

Dear urban innovation friends,

I am pleased to share this interim report from the inaugural cohort of the Urban Innovation Fellowship at Cornell Tech, a program dedicated to a fundamental question: how can city governments innovate where it matters most — in the agencies that deliver services to our residents every single day?

This past year, seven remarkable Fellows embedded across seven New York City agencies to tackle critical challenges at the intersection of technology, policy, and operations. They worked on everything from harnessing artificial intelligence to transform how we inspect our streets, to reimagining public-private collaboration so that innovative startups can work more easily with government, to deploying "bridge" decarbonization technologies while the City transitions to clean energy. But more importantly, they ushered in a different way of working — one grounded in rapid testing, cross-agency collaboration, and a deep commitment to solving real problems for New Yorkers.

From the outset, specificity and focus have been our guiding principles. Michael Samuelian, Director of the Urban Tech Hub, and I worked closely with partners in City Hall to identify the right agencies and to define projects that met a high bar: they must be ambitious yet achievable, a top priority for the agency, and would not happen otherwise. These are not backlog-clearing exercises — they are targeted projects that push the boundaries of what local government can accomplish when innovative technologies are applied to persistent urban challenges.

The work of this Fellowship extends beyond these seven projects. It is foundational to everything Mayor Mamdani's administration hopes to accomplish. Universal childcare requires the ability to hire at speed. Affordable housing requires permitting that works. Cleaner streets and a resilient infrastructure require the ability to adopt new technologies and manage complex operations at scale. None of these are possible without fixing the underlying machinery of government.



This Fellowship — in a small but meaningful way — is a test of solutions to these challenges. And as you read this report, I think you will see that when you embed talented people with clear missions in the agencies that do the real work, transformative things happen.

I hope you find this report both inspiring — for what the Fellows have accomplished this year — and clarifying, for the work that still remains and which we will tackle in this second year of the Fellowship. I look forward to continuing this conversation with you as we work toward building a government that works better for all New Yorkers, and a model to help other cities do the same.

Warmly,

Handwritten signature of Ashwini Chhabra.

Ashwini Chhabra
Founding Director, Urban Innovation Fellowship
Urban Tech Hub @ Cornell Tech

The launch of the Urban Innovation Fellowship marks the culmination of years of research and advocacy by the Urban Tech Hub to enhance innovation capacity in New York City government — and the beginning of what we hope will transform how cities address their most pressing challenges.

The path to this Fellowship began with inaugural Urban Tech Fellow Rohit (Rit) Aggarwala's landmark 2021 *Rebooting NYC* report and continued through the City and State's *Making New York Work for Everyone* program. Building on one of the initiatives from that report, Urban Tech Fellow Cara Eckholm tackled the challenge of expanding government capacity in her 2023 *Pilot NYC* research project, calling to “empower and embed innovation leads at key City agencies.” Thanks to the generosity of Bloomberg Philanthropies, the Urban Innovation Fellows program launched in 2024 to strengthen NYC's technical capacity by embedding Fellows directly within agencies.

The Fellowship rests on four pillars that both address immediate challenges that agencies face, while also focusing on how learnings from the program can scale and translate to other cities across the country.

The program is designed to:

1. Build collaborative partnerships across public, private, and academic sectors
2. Advance innovative city projects that agencies cannot execute through conventional means
3. Seed a technology and design talent pipeline that demonstrates the value of specialized expertise in government
4. Create a replicable model that other cities can adapt


Despite its size and complexity, we believe that New York City is the ideal laboratory for this work — large enough to test solutions at scale, agile enough to move faster than federal bureaucracy, and positioned as a global hub with unmatched talent. The Urban Tech Hub provides the intellectual rigor and agency relationships that help Fellows see beyond silos and understand government as interconnected systems.

This Fellowship sits at the core of the Urban Tech Hub's mission: bridging the gap between technological innovation and urban governance. For years, the Hub has cultivated relationships with City officials and agencies, building trust and understanding on both sides while assembling research focused on helping cities thrive through the responsible use of technology. This Fellowship activates those relationships and expertise — not through academic research alone, but through direct engagement with the everyday machinery of government.

This program embodies our belief that cities work better when innovation capacity is built from within, when expertise flows freely between sectors, and when the brightest minds choose to spend their time solving problems that affect millions of lives.

With great pride in the work to date and excitement for what lies ahead, I invite you to explore this interim progress report on the Urban Innovation Fellows Program.

Thank you,



Michael Samuelian, FAIA
Founding Director, Urban Tech Hub
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Director of the Urban Innovation Fellows Initiative



Ashwini Chhabra is the inaugural Director of the Hub's Urban Innovation Fellows Initiative, drawing on a 25+ year career spanning law, government, and startups. Before joining Cornell Tech, Ashwini served as Chief Public Policy Officer at TIER Mobility, a Berlin-based micromobility company operating in over 500 cities across Europe. He previously founded and led the Policy Development teams at Uber and Bird and held multiple transport policy roles in Mayor Bloomberg's administration, including Senior Advisor in the Mayor's Office. Ashwini began his career as a corporate lawyer.

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Stephen Albonesi

*Fellow, New York City
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Stephen Albonesi served as Senior Project Manager for Planning & Urban Design at The Municipal Art Society, leading research on public space design and successfully proposing the City's first Chief Public Realm Officer position. His experience includes founding team work at Localize.city, a real estate technology startup, and consulting at Appleseed on economic development projects. He holds a Master of City and Regional Planning degree from Rutgers University and a Bachelor's in development sociology from Cornell University.

Tom Conboy

*Fellow, NYC Department of Citywide
Administrative Services*



Tom Conboy led innovation sprints with Newlab and the NYC Economic Development Corporation, including the Resilient Energy Storage Studio and Founder Fellowship cohort. His work emphasizes multi-stakeholder coalition building across regulatory agencies, community leaders, entrepreneurs, and utilities to advance climate resilience initiatives. He holds a Bachelor's degree in business administration with a sustainable urban environments concentration from NYU Stern School of Business.

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Introduction

Whether you tie it to the publication of the best-selling Abundance, by Ezra Klein and Derek Thompson, or to the rise and ignominious decline of Elon Musk's DOGE, 2025 was the year everyone started talking about state capacity.

As such, it is timely to share some initial learnings from the Urban Tech Hub's most recent initiative — one dedicated to helping build the innovation capacity of municipal agencies, starting in New York City: the Urban Innovation Fellows program.

While many cities have made meaningful investments in building City Hall-level innovation capacity, there has been significantly less investment in building such capacity throughout the whole of government. As a result, the “innovation signal” weakens the further you travel down the City org chart. As an example, whereas there are 300 employees working in New York City Hall, there are 300,000 City employees working across the 50+ City agencies that deliver services to 8.4 million New Yorkers daily. This, then, is the problem we are tackling.

With the generous support of Bloomberg Philanthropies, in late 2024 we launched the Urban Innovation Fellows program to inject innovation capacity directly into City agencies, creating a decentralized innovation

“mesh network” of sorts to serve as a force multiplier for City Hall efforts.

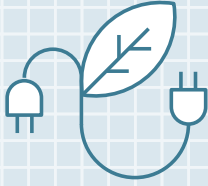
Over the course of the past year, our seven inaugural Urban Innovation Fellows have been working directly in seven New York City agencies — the Departments of Citywide Administrative Services (DCAS), Environmental Protection (DEP), Sanitation (DSNY) and Transportation (DOT), as well as the NYC Housing Authority (NYCHA), the NYC Economic Development Corporation (EDC), and the Mayor's Office of Contract Services (MOCS) — on key agency initiatives. They are helping these agency staff to implement urban technology solutions that advance priority City objectives and to address the policy, procurement, and operational roadblocks that prevent the scaling of successful programs.

This first cohort of Innovation Fellows brings diverse expertise spanning the areas of product management, data science, UX design, urban planning, advocacy, and startup operations. Each Innovation Fellow spends four days per week embedded in their assigned agency and one day on Cornell Tech's Roosevelt Island campus, creating a unique blend of hands-on implementation and academic collaboration.



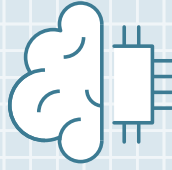
2025 Fellowship Meeting with then First Deputy Mayor Maria Torres-Springer

The projects they're tackling span three critical themes:



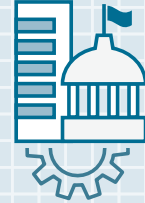
Deploying “bridge” decarbonization tech

The City has set ambitious goals for decarbonization. One group of projects (NYCHA, DCAS) is deploying “bridge” technologies to help decarbonize city-owned properties today, while simultaneously investing in long-term electrification.



Leveraging AI/ML and data

Another group of projects (DOT, DEP, DSNY) is leveraging big data and advanced technologies like AI and machine learning to more efficiently manage city assets and strengthen infrastructure to produce results faster and more cost-effectively.



Updating the public-private “API”

The last group of projects (MOCS, EDC) involves updating how city agencies procure services from the private sector — what we think of as an “API” for public-private collaboration. These two Fellows are working to update decades-old procurement methodology so that agencies can move faster and can better speak the language of startups they will need in order to innovate.





But the Urban Innovation Fellows program isn't just about solving New York's challenges. It's about creating a replicable model for agency-level innovation everywhere. By documenting our processes, measuring our impact, and sharing our learnings, we aim to influence how cities everywhere advance technology adoption and expand public-private collaboration.

As cities worldwide grapple with climate change, aging infrastructure, and growing service demands, the Urban Innovation Fellows program offers a compelling blueprint: embed technical expertise where the work happens, foster cross-agency collaboration, and build more sustainable innovation capacity that outlasts any single administration.

“I work alongside operations teams who understand their challenges deeply and often have strong ideas. My role is to translate ambiguity into clear pain points and testable solutions. I also collaborate with policy experts to translate evolving policy into digital compliance products. I bridge technology and business to ensure alignment around user needs and measurable impact.”

— Anh Nguyen, DEP Fellow



Fellowship overview

What is needed?

Local governments are where policy ideas are tested, refined, and scaled. They are fundamental to ensuring not only a functioning city, but a thriving one. From delivering cleaner water and safer streets to improving transit systems and maintaining public spaces, local government is where democracy meets daily life.

What makes local government especially powerful is its grounding in the community. City agencies and staff bring deep local knowledge and expertise, understanding the nuances of neighborhoods and the lived experiences of residents. This proximity to people and place allows local governments to act with agility, to respond quickly to emerging needs, adapt policies in real time, and pursue initiatives that are tailored to the unique context of their city.

Despite the worthiness of the work of city governments, significant gaps persist in their expertise, resources, and ability to move swiftly, particularly in areas where technology and public service intersect. And, partially as a result of the COVID-19 pandemic, there is a large and persistent vacancy rate that further exacerbates these challenges.

City government has an acute need for skilled tech and design professionals, yet faces structural challenges in attracting and retaining them. While the private sector offers highly competitive salaries, civil service compensation remains well below market rates. This pay gap, coupled with outdated civil service rules and a perception that cities do not provide an opportunity to work on cutting-edge innovation, makes it difficult to recruit and retain top tech and design talent, limiting the City's capacity to modernize its systems and implement innovative solutions.

Nowhere is this more evident than in the realm of digital transformation. Staying current with emerging technologies is costly and demands a level of agility that can be difficult for government agencies. For example, many government departments are now exploring how to responsibly integrate artificial

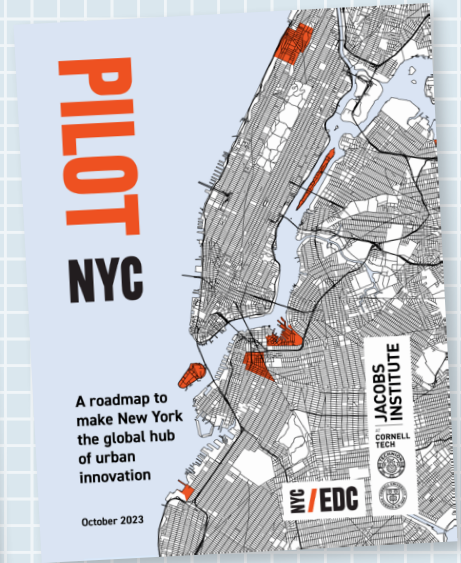
intelligence into their work, even as they are still navigating the expensive and complex transition to cloud-based infrastructure — a transformation that defined the private sector's digital evolution more than a decade ago.

How can we meet those needs?

There have been other programs at different levels of government that also worked to inject innovation into public institutions. The most successful of these include [18F](#) and the [US Digital Service](#) at the Federal level (both of which have recently been dismantled), and City Hall i-teams at the local level.

But there has historically been less investment at the City agency level, despite the fact that agencies are where the proverbial rubber meets the road when it comes to providing services to City residents. And whereas election cycles bring fresh perspectives and a host of new ideas to City Hall, turnover at the agency level is much less frequent. As a result, even the most innovative ideas coming out of City Hall can only go so far without complementary investments in innovation capacity at the agency level.

This is where the Innovation Fellows program comes in. In order to help boost the “innovation signal” emanating from City Hall, the Fellowship deploys a “mesh network” of innovation capacity across several City agencies. This network — consisting of the seven Innovation Fellows, supplemented by partners in City Hall, Cornell Tech and others in the NYC urban tech ecosystem — forms a connected system where knowledge, ideas, and expertise flow freely rather than hierarchically. By placing multiple Fellows across different agencies and creating weekly touchpoints for collaboration, the program bridges silos and fills gaps in expertise. This structure allows Fellows to learn from one another, share resources, and apply lessons across contexts, leveraging their collective knowledge, skills, and experience. It is an approach grounded in learning and experimentation — one that adapts as needed.



Background

The Fellowship is the result of years of research on how to inject innovation into New York City government.

The 2022 *Rebooting NYC* report, authored by former Cornell Urban Tech Fellow and New York City's former Chief Climate Officer, Rohit Aggarwala, outlined recommendations for an urban tech agenda that would address New York's myriad challenges as it emerged from the COVID pandemic.

Making New York Work for Everyone, a 2022 joint action plan developed in partnership between New York City and State, further argued that the City is uniquely positioned to become a global hub for urban innovation.

Finally, the 2023 *Pilot: New York City* report, jointly published by Cornell Tech and the New York City Economic Development Corporation (EDC), and primarily authored by Cara Eckholm, a Cornell Tech Fellow, and Daria Siegel, Senior Vice President of Innovation Industries at EDC, emphasized the need to “empower and embed innovation leads at key City agencies.”

Drawing on the recommendations and groundwork established by these reports, Cornell Tech launched this Fellowship in November 2024.

Project selection and scope

The inaugural cohort of the Urban Innovation Fellowship is focused on New York City. As the largest urban laboratory in the US and the home of Cornell Tech, New York City presents the perfect opportunity to test the Fellowship model.

The founders of this Fellowship — Michael Samuelian and Ashwini Chhabra, both of whom have previously worked in New York City government — worked closely with partners in City Hall to identify the right group of City agencies to launch the Fellowship, and then worked with those agencies to define the scope of the projects the Innovation Fellows would tackle.

Agency projects were chosen with both ambition and feasibility in mind. The aim was to identify pressing initiatives that pushed the boundaries of what city government could achieve while remaining realistic in scope. It was equally important to avoid projects that merely cleared existing backlogs or positioned Fellows as an extra pair of hands. Projects needed to be high priority; they needed to be ambitious enough, but achievable over the two-year duration of the Fellowship; and they had to be projects that, but for these Fellows, the agencies would not otherwise be able to deliver.

Once projects were defined and actionable, the skills required for successful delivery were outlined, and Cornell Tech hired seven Fellows and matched them to agencies based on their expertise and experience.

The seven Urban Innovation Fellows are mid-career professionals from a variety of backgrounds, including product and innovation strategy, user experience and service design, research and data analysis, startup and scale-up operations, project and program management, coalition building, and stakeholder engagement. Together, these roles form a rich network of interdisciplinary skills and collective experience capable of addressing a wide range of urban challenges. And while the Fellows come from many different backgrounds, they are united in their desire to make a broad public impact within their areas of expertise while gaining hands-on experience in local government.

Goals

The Fellowship was designed with four core goals in mind: (1) to build collaborative partnerships, (2) to advance innovative, priority projects in city agencies, (3) to seed a technology and design talent pipeline for city agencies, and (4) to serve as a model for other cities pursuing government innovation. Together, these goals aim to cultivate a sustainable, long-term culture of innovation in local government.

- 1 Build deeply collaborative partnerships:** Innovation thrives at the intersection of public, private, and academic initiatives. This Fellowship strengthens those connections across the City. By deepening partnerships with universities, overextended public officials gain access to new ideas and the capacity to test experimental approaches that might be too risky otherwise. Partnerships with private industry similarly bring the agility of startups and the innovative energy of the tech sector to address the City's toughest challenges.
- 2 Advance innovative City projects:** Fellows bring specialized expertise from the private and nonprofit sectors that allows the City to identify and execute promising technology projects without relying on consultants or navigating costly, time-consuming, and ill-suited hiring processes. Their external

perspective helps cut through policy barriers and institutional inertia, enabling agencies to scale successful pilots more broadly.

- 3 Seed a tech pipeline for City agencies:** By embedding Fellows directly into agencies, the Fellowship demonstrates the value of specialized technology and design talent through hands-on results. At the same time, it offers professionals the chance to do high-impact work in the public sector, outside the constraints of shareholder-driven priorities. This mutual exposure builds in-house expertise within agencies while giving Fellows practical experience in civic innovation.
- 4 Develop a replicable model for other cities:** New York City acts as a laboratory for local government innovation nationwide, providing the structure and support to test, refine, and scale a Fellowship program that other cities can adapt. For resource-limited municipalities, where innovation is often most critical, this program offers a tested framework.

Taken together, these four goals create a foundation for lasting government innovation in the public sphere. They give city officials, often focused on the daily demands of service delivery, a window into cutting-edge solutions. They provide startups and tech companies a pathway to channel their expertise toward civic challenges. They give academics a chance to apply their research in real-world contexts. They also offer working professionals an opportunity to understand, and directly improve, how cities function.



Photo by Max Touhey

Structure

The City serves as a living laboratory for civic innovation and urban technology. It mirrors the scale and complexity of the federal government while maintaining the agility to move more quickly through the constraints that slow larger bureaucracies. Combined with New York's role as a global financial and cultural hub, its relationship with Cornell as an intellectual powerhouse creates unmatched opportunities for experimentation and applied research.

The Cornell Urban Tech Hub is a natural home for the Urban Innovation Fellowship. The Hub brings long-standing relationships with City officials and agencies, as well as deep expertise from scholars who have devoted their careers to helping cities thrive. These networks provide Fellows with critical foundations for success, allowing them to move beyond agency silos and gain a bird's-eye view of government as a whole.

Fellows spend four days per week embedded within their respective agencies, then reconvene every Thursday on Cornell Tech's Roosevelt Island campus for a structured knowledge exchange. These weekly gatherings include collaborative work sessions, guest lectures, self-studies, and field visits. Fellows share lessons learned, swap tools and templates, and develop new skills together. They also work collectively to document and disseminate their knowledge.

Collaborative work sessions



These weekly sessions are central to building shared understanding. Fellows surface common challenges and themes they encounter at their respective agencies, which they use to create playbooks and develop civic innovation frameworks. As this is the Fellowship's inaugural cohort, Fellows also define its structure by designing metrics, capturing the program's story, and refining its overall direction.



“There's real value in being dispersed throughout the City but also leaning on the Cornell Tech team on Thursdays. Regarding my EV charging project, it was really helpful to talk to Meera [EDC Fellow] and Tom [DCAS Fellow], who both worked at Newlab on EV charging pilots, to quickly ramp up my understanding of the landscape and sector.”

— Noelle Francois, NYCHA Fellow



“Being able to come together on Thursdays to reflect and share insights is powerful. For example, I can immediately get answers from Catrina [DOT Fellow] or Anh [DEP Fellow] about whether they have data on manholes that isn't on the City's Open Data — something that would take much longer otherwise. We're much more aware of other projects that could benefit our work.”

— Stephen Albonesi, DSNY Fellow



“It's great to have this intentional day every Thursday when we come together. We reflect on what we've been working on, any challenges we're facing, 'can you talk about this, help me with that'. We also have the great fortune to have guest speakers and meet folks who are doing this in other cities across the country and share ideas. The level of immersion that we're afforded as Fellows to truly become part of the team, I think it's what sets us apart.”

— Tom Conboy, DCAS Fellow

Guest speakers

Guest speakers enrich the Thursday sessions. They include Cornell Tech faculty and researchers who provide a theoretical grounding for urban innovation or fresh perspectives on urban systems, as well as external leaders who share insights and strategies from their own careers within City government, the private sector, and elsewhere.



Self-education

Fellows also dedicate time to self-education, reading, and discussing influential works on government innovation and transformation. Recent selections include *Hack Your Bureaucracy*, *Recoding America*, and *Abundance*. Fellows present takeaways and explore how these lessons can be applied to their projects.



Field visits

Because the Fellows primarily come from the private sector, they needed to quickly develop an understanding of how City systems operate. Field visits are one way to achieve this. Fellows organize tours of key City facilities and events, often drawing on their own professional networks. Recent visits have included the Newtown Creek Wastewater Resource Recovery Facility and the DCAS Fleet Show. These experiences showcase the scale and variety of the City's operations, and introduce Fellows to pockets of innovation that exist in City government outside of their agencies.



Knowledge dissemination

A crucial element of the Fellowship is sharing knowledge beyond the cohort. Fellows contribute thought leadership through posts on the [Urban Tech Hub's Concrete & Code Substack](#) and by presenting at public events. For example, Catrina Cuadra (DOT Fellow) and Anh Nguyen (DEP Fellow) presented on climate-resilient infrastructure at the New York Climate Exchange's 2025 Climate Solutions Summit, and Noelle Francois (NYCHA) presented to the C40 Zero Emission Vehicle Network on electric vehicle charging in multifamily housing during their High Mileage Vehicle Charging Discussion Series. Fellows also present during Cornell Tech's annual Urban Tech Summit, which draws preeminent local and national leaders focused on solving urban issues through government, academic, and private sector innovation. And, as befits a Fellowship based at an academic institution, the Fellows have also presented their work to classes of students at Cornell Tech, the Cornell Brooks School of Public Policy, and the City University of New York (CUNY).



Program objectives

At the outset of the Fellowship, Fellows identified select objectives to help guide their work and success metrics to measure their progress towards these objectives. In the next section, Case studies, each of the Fellows discusses their individual project objectives and success metrics.

Similarly, the Fellowship team is developing success metrics to define what success looks like for the Fellowship as a whole, across three timespans: the near-term, medium-term, and long-term. Each successively builds, creating impacts that extend beyond individual projects and towards a stronger civic innovation culture across the City.

- **Near-term (Impactful):** These metrics are tied directly to the Fellows and their projects. The focus is on whether the project was completed and if the Fellow achieved established goals. Successful near-term outcomes create templates for agencies to implement urban technology solutions, scale promising pilots, and remove barriers to innovation.
- **Medium-term (Scalable):** These metrics extend beyond the immediate control of the Fellows or the Fellowship. The successful execution of projects should enable agencies to scale adoption, provide working models, and allow other agencies or cities to replicate the solutions, products, and processes developed through the Fellowship.
- **Long-term (Replicable):** When the near-term and medium-term goals are met, they contribute to the creation of a lasting urban technology innovation culture. In this stage, the City builds a stronger technology ecosystem, fosters interest among technologists in pursuing public sector roles, and positions itself to influence tech founders and urbanists to invest in building solutions that contribute to City objectives. The long-term vision is a city that both invests in and benefits from a robust urban technology landscape.

“As a designer, I’ll always advocate for more designers in government. I’m hoping to demonstrate the value of folks with user experience and service design backgrounds in roles beyond their traditional places. Bringing designers into project management and product management roles, helping think about reforms and implementation, is a powerful way to ensure what we’re doing reaches agencies effectively.”

— Calgary Haines-Trautman, MOCS Fellow

“I spent most of my career in the private sector, building and selling technology to large enterprises, so I understand ambition and the pressure to deliver results. After nearly a year embedded in government, I also understand the operational realities agencies face. A solution is only meaningful if it addresses the problems people are actually experiencing. That requires listening to user pain points and mapping them to measurable outcomes. Often, impact starts by bringing the right people into the same room. By drawing on institutional trust and relationships, we bring together technologists and field operators who may not initially want to discuss computer vision, but collaboration becomes practical when centered on real needs.”

— Anh Nguyen, DEP Fellow



Case studies

The projects undertaken by the Fellows fall, broadly, under three themes of focus:

Deploying “bridge” decarbonization tech

The City has set ambitious goals for decarbonization. One group of projects (NYCHA, DCAS) is deploying “bridge” technologies to help decarbonize City-owned properties today, while simultaneously investing in long-term electrification.

NYC Housing Authority (NYCHA)
Powering the future of public housing

NYC Dept. of Citywide Administrative Services (DCAS)
Accelerating municipal decarbonization

Leveraging AI / ML and data

Another group of projects (DOT, DEP, DSNY) is leveraging big data & advanced technologies like AI and machine learning to more efficiently manage city assets and strengthen infrastructure to produce results faster and more cost-effectively.

NYC Department of Transportation (DOT)
AI for city streets

NYC Department of Environmental Protection (DEP)
Transforming water infrastructure and air quality policy

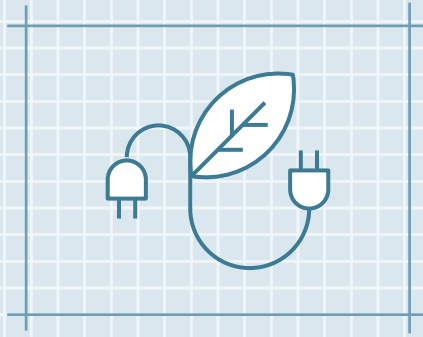
NYC Department of Sanitation (DSNY)
Scaling waste containerization citywide

Updating the public-private “API”

And the last group of projects (MOCS, EDC) involves updating how City agencies procure services from the private sector — what we think of as an “API” for public-private collaboration. These two Fellows are working to update decades-old procurement methodology so that agencies can move faster and can better speak the language of startups they will need in order to innovate.

Mayor’s Office of Contract Services (MOCS)
Procurement reform for innovation

NYC Economic Development Corporation (NYCEDC)
Streamlining the pilot to procurement pipeline



Deploying “bridge” decarbonization tech

Cities must decarbonize in the face of climate change in order to remain thriving, resilient places to live. In New York City, more than 50 government agencies are each responsible for developing strategies to align their operations with the City’s ambitious climate goals. Among them, NYCHA and DCAS oversee a significant portion of the City’s public building and vehicle infrastructure.

Both agencies are increasingly embracing emerging technologies (e.g., waste heat recapture, renewable diesel heating oil, solar vehicle charging, and EV charging networks in underserved areas) and new ways of work to meet their decarbonization targets.



CASE STUDY

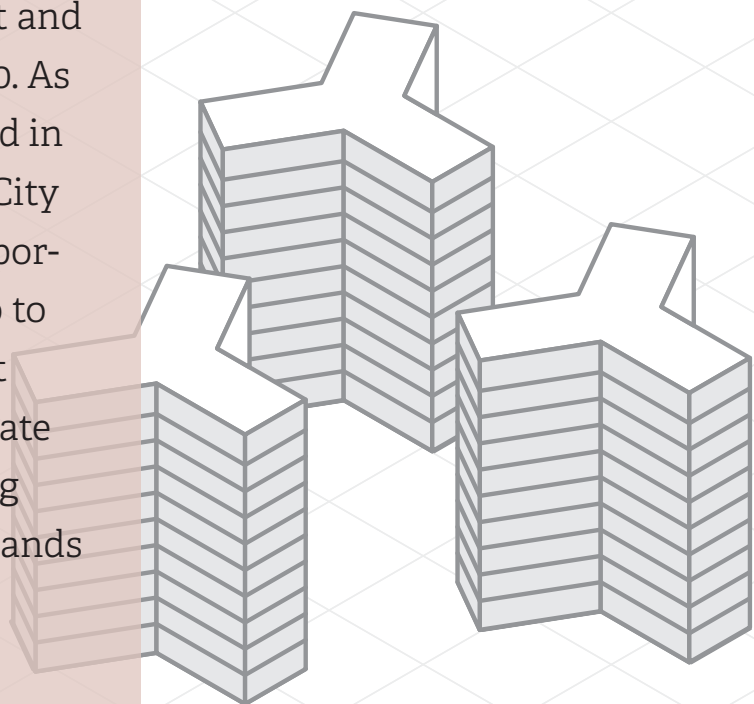
New York City Housing Authority (NYCHA)

Powering the future of public housing

New York City's ambitious climate goals require rapid decarbonization of both the built environment and transportation sectors by 2050. As the largest residential landlord in New York City, the New York City Housing Authority has an opportunity to leverage its portfolio to help the City make significant progress on achieving its climate goals while improving housing quality for hundreds of thousands of New Yorkers.

Fellow

Noelle Francois





Baruch Houses

Introduction

The New York City Housing Authority (NYCHA), the largest public housing authority in North America, was created in 1934 to provide decent, affordable housing for low- and moderate-income New Yorkers. Originally created to alleviate a housing crisis caused by the Great Depression, the Authority would go on to build tens of thousands of units between 1945 and 1965. Known for its distinctive “Towers in the Park” architecture, NYCHA developments can be found across all five boroughs.

While many cities across the country have demolished or privatized their public housing over the past forty years, New York City remains a notable outlier, and New York City public housing exists as some of the only truly affordable housing in the City.

Today, NYCHA is the largest residential landlord in New York City. A city within a city, it is home to 1 in 17 New Yorkers. The Authority provides affordable housing to over 500,000 residents through public housing and Permanent Affordability Commitment Together (PACT) programs, as well as Section 8 housing. As of February

2025, NYCHA reported 177,569 apartments in 2,411 buildings across 335 conventional public housing and PACT developments.

As a Public Housing Authority (PHA), NYCHA’s largest source of funding comes from the federal government. However, decades of disinvestment have created an enormous deferred capital need. According to the Authority’s 2023 physical needs assessment, NYCHA currently has a \$78B capital investment need in order to bring its portfolio into a state of good repair.

At the same time, New York City has set ambitious climate goals to ensure the City remains at the forefront of climate regulations. Local Law 97 (LL97) in particular requires large buildings to reduce their greenhouse gas (GHG) emissions by 80% by 2050. To comply, NYCHA must make its best efforts to achieve an 80% reduction in GHG emissions across its portfolio. With very limited funding and an aging building stock primarily constructed before 1970, NYCHA faces a formidable challenge. Yet the mandate to decarbonize presents an opportunity to modernize public housing infrastructure and preserve a vital public good, while improving housing quality for NYCHA residents.

The challenge

NYCHA is actively pursuing multiple innovative technologies and external funding opportunities to support decarbonization. As an Urban Innovation Fellow embedded in NYCHA's Sustainability department within the Asset and Capital Management division, Noelle is leading two high-priority projects to implement emerging technologies aimed at reducing GHG emissions.

Decarbonizing NYCHA's buildings

NYCHA's largest source of emissions comes from heating. The Authority currently provides 90% of its heat and hot water from fossil fuel-powered boilers. Moving to carbon-free sources is projected to eliminate 70-75% of NYCHA's GHGs from operations and is a high priority for the Authority.

In 2021, NYCHA launched the *Clean Heat for All* Challenge, inviting the private sector to develop an electric heat pump that could fit in a standard NYCHA window, plug into a standard outlet, and be installed in under two hours. The challenge was a success, and NYCHA has committed to deploying at least 30,000 units in the coming years.

To fully decarbonize, NYCHA needs solutions for producing domestic hot water (DHW) without fossil fuels as well. Buildings with electrified space heating must still continue to run their boilers year-round until domestic hot water at the building is electrified, preventing the decommissioning of these fossil fuel-dependent systems. NYCHA is exploring new and innovative ways to electrify domestic hot water across its portfolio. Noelle is leading a demonstration project to assess the feasibility of a promising new technology called wastewater heat recovery in order to determine whether it could be a financially viable, scalable option for the portfolio.

Wastewater heat recovery involves repurposing thermal energy (heat) from sinks and shower drains before it exits into the sewer system, and instead using the heat to generate domestic hot water for the building. At the demonstration project site, a 70 unit building in Upper Manhattan, the wastewater heat

recovery system is projected to meet the majority of the building's domestic hot water needs. Through a series of grants from the New York State Energy Research and Development Authority (NYSERDA), the project will be implemented as part of a larger retrofit planned at the building. If it generates the expected energy and cost savings, the goal is to identify additional buildings across the portfolio to deploy the technology.

Reducing transportation emissions city-wide

After buildings, New York City's second largest source of emissions is transportation, with the majority of emissions coming from passenger vehicles. Expanding electric vehicle uptake is essential to meeting the City's climate goals, but charging anxiety — the fear that an EV driver will not be able to find a charging station when needed — has resulted in lower EV adoption in large, majority renter cities like New York City with limited off-street parking.

NYCHA currently owns and operates a portfolio of more than 100 residential properties with associated off-street parking facilities, amounting to more than 14,000 parking spaces throughout the five boroughs. Many of these parking lots are underutilized by NYCHA residents and have excess parking available. NYCHA is exploring opportunities to activate its parking lots for public electric vehicle charging, without diverting limited capital dollars away from critical projects at the Authority. NYCHA's goal is to increase access to EV charging in underserved neighborhoods while generating much-needed revenue for the Authority.

Goals

Over the course of the two-year Fellowship, Noelle will:

- Identify and pilot a financially viable, scalable waste heat recovery technology at a NYCHA development using funds from NYSERDA's Waste Heat Recovery Program Opportunity.
- Develop a public-facing EV charging program at NYCHA to generate revenue for the authority while expanding access to electric vehicle charging in underserved neighborhoods.

Approach & progress: waste heat recovery

Noelle is leading NYCHA's wastewater heat recovery demonstration project. To support this effort, she submitted two successful grant proposals to NYSERDA under its Heat Recovery funding opportunity. The first proposal will fund system design for a wastewater heat recovery system, while the second will support the system's construction and implementation.

Before selecting wastewater heat recovery as the most promising solution for NYCHA, she first undertook a high-level analysis of NYCHA's portfolio to understand existing sources of waste heat and identify opportunities for waste heat recovery with the potential to scale across the portfolio. Noelle focused on the technical feasibility, scalability, and investment potential of waste heat recovery technologies across four primary areas: heating, ventilation, and air conditioning (HVAC) systems, domestic hot water, data centers, and adjacent infrastructure.

- **Heating:** Ninety percent of NYCHA's buildings are heated with central steam boilers, making them a natural point of focus for a potential waste heat recovery project from NYCHA's perspective. However, while these boilers generate significant waste heat, they run counter to NYSERDA's stated goal of reducing greenhouse gas emissions through their work. To fund waste heat recovery projects that rely primarily on the heat from fossil fuel-
- burning systems like boilers would incentivize building owners to maintain the system rather than pursue electrification. NYSERDA's preference is for fossil fuel-burning systems to be phased out in favor of building electrification, making boilers a poor choice for a demonstration project at NYCHA from NYSERDA's perspective.
- **Ventilation:** Noelle also explored ventilation as a possible source of waste heat. However, only about 60% of NYCHA buildings have ventilation of any kind, and of those that do, the ventilation is exhaust only. Waste heat recovery technologies for ventilation require both intake and exhaust vents in order to function. For this reason, it was determined that ventilation was not a viable option.
- **Air conditioning:** NYCHA does not provide air conditioning inside resident apartments, but there are a small number of community centers co-located on NYCHA campuses that do operate air conditioning. However, because a waste heat recovery solution centered around building-cooling would not have a direct benefit to NYCHA residents and could not easily be scaled beyond community centers, it was also determined to be a poor choice for a demonstration project.
- **Domestic hot water (DHW):** Because NYCHA is currently electrifying space heating through its window heat pumps, heat and hot water at these buildings will no longer be generated by a single source like they were when steam boilers were in use. NYCHA was particularly interested in exploring wastewater heat recovery as an option to electrify DHW at sites that are undergoing or will eventually undergo electrification of space heating. This would allow both systems to be electrified and the boilers to be fully decommissioned. Because all buildings at NYCHA require DHW, wastewater heat recovery has the potential to scale to other similarly structured developments across the portfolio, and the technology was determined to be a promising option for a project.
- **Data centers and adjacent infrastructure:** Finally, Noelle also explored two additional sources of waste heat beyond NYCHA's residential buildings — data centers and the MTA's subway system. Unfortunately, neither proved promising at this time. While data centers can generate significant waste heat, NYCHA

maintains only a small number of data centers, which are located within central staff offices. This again raised the issue of no direct benefit to NYCHA residents. She also explored the possibility of utilizing waste heat from the MTA's subway system at developments that are located along or near MTA train stations and tunnels; however, it became clear that it was not feasible to develop a project of that potential scope and magnitude within the relatively short NYSERDA application timeline.

After conducting the opportunity analysis, it became clear that wastewater heat recovery was the most viable waste heat recovery option to test at NYCHA. Wastewater heat recovery has emerged as a compelling solution for NYCHA's decarbonization strategy — particularly when paired with other electrification and energy conservation measures.

Noelle then worked with the Energy Programs team to identify a suitable project site. The following criteria were used to evaluate potential sites:

- **Siting and sizing requirements:** Only buildings with enough space to fit the required infrastructure, including a large wastewater holding tank, were considered.
- **Engineering capacity:** Preference was given to sites that had already procured engineering consultants and completed baseline utility assessments.

The Energy Programs team ultimately selected a site in Manhattan for the demonstration project. An engineering consultant already working at the building provided cost and energy savings estimates for a wastewater heat recovery system at the site, which were needed for the NYSERDA applications. Noelle submitted design and implementation proposals in early June 2025, and NYCHA was awarded design funding later that month. NYCHA was subsequently also awarded an implementation grant in August, greenlighting the project's funding. Design work began in fall 2025 and will continue through early 2026. Construction will ultimately take place as part of a larger comprehensive renovation at the building, likely beginning in 2027. While the timing of the implementation is tied to the building's larger construction timeline and will happen after the conclusion of the Fellowship, Noelle has secured funding and buy-in to continue the implementation after her departure.

Potential impacts: waste heat recovery

The demonstration project will provide a promising proof of concept for the electrification of domestic hot water with the potential for replicable impact in similarly structured developments across NYCHA's portfolio. At the demonstration project site, the wastewater heat recovery system is projected to generate 100% of the building's domestic hot water needs. Furthermore, because wastewater heat recovery is not yet a common technology in New York City buildings, the grant stipulates that NYCHA must share data and outcomes from the demonstration project with the project team at NYSERDA in order to develop a case study documenting the project, with the goal of encouraging private building owners to implement the technology within their own buildings.

Approach & progress: electric vehicle charging

Noelle is advancing a second project within the Sustainability department focused on activating NYCHA's underutilized parking lots for public electric vehicle charging. The dual goals of the project are to expand access to EV charging in underserved neighborhoods while generating revenue for the Authority.

NYCHA identified for-hire vehicle (FHV) drivers (e.g., livery car drivers and Uber and Lyft drivers) as a promising constituency to target for its electric vehicle chargers. These drivers tend to live in outer borough neighborhoods that are not well served by EV charging infrastructure. New York City issued a mandate to electrify for-hire vehicles by 2030, meaning demand for charging in these neighborhoods is projected to expand significantly over the next five years. The City has also set a broader goal that all New Yorkers should live within 2.5 miles of a fast charger by 2035. However, many neighborhoods in the Bronx, Brooklyn, and Queens currently lack access to a single public direct current fast charging (DCFC) charger. The existing charger network in NYC does not align with where

for-hire vehicle drivers live, and the growing demand for chargers will hinder the electrification of NYC's FHV fleet if more chargers are not installed.

Noelle spent the first six months of the Fellowship researching the EV charging market, talking to vendors, and analyzing the financial models most common to public EV charging. A previous consultant provided a detailed analysis and a financial model for six NYCHA sites likely to be heavily utilized by FHV drivers, but the model was predicated on the assumption that NYCHA would own the charging equipment and, in turn, receive all the revenue generated from the chargers. However, because NYCHA intends to secure public-private partnerships rather than use its own funds to bring chargers to its campuses, the model was limited in its use. NYCHA needed to understand if there was appetite from vendors to cover all installation and operations costs in exchange for access to NYCHA's parking lots, and if so, what kind of lease payment, portion of charging revenue, or hybrid of the two it could reasonably expect to receive. NYCHA needed to further understand at what scale vendors would desire to operate. On the one hand, charging infrastructure can be quite expensive to install, and vendors might seek a single site or phased implementation to ensure adequate capital for the projects. On the other hand, vendors seeking financing might have a minimum number of sites below which investors would not be interested in the project. It was not clear at the outset if there would be consensus around how many sites to offer to vendors.

NYCHA also heard consistently in conversations with vendors that sophisticated analysis is needed to determine whether a potential site for EV chargers is financially viable. Existing electrical infrastructure, traffic counts, and proximity to amenities all influence whether the chargers will ultimately receive sufficient utilization to generate the revenue required to justify the significant up-front installation costs. It was recommended that NYCHA allow vendors to inform the site selection process, as they routinely engage in this type of analysis as part of their business operations and are better equipped than NYCHA to understand the complexities of EV charger siting in New York City.

Because NYCHA had a significant number of unanswered questions around revenue potential, site

selection, and scale, the team decided to release a request for information (RFI) in advance of issuing a full solicitation for proposals. The RFI provided NYCHA with a structured way to gather information from vendors regarding the most desirable sites and the types of partnership models they were open to entering with NYCHA.

The RFI was issued on July 10, 2025 and closed six weeks later. NYCHA received significant interest in the RFI, and 16 vendors ultimately submitted responses. Noelle will use the responses to incorporate vendor feedback into NYCHA's overall program design, and then draft and release a formal solicitation for vendor proposals in early 2026, with a goal of reviewing proposals, selecting vendors, and potentially beginning construction that year. A current (January 2026) open question is whether construction can start on more modest Level 2 chargers while vendors work with Con Edison to obtain sufficient power at the parking facilities to support more power intensive DCFC chargers. If phased implementation is possible, construction can likely start in 2026. However, if vendors only want to construct once, which seems probable, construction will most likely be delayed 6-18 months as vendors work to get additional power supply to the sites. Either way, Noelle will leave NYCHA with a completed procurement and a strong plan for implementation.

Potential impacts: electric vehicle charging

Capitalizing on NYCHA's vast portfolio across the five boroughs to bring public EV charging to New York City has the potential to generate much-needed revenue for the Authority while helping to support the adoption of EVs in the City, where EV charging has proven difficult due to low homeownership rates and a high renter population. It will support the electrification of New York City's for-hire vehicle fleet, which has already shown a strong appetite for electric vehicles, far surpassing its first-year electrification target. In the first 10 months of the Green Rides initiative, which requires the FHV fleet to electrify by 2030, the TLC reported that almost 20% of high-volume trips were conducted in either an electric vehicle or a wheel-

chair-accessible vehicle, far exceeding the year's target of 5%. More than 14 million EV trips during that time saved a combined 19,000 metric tons of CO₂ emissions, marking significant progress toward New York City's long-term goal of reducing climate emissions by 80% by 2050.

Next steps

Waste heat recovery

NYCHA is currently working with an engineering firm to complete designs for the wastewater heat recovery system. Those designs should be complete in November 2025 and will then be incorporated into a broader scope of work for a large-scale renovation at the demonstration project site. Once that broader scope has been developed, NYCHA will solicit vendors to complete the work.

The vendor solicitation process is multi-step and involves complex financial transactions and the approval of the federal government. It is unlikely that construction will start at this building demonstration site before 2027. Given this reality, Noelle is working to ensure the project is positioned for success after the conclusion of her Fellowship. She is coordinating a review of the initial designs with NYCHA's Architecture and Engineering Services (AES) team, facilitating contract negotiations with NYSERDA to release the implementation funds, and liaising with NYCHA's Real Estate Development (RED) team to ensure the wastewater heat recovery system is included in the final scope of work for a comprehensive renovation at the building.

Electric vehicle charging

Noelle is currently drafting a solicitation for vendor proposals that will be released in early 2026. The goal will be to review vendor proposals, select vendors, and move into contract negotiations in the first half of 2026.

Upgrades to the electrical system will likely need to be performed at each site as a precursor to installing equipment. Con Edison offers an incentive program for developers to help fund the cost of electrical upgrades that support electric vehicle charging, and the vendors will need to coordinate with Con Edison to complete those upgrades prior to equipment installation. They will also need to obtain any necessary permits and approvals prior to beginning work. NYCHA may need to obtain special permission from the City to use existing parking lots for EV charging, and will need to review installation designs and construction plans internally before any work can begin. Ideally, construction can begin in the second half of 2026.

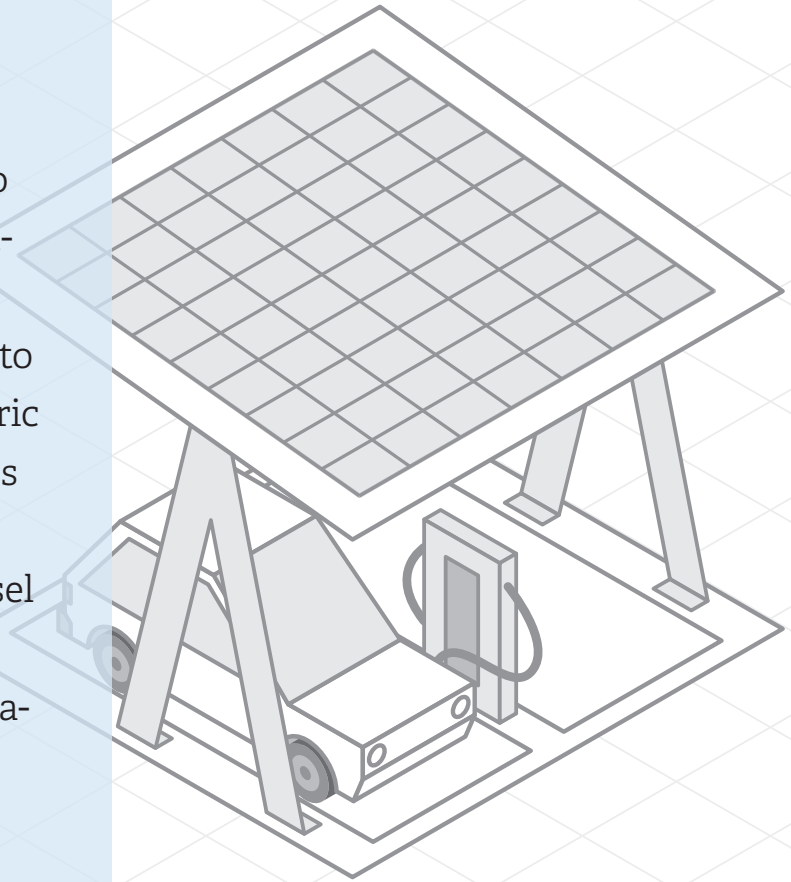


CASE STUDY

New York City Department of Citywide Administrative Services (DCAS)

Accelerating municipal decarbonization

Building on DCAS’s successes to date in implementing decarbonization programs, the agency’s near-term goals include efforts to implement solar-powered electric vehicle charging canopies across all five boroughs, and pilot the drop-in usage of renewable diesel biofuel in buildings to reduce emissions today while electrification continues at pace.



Fellow

Tom Conboy

Introduction

The Department of Citywide Administrative Services (DCAS) is tasked with making city government work for all New Yorkers, with sustainability as one of three key tenets. DCAS manages the largest electric vehicle (EV) fleet (5,200+) and charging network (2,080+) in New York State. For harder-to-decarbonize heavy-duty vehicles and vessels, like fire trucks and ferry boats, the City has turned to renewable diesel biofuel, completing a 100% transition of the heavy-duty vehicle fleet in 2024 and replacing 4.5 million conventional diesel gallons with renewable diesel on the Staten Island Ferry in 2025.

Beyond implementing lower-carbon technology, the agency is actively charting an expansion of its decarbonization scope. In 2024, DCAS testified in support of Local Law 63, which passed and directed the agency to implement solar canopy electric vehicle charging systems in each borough. Simultaneously, DCAS is leading innovation efforts to test renewable diesel applications beyond transportation — moving from established vehicle and vessel usage to exploring its performance in heating fuel-oil powered buildings.

Both initiatives stand to benefit from rapid program acceleration: the solar canopy local law must be implemented entirely by the end of 2026, and Local Law 97 now requires buildings to report and utilize lower-carbon building heat solutions. Accelerating these two initiatives across New York City and in partnership with other City agencies forms the core of Tom's Fellowship scope.



DCAS installed the first solar canopy for electrified fleet operations in 2022, in partnership with the Department of Corrections.

The challenge(s)

Coordinating cross-agency decarbonization at scale

As the agency that makes City government work for all New Yorkers, DCAS leads cross-agency sustainability and decarbonization efforts. Deploying new technologies, from solar canopies to renewable diesel, requires building trust with operations managers, facilities staff, and sustainability leads across agencies who often have limited experience in clean energy solutions. Many are concerned about added operational burdens or risks, such as maintaining solar infrastructure or potential fuel switch-over issues. Tom's role involves coordinating across multiple departments, each with distinct operational priorities, regulatory requirements, and risk tolerances, to successfully launch these initiatives.

Implementing future-forward technologies that improve built infrastructure, without slowing timelines

Every decarbonization project requires understanding existing built infrastructure, as new technologies must integrate with existing assets. Solar canopies, for example, depend on adjacent building power supplies, available sunlight, tree placement, and parking preferences. Trenching from the electrical supply to the canopy installation area represents a major cost component, with each additional foot significantly impacting the cost-benefit calculation. Renewable diesel offers an opportunity to lower carbon emissions from existing building heating equipment. For maximum impact, renewable diesel deployments should target fuel oil heating systems that cannot otherwise be easily electrified in the short term due to cost or the scale of replacement required.

Building confidence in renewable diesel performance for buildings

While the City has made great strides in scaling renewable diesel for its heavy-duty vehicle fleet, building usage represents uncharted territory, requiring DCAS to be a national front-runner and knowledge leader. Early tests have shown that renewable diesel successfully drops into existing diesel tanks and boilers while reducing life-cycle emissions by 60%, though site operators nevertheless remained concerned about legacy system performance with new fuels. Buy-in is necessary from building operators (DCAS, DOE, and others), regulatory partners (DOB, FDNY), and City leadership (City Council).

Goals

1. **Expand solar canopy electric vehicle charging infrastructure:** Tom will manage deployment of at least five solar canopy installations across DCAS and other agency facilities within two years, successfully fulfilling Local Law 63. This includes program management, vendor oversight, and inter-agency partnership building and site scouting to ensure impactful, well-utilized installations, operational success, and a meaningful expansion of the City's low-carbon transportation network.
2. **Build confidence in renewable diesel implementation for NYC buildings and fleet:** Tom will scale renewable diesel adoption across New York City's building heating systems and fleet operations through stakeholder coordination and regulatory compliance. This includes forging cross-sector partnerships with regulatory agencies, technical organizations, and industry groups to scale renewable diesel adoption in city-owned buildings and fleets, including establishing measuring, reporting, and validation processes in support of renewable diesel expansion for significant short- and medium-term carbon reductions.
3. **Build systematic innovation pipeline for emerging technologies:** Tom will serve as the primary resource for vetting, testing, and implementing emerging clean technologies across NYC's fleet — from autonomous lawn equipment to sustainable aviation fuel for helicopters to mobile solar panels. Each technology undergoes stakeholder validation with partner agencies and robust documentation to inform implementation decisions. This systematic approach not only advances the City's clean energy goals but also creates replicable models for other municipalities, underscoring leadership in sustainability innovation in local government.



DCAS Fleet manages a fleet of over 150 off-grid solar carport units, which provide power completely from the sun.

Solar infrastructure

Approach & progress

Tom is leading the implementation of 2024's Local Law 63, which mandates that DCAS construct at least five solar canopy systems distributed across the five boroughs. In spring 2025, DCAS awarded a contract to INF Associates to facilitate canopy implementation, including on-site electrical engineering reviews. Tom manages the central vendor relationship and coordinates across partner agencies, including NYC Parks, DEP, DOE, DOT, and NYPD, to deliver at least 25 new Level 2 chargers in a two-year time frame.

Finding the best site requires balancing multiple site selection considerations across agency properties: parking availability, energy supply capacity, capital improvement schedules, and operational constraints. A site may be ideal for canopy deployment, but a planned improvement project starting in six months can defeat the opportunity. This requires both local knowledge — building meaningful relationships with each facility manager — and electrical engineering expertise, which the vendor provides. It is up to DCAS and the vendor, collaboratively, to optimize energy generation potential while ensuring grid integration, operational accessibility, and maintenance requirements — and then achieve the final buy-in from the agency to implement.

Impacts

The canopy implementations fulfill City Council commitments under Local Law 63 by expanding solar EV charging infrastructure on City agency property across all five boroughs. This will, in turn, establish a replicable deployment model that enables the canopy program (a first-of-its-kind municipal asset) to expand beyond initial LL63 funding and become a viable long-term EV charging asset, supporting the 5,000+ (and growing) EV fleet. This work also demonstrates a successful cross-agency coordination effort for municipal decarbonization, creating a framework for new technical deployments that other municipalities can adopt.

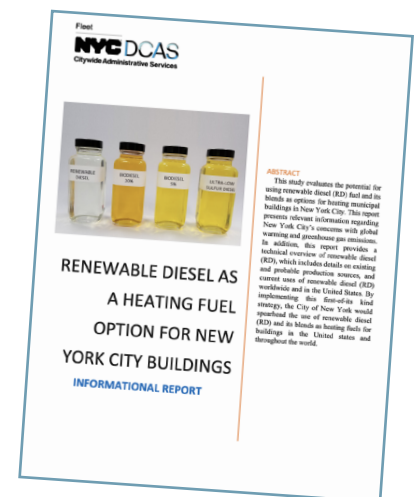
Renewable diesel

Approach & progress

Building on successful renewable diesel implementation in New York City's vehicle and vessel fleet, Tom is translating DCAS's leadership in renewable diesel for building heat.

DCAS has begun testing renewable diesel at a fuel oil-powered public school in the Bronx, with plans to expand to an additional public school and DCAS-managed buildings. Conducting a well-documented pilot program of renewable diesel will be critical to establishing its efficacy as a short- to medium-term 'bridge' decarbonization solution. This includes real-world testing at City buildings and supporting laboratory analysis. These findings

DCAS Fleet authored a report exploring the pilot use of renewable diesel as a heating fuel for NYC buildings.





Mockup of potential canopy installation at Petrides School, Staten Island

will prove that renewable diesel performs equally to No. 2 fuel oil for building heat and hot water applications.

The stakeholder network will be broad — encompassing regulatory bodies (DOB, FDNY), industry partnerships (National Oil Heat Research Association, Clean Fuels Alliance), and research collaborations, including a California Air Resources Board (CARB) MOU and partnership with Stony Brook University’s Advanced Combustion Lab for laboratory testing. This foundation enables technical validation and expanded buy-in for renewable diesel building applications.

Tom will also work to establish deeper feedstock monitoring and validation processes to ensure renewable diesel inputs (used cooking oil, waste animal fats, soybean oil) are as low-carbon as possible. This work includes completing a memorandum of understanding with CARB, which has developed feedstock monitoring processes for renewable diesel supplies in California and has expressed willingness to share knowledge to help New York City pursue similar deployment.

Impacts

The demonstrated performance of renewable diesel creates an opportunity to broaden the scale of this deployment across City-owned buildings to lower emissions. This work has impacts for both City operations and the overall real estate sector as Local Law 97 reporting and compliance requirements take effect. The project team maintains that this work is not intended to replace or slow electrification, but rather offers an immediate bridge solution to lower carbon emissions in harder-to-decarbonize buildings. Beyond New York City, the work will demonstrate that renewable diesel is a viable solution that other cities can adopt to accelerate their own building decarbonization efforts.

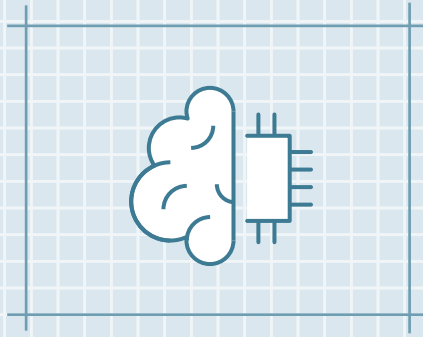
Next steps

Solar infrastructure: completion and integration optimization

The site selection process for solar canopies will continue through the end of 2025. As sites are finalized and timelines and project budgets are finalized, they will be activated, leading to a staged timeline of canopies coming online throughout 2026. The vendor is producing 3D-sketch mockups to aid site managers in visualizing the footprint of the canopies and plan for utilization and concurrent local operations, such as unobstructed movement of larger trucks. DCAS aims for all five canopies to be online by Fall 2026, with each canopy being open to local fleet EVs as well as citywide electrified vehicles.

Renewable diesel: winter season testing and validation

The 2025-2026 winter heating season is a key time to study renewable diesel performance. DCAS will be working within multiple internal departments to coordinate tests at both public school sites and DCAS buildings. Knowledge partners will be closely involved, including potential concurrent laboratory testing of burner performance. This combination of favorable laboratory findings and real-world building performance success in New York City (including long-term success in the vehicle and vessel fleet) will be critical to establishing the case for scaling this lower-carbon fuel option in No. 2 fuel oil-powered buildings across the City.



Leveraging AI / ML and data

AI and other data-driven information systems are everywhere right now. They are reshaping how we learn, work, and use technology in our personal lives. When the Urban Innovation Fellowship was announced last year, the conversation around AI had shifted from “this can’t do everything” to “how can we use this for everything.” Seemingly everyone was beginning to ask how more intelligent and responsive data tools could fit into their lives in ways that solve real problems.

But AI isn’t magic. Especially in the public sector, it’s often powered by something far less glamorous behind the scenes — decades of records, siloed systems, and the unheralded labor of people stitching those systems together. At DOT, DEP, and DSNY, the Urban Innovation Fellows are helping to lay the foundations for powerful data tools that address these operational challenges.

What is computer vision?

Computer vision is a field of artificial intelligence (AI) that consists of building models that enable computers and systems to interpret and make decisions based on visual data, similar to the human eye and brain. By using techniques from machine learning, deep learning, and image processing, computer vision allows machines to analyze images and videos, recognize objects, and detect patterns.

What is machine learning?

Machine learning (ML) is a type of AI that enables computers to learn patterns from data and make decisions or predictions without being explicitly programmed. In the context of pavement condition assessment, machine learning algorithms can be trained to recognize various types of surface distress — such as cracking, rutting, and potholes — by analyzing imagery and sensor data.



CASE STUDY

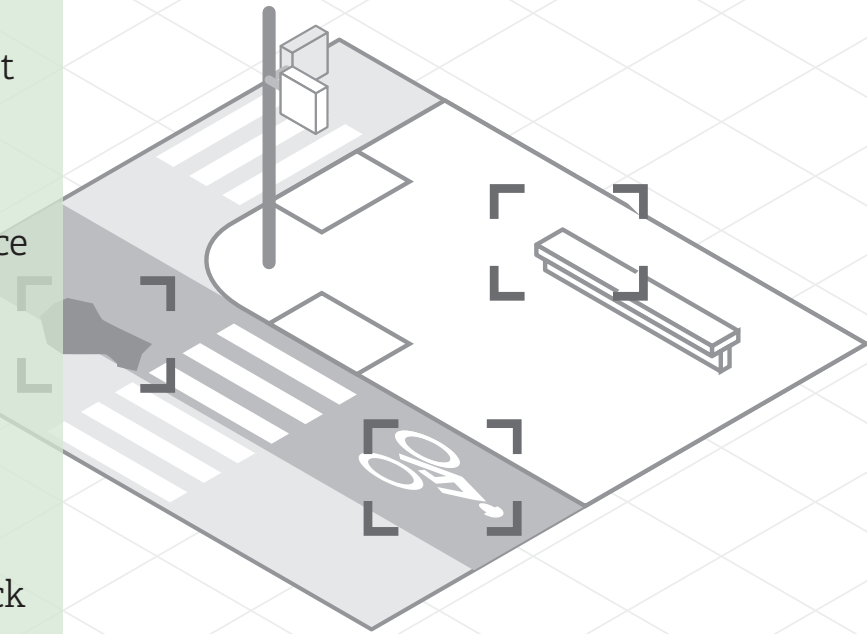
New York City Department of Transportation (DOT)

AI for city streets

AI for city streets leverages computer vision to transform asset inspection from a slow, manual process into a fast, data-driven system. The program aims to reduce inspection time by 75%, enabling the City to assess pavement, road markings, street furniture, and other critical assets with unprecedented accuracy and efficiency, turning what was once a bottleneck into a strategic tool for smarter, more proactive infrastructure management.

Fellow

Catrina Cuadra



Introduction

AI is rapidly reshaping industries across the globe, raising critical questions about how emerging technologies can be applied for the public good. For government actors, the opportunity lies in solving long-standing challenges with smarter, more efficient tools. Catrina Cuadra is working with the New York City Department of Transportation (NYC DOT) to launch *AI for city streets*, its flagship initiative to apply computer vision and machine learning to infrastructure and asset management. In doing so, DOT is positioning itself as a leader in using AI to improve safety, efficiency, and infrastructure resilience for millions of New Yorkers.

The urgency of this work is underscored by the accelerating impacts of climate change. Rising temperatures, extreme weather events, and more intense rainfall are accelerating the deterioration of roads, bridges, and markings, increasing both safety risks and maintenance costs. Traditional inspection and maintenance cycles, which already strain limited resources, cannot keep pace with the accelerating rate of damage. Without innovation, the gap between infrastructure needs and government capacity will only widen over time. AI offers a path forward by transforming how cities monitor and maintain their assets, shifting from reactive, labor-intensive processes to proactive, data-driven management.

Nowhere are these challenges more pressing than in New York City, which manages more than 6,000 miles of roadway and one of the most complex urban transportation systems in the world. The scale, intensity of use, and diversity of infrastructure types, from highways and arterial roads to bike lanes and pedestrian crosswalks, create unique demands that cannot be met with one-size-fits-all approaches. *AI for city streets* responds to this reality by integrating computer vision into pavement condition inspections, enabling DOT to collect more accurate, comprehensive, and frequent data. This foundation will allow the agency to prioritize repairs, extend the lifespan of assets, and ensure safer, more resilient streets for everyone who walks, bikes, and drives in the City.

The challenge

Outdated inspection methods

For decades, New York City has relied on a “windshield survey” as its primary method for assessing pavement conditions. Under this process, teams of inspectors drive every street across the City once every two years, assigning each segment a score based on visible pavement deterioration. These scores are then used to prioritize which roads are repaired or repaved, ensuring that limited resources are directed toward the greatest need. This system has served the City well for many years, helping to keep New York moving despite immense infrastructure demands. However, windshield surveys are inherently subjective, relying on visual judgment that can vary between inspectors. While once the best available method, the City now faces new challenges and has access to more advanced tools capable of producing faster, more consistent, and more comprehensive results.

The problem of bike lanes

One of the most pressing challenges lies in the treatment of bike lanes. Today’s inspection processes do not fully account for the unique vulnerabilities of cyclists, for whom even minor pavement deterioration can have dire consequences. Hitting a pothole in a bike lane poses far greater risks than in a car, yet bike lanes are currently evaluated as part of the roadway as a whole. A more nuanced approach is needed, one that allows bike lanes to be assessed and prioritized separately, with weightings that reflect the distinct impacts of surface conditions on cyclists and other vulnerable road users.

A lack of markings data

Another critical gap is the lack of a centralized inventory and condition management system for roadway markings. At present, no comprehensive repository exists to document where markings are located across the City. As a result, DOT cannot fully track the deterioration of critical markings, such as crosswalks, lane lines, and bus or bike lanes, nor can it proactively plan their maintenance. This absence of both inventory and condition data creates safety and operational

challenges, from faded crosswalks that endanger pedestrians to missing lane markings that compromise traffic flow. Developing the tools to systematically document, assess, and maintain markings is a vital challenge that must be addressed to ensure safe, navigable, and equitable streets.

Solution

Computer vision offers a powerful solution to these challenges by transforming how DOT collects and analyzes infrastructure data. Instead of relying on traditional survey methods, high-resolution imagery can be captured citywide and processed with machine learning to automatically detect pavement distresses, assess their severity, and catalog roadway markings. This approach produces consistent, objective results at a fraction of the time required by traditional methods, allowing every street to be inspected more frequently than the mandated two-year cycle. Importantly, computer vision enables bike lanes to be assessed separately from general travel lanes, ensuring that their unique vulnerabilities are properly accounted for. It also supports the creation of a comprehensive markings inventory and the ability to track deterioration over time, giving DOT the data it needs to prioritize maintenance, improve safety, and extend the life of its infrastructure.

ATTAIN grant

Early in 2024, DOT applied for and was awarded nearly \$8 million through the U.S. Department of Transportation's ATTAIN (Advanced Transportation and Congestion Management Technologies Deployment) grant to operationalize *AI for city streets*. The ATTAIN program is a competitive federal funding initiative that supports the deployment of advanced transportation technologies to improve safety, efficiency, mobility, and infrastructure management. Unlike research-focused programs, ATTAIN is designed to move promising innovations into real-world operations, funding projects that deliver measurable public benefit. For DOT, this grant provides the resources to scale computer vision beyond limited pilots, investing in the infrastructure, technology, and staffing needed to integrate automated pavement and roadway markings inspections into

routine practice and deliver safer, more resilient streets citywide.

Goals

Catrina's Fellowship will provide dedicated leadership to guide DOT through the full lifecycle of adopting computer vision for infrastructure management. This includes overseeing the decision-making process to determine the most effective approach for integrating computer vision into DOT's operations, from evaluating in-house development to out-of-the-box solutions. She is charged with managing pilots to test these approaches, assessing their effectiveness and ensuring lessons learned inform long-term strategy. In addition, Catrina plays a critical role in navigating procurement, acquiring the necessary software, and overseeing its implementation, ensuring that *AI for city streets* moves from concept to operational reality in a way that is both technically sound and aligned with DOT's broader goals.

The overarching goal of this Fellowship is to deliver a fully operational, integrated computer vision program for assessing pavement and roadway markings. Ideally, this program integrates seamlessly with field operations in the form of an iPad-accessible application, featuring an interactive map that visualizes condition grades for each roadway segment. By automating key elements of the inspection process, the program will reduce the assessment timeline from two years to just six months. In addition to pavement grading, it will catalog currently uninventoried roadway markings and assign condition ratings, addressing a major gap in existing asset data.

Approach & progress

The project's five-phase strategy

Landscape analysis (2025 Q1)	Define solution requirements. Inventory and investigate out of the box and proprietary solutions.
Pilot (2025 Q2)	Select companies and software to pilot.
Performance analysis (2025 Q3)	Analyze pilot performance and decide which direction to go.
Procurement (2025 Q4)	Procure software.
Implementation & integration (2026 Q1-Q3)	Oversee and execute the integration of software into preexisting tech stack.

Landscape analysis

During this phase of *AI for city streets*, Catrina focused on market research and requirements gathering to establish a clear foundation for decision-making. This involved a detailed assessment of out-of-the-box solutions available on the market, evaluating their capabilities, limitations, procurement pathways, and alignment with DOT's needs. At the same time, Catrina analyzed what it would take to build internal AI capacity, identifying the technical, financial, and staffing requirements necessary to develop, maintain, and scale in-house computer vision tools. By comparing these two approaches side by side, DOT was able to articulate the trade-offs between speed and flexibility, cost and scalability, and short-term deployment versus

long-term innovation. This early phase ensured that the project is grounded in both a realistic understanding of market options and a strategic vision for internal capability-building.

Pilot

This phase of the project began with the design of a targeted pilot, which involved selecting a test area in the City that combined diverse land use types, roadway conditions, and infrastructure needs, while also serving as a high-traffic corridor representative of the challenges DOT faces citywide. For this reason, DOT chose 40 line miles in West Midtown Manhattan. By selecting such a complex and varied environment, the pilot was structured to provide meaningful insights into how well each solution could perform under real-world conditions and scale to the broader network.



Pilot area

	In-house	Out-of-the-box
Tagline	<i>The build-it-yourself option</i>	<i>The get-it-done option</i>
Overview	Google Vertex AI offers NYC DOT the opportunity to be a local founding voice in government AI applications. Building in-house provides greater flexibility and the ability to iterate as needs evolve.	An out-of-the-box product enables rapid sourcing and implementation of automated pavement condition assessment tools. It offers quick deployment with minimal internal setup.
Advantages	<ul style="list-style-type: none"> • High flexibility and control • Customizable and adaptable to agency needs • Builds internal capacity and long-term expertise 	<ul style="list-style-type: none"> • Fast implementation • Lower upfront effort and internal coordination • Reduced risk of project failure
Considerations	<ul style="list-style-type: none"> • Requires significant long-term financial investment • Demands new infrastructure and in-house technical talent • Longer time to full deployment 	<ul style="list-style-type: none"> • Limited flexibility for customization • Dependent on vendor timelines and priorities • Potential challenges in scaling long-term

Companies were then invited to participate and deploy their tools in this pilot area, allowing DOT to evaluate their technologies in practice. Over a six-week period, the agency conducted side-by-side comparisons to measure performance, accuracy, ease of deployment, and integration potential. This structured approach enabled DOT to assess not only the technical strengths and limitations of each option but also the broader trade-offs between rapid implementation through commercial products and the long-term flexibility of building internal AI capacity.

Performance analysis

This phase of the project analyzed and synthesized how each company performed during the pilot. The evaluation went beyond surface-level results, focusing on the quality and accuracy of the work, the speed and timeliness of delivery, and the overall comprehensiveness of each product. By assessing these factors side by side, DOT was able to identify not just the strengths and weaknesses of each solution, but also how well each product aligned with the agency's operational needs and long-term vision for AI-driven infrastructure

management. The comparison provided critical insight into the trade-offs between immediate functionality and the ability to scale or adapt in the future.

Equally important to the decision-making process was the quality of communication and relationship-building demonstrated by the companies throughout the pilot. For a project of this scale and importance, strong collaboration and clear, consistent engagement are as vital as the technical capabilities of the product itself. Evaluating vendor responsiveness, willingness to problem-solve, and ability to adapt to DOT's requirements provided a more holistic understanding of how each partner would function in a long-term engagement.

The outcome of this phase was twofold: first, the selection of the most appropriate product or approach to pursue; and second, a detailed report documenting the pilot, the performance of each company, and the rationale behind the final decision.

Pavement and markings condition assessