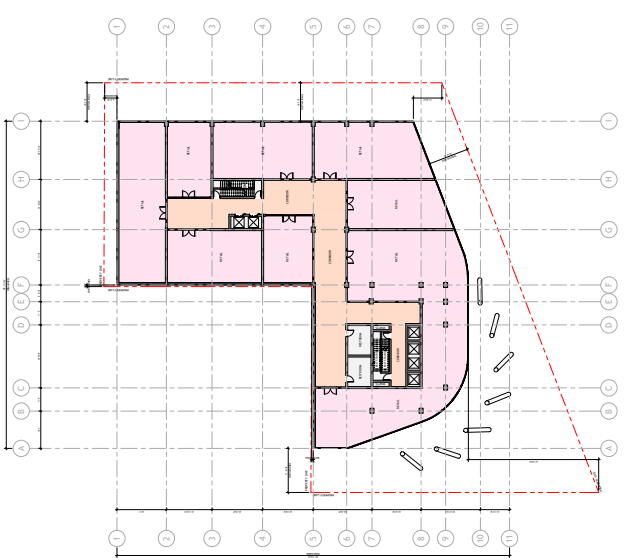
- Conducting massing studies to explore the tower's sculptural form.
- Performing a site analysis to determine optimal design strategies for urban integration.
- Contacting nearby buildings to negotiate air rights acquisition and estimate associated costs. Successful extra 40k sqft at \$300 a sqft.
- Co-Design the façade system using Revit, Rhino Inside, and Grasshopper to achieve a seamless and dynamic exterior expression.
- Producing exterior renderings that captured the building's iconic presence and conveyed its vision.



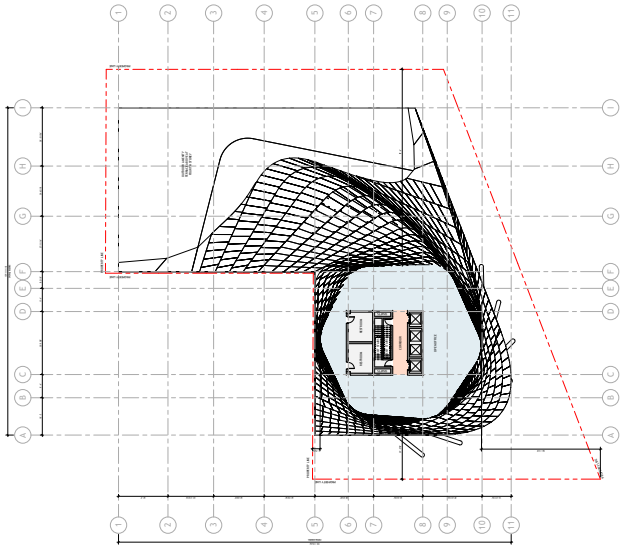
Site View Analysis



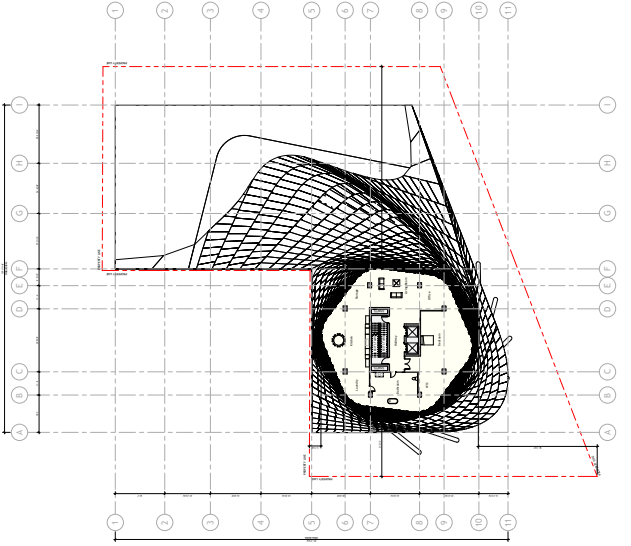
Ground Floor Plan



TYP. Retail Plan



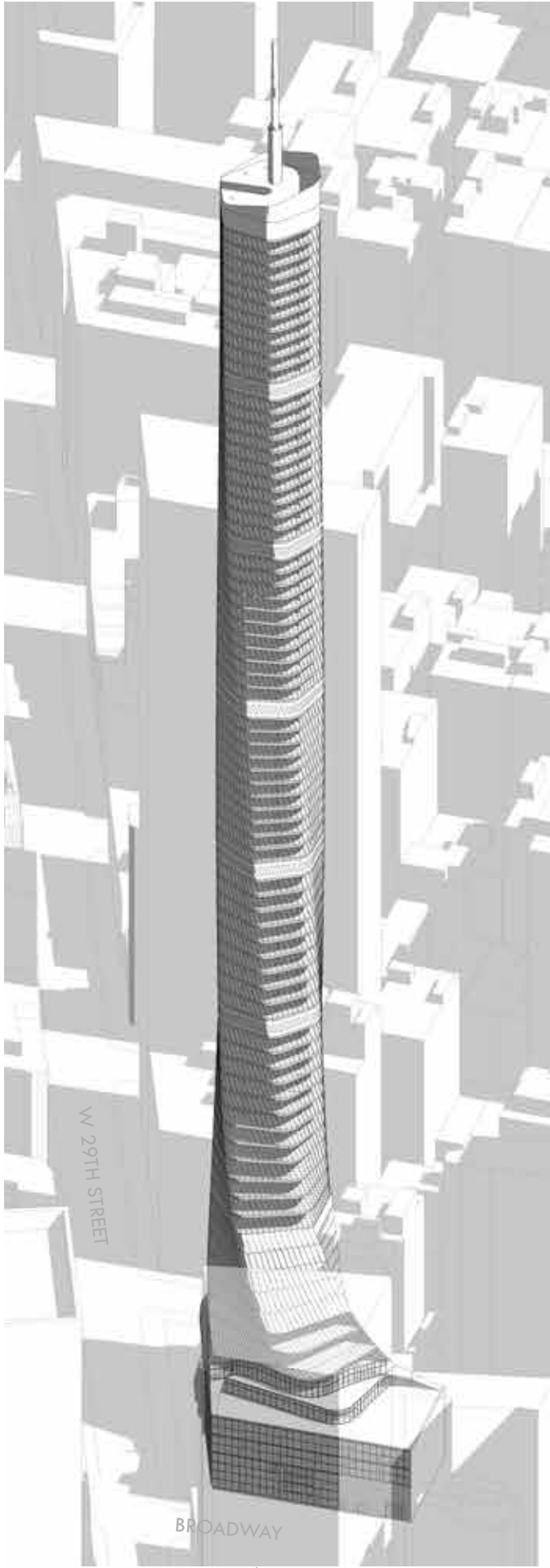
TYP. Office Plan



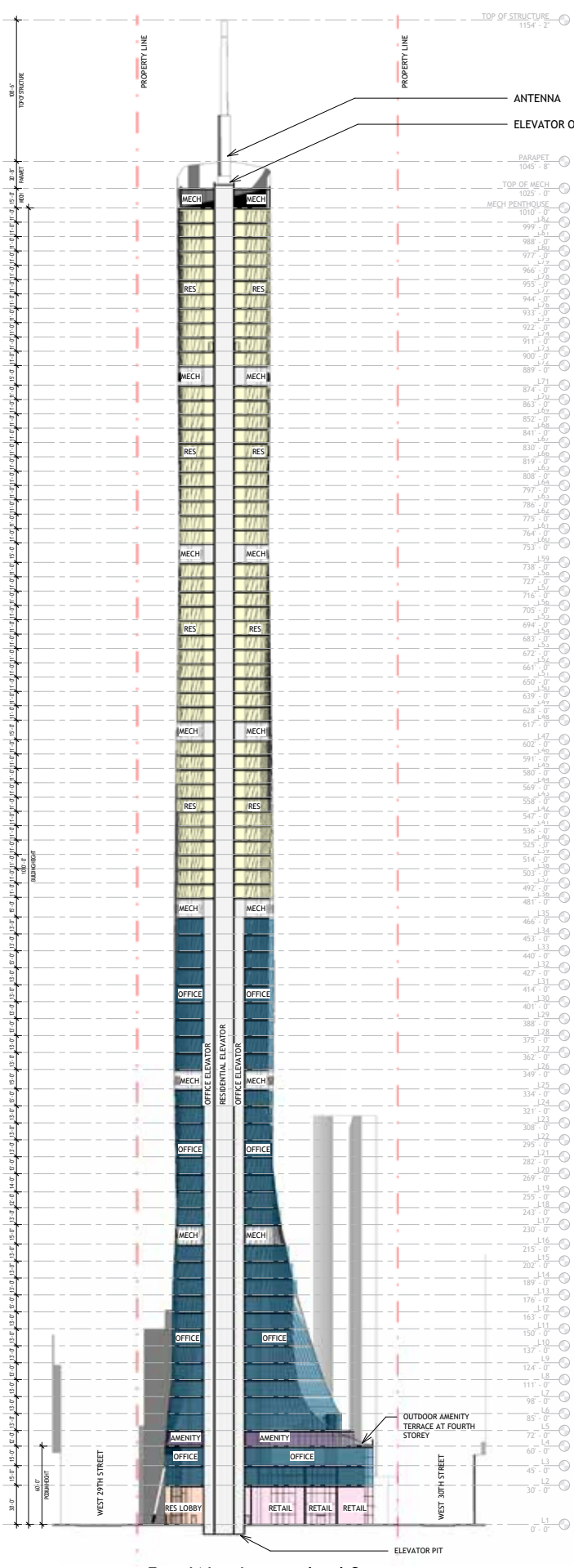
TYP. Residential Plan



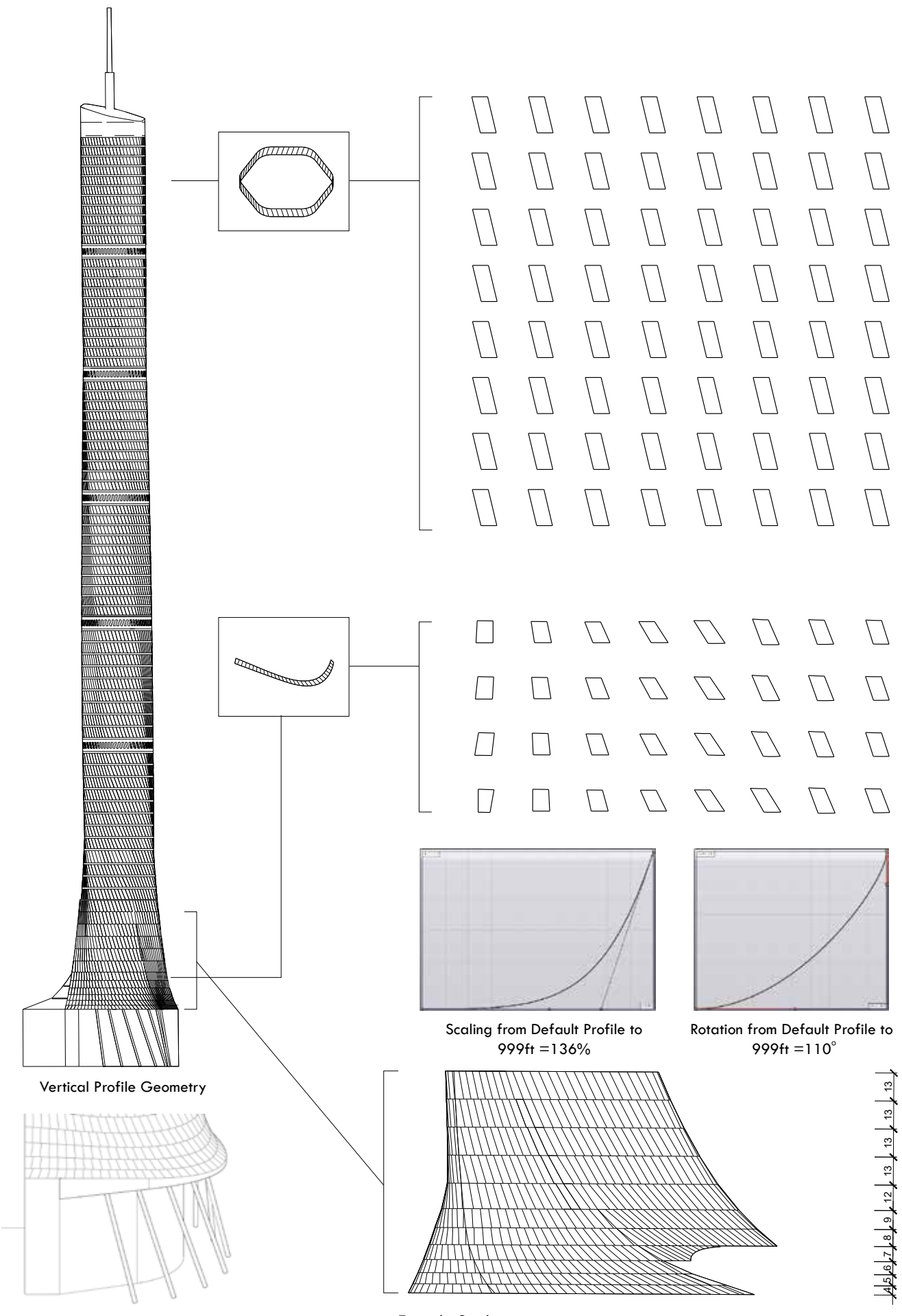
View of The Tower From Time Square



Axon



East-West Longitudinal Section



Vertical Profile Geometry

Facade Study

INHABITING THE BLACK BOX

INTEGRATING HUMAN, ECOLOGICAL, AND TECHNOLOGICAL NETWORKS AT H5 DATA CENTER NYC

SEXY APOCALYPSE EMBRACING THE END, THE END OF MORTALITY

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Architecture Studio Summer 2024

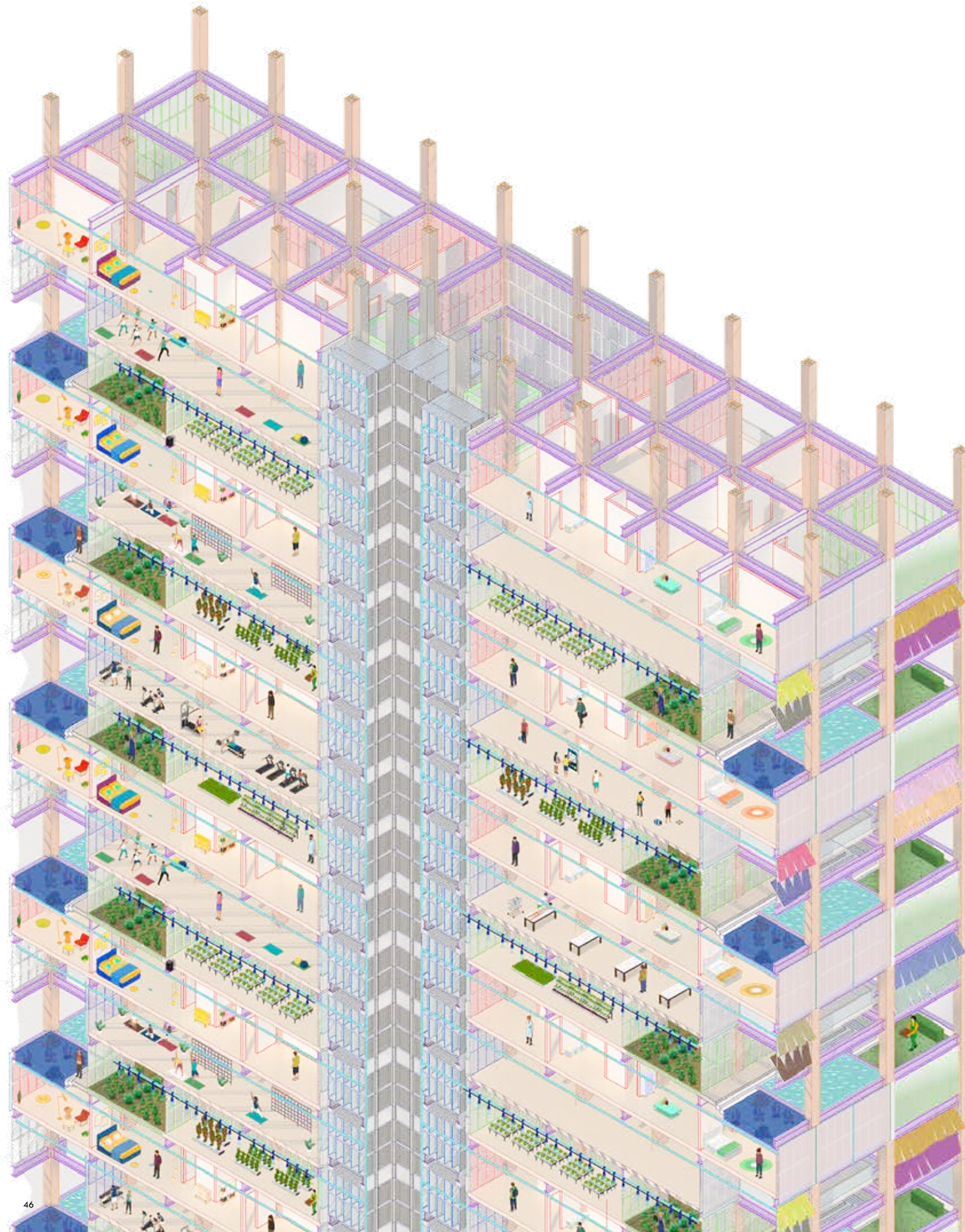
This project reimagines the H5 Data Center in New York City as a pioneering hub that bridges the gap between technology, humanity, and ecology. In response to the rapid proliferation of artificial intelligence and the environmental demands of data centers, the proposal challenges the opaque nature of the “black box” by transforming it into a transparent and symbiotic model for urban innovation.

The data center is designed to minimize environmental harm by avoiding the extraction of new raw materials. Through an in-depth analysis of New York scrapyards, the project identifies sources of old servers, metals, and other components that can be repurposed for the construction of the data center. Every element, from the servers to the structural materials, is reclaimed from landfills and scrapyards, demonstrating how waste can be reimagined as a resource.

The design mitigates the environmental impact of data centers across their entire lifecycle—production, operation, and end-of-life. By harnessing waste heat and carbon dioxide emissions, the project creates opportunities for residential heating and agricultural production, fostering a circular economy. Aquaponics, vertical farming, and 3D ocean farming are integrated directly into the structure, leveraging heat exhaust and CO₂ for sustainable food production.

The proposal also incorporates renewable energy solutions such as solar panels and water runoff systems for cooling. Materials are sourced sustainably, ensuring the entire structure becomes a testament to the possibilities of recycled architecture. The data center’s core is reimagined as a transparent, accessible resource, with spaces for education, markets, and recreational facilities, seamlessly merging public and private realms.

By combining technological, ecological, and social networks, the H5 Data Center becomes a prototype for sustainable development, promoting community engagement while addressing global challenges posed by AI and climate change. This visionary project underscores the urgency of rethinking the urban footprint of technology to achieve a harmonious coexistence between innovation and the natural world.

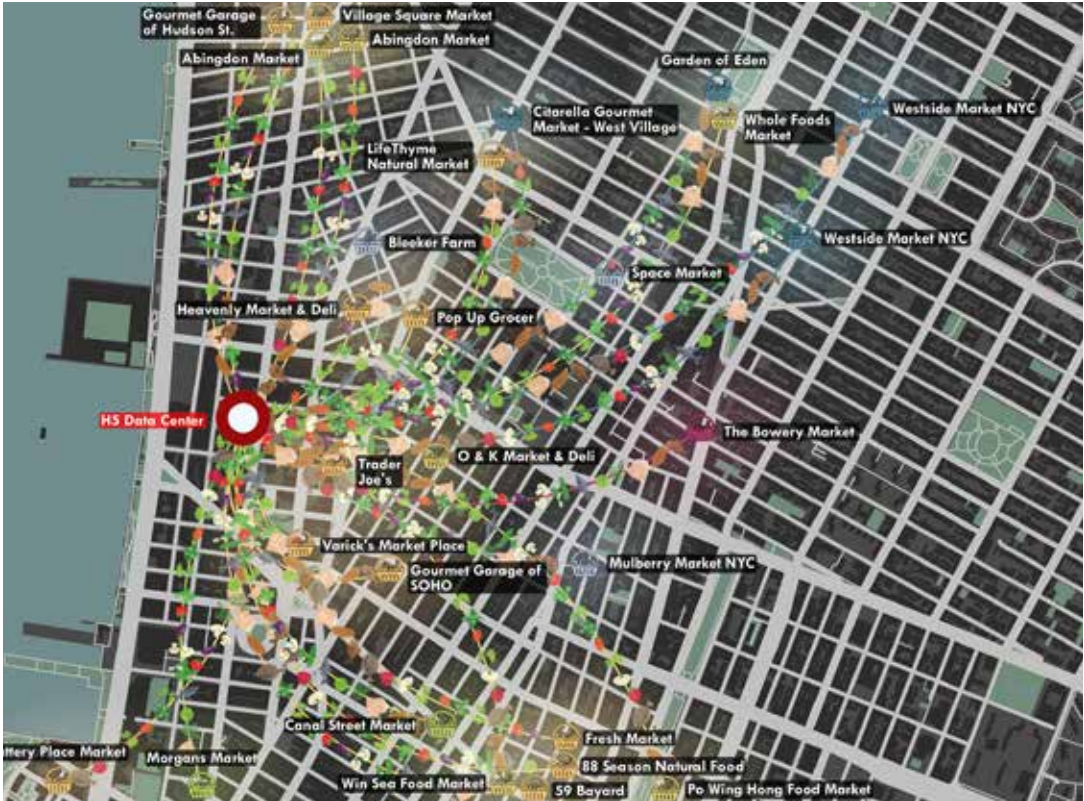




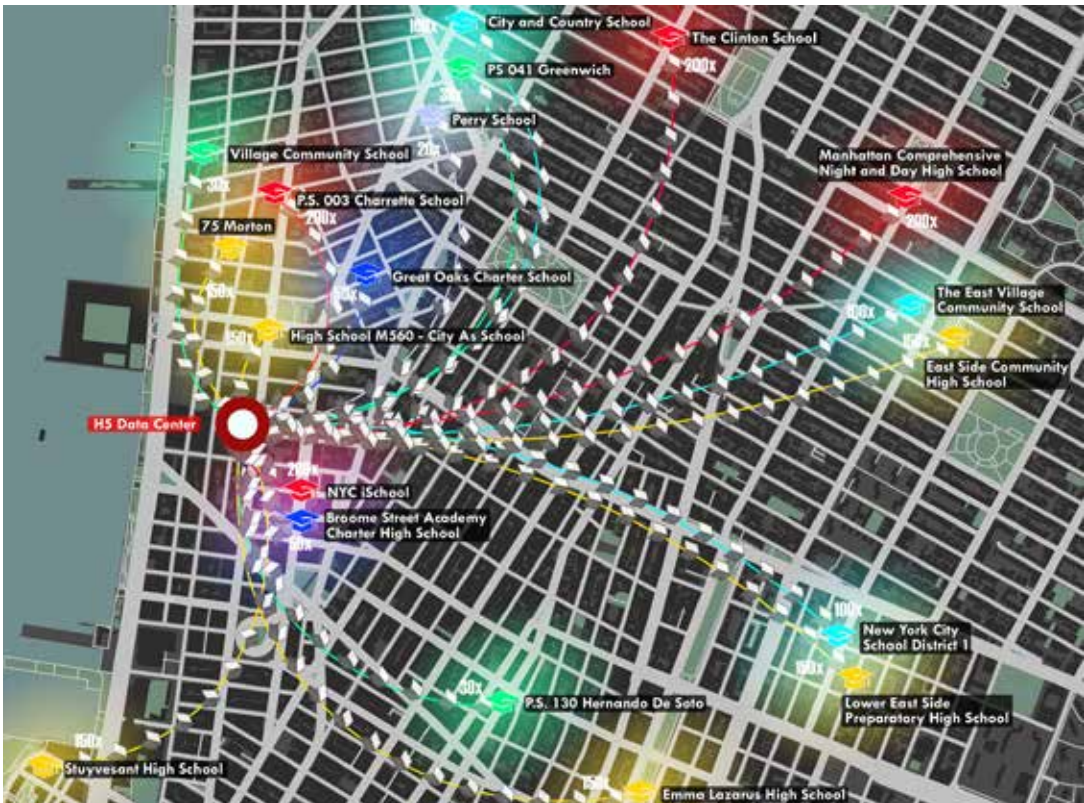
This diagram analyzes data centers in Manhattan, focusing on the H5 Data Center and its extensive network of carriers across New York. By mapping its connections, the study reveals the scale of data aggregation in a medium-sized data center and its critical role in the city's digital infrastructure



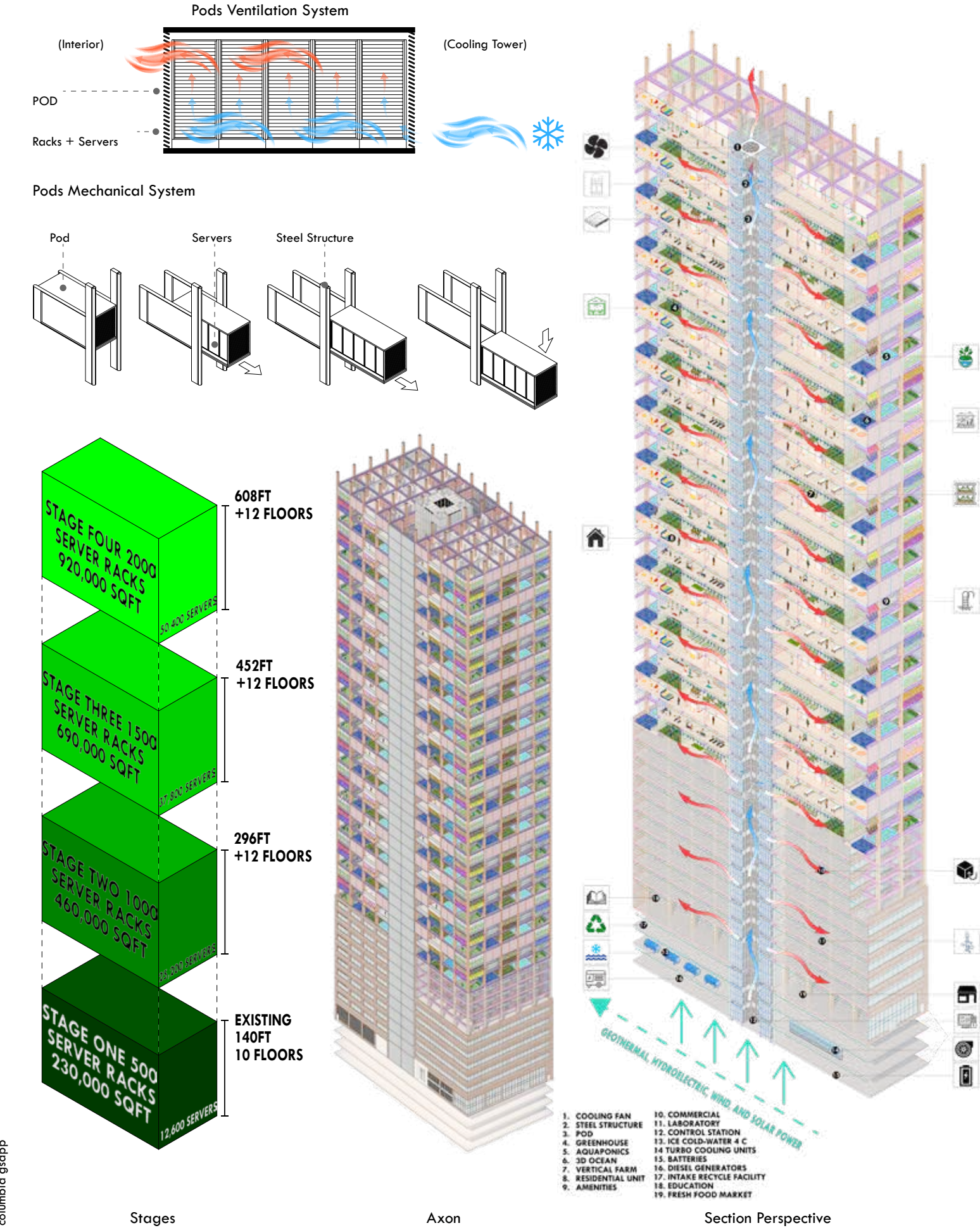
This diagram maps New York metro-area scrapyards by size and annual recycled material volume, including metals, servers, and batteries. It underscores my project's strategy to repurpose these resources in data center construction, thereby reducing material waste and environmental impact.



This map highlights fresh food markets within a two-mile radius and their role in local food access. By repurposing heat and CO2 emissions from the data center for agriculture, food production increases by 30%, directly benefiting these markets and the community.



This map visualizes the network of schools within a two-mile radius, illustrating their annual laptop and desktop recycling processes. By leveraging these educational institutions, the data center can repurpose recycled electronics to provide refurbished technology to schools and the community, fostering a circular economy in digital resources.



Stages

Axon

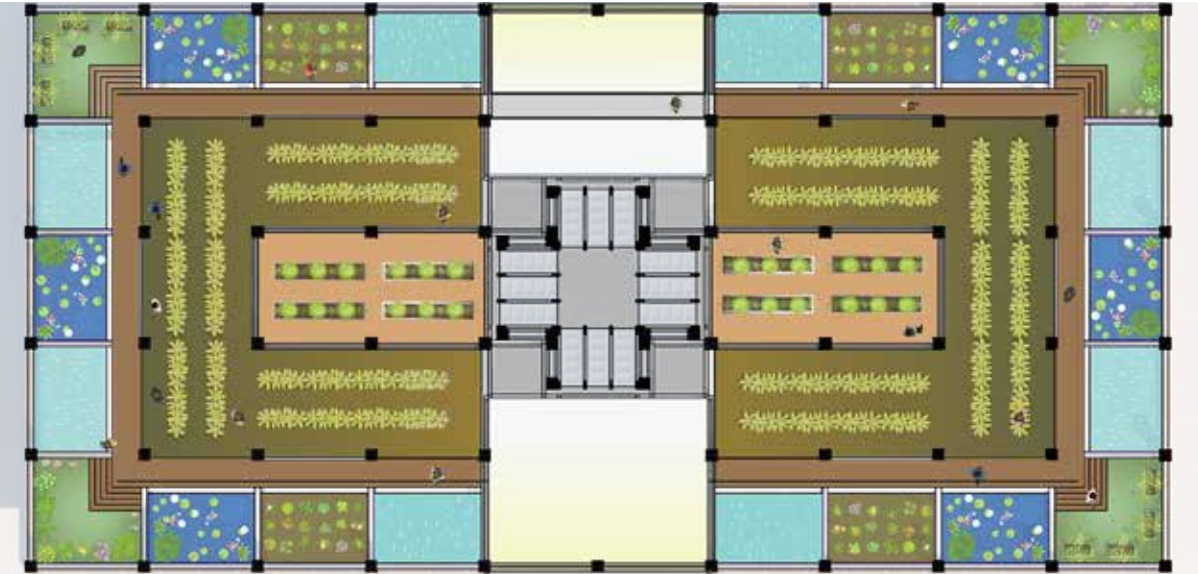
Section Perspective



Module 3rd Floor- Live and Play



Module 2nd Floor- Community Gym, Indoor and Outdoor Flex Spaces



Module 1st Floor- Aquaponics, Vertical Farm, 3d Ocean, and Hydroponics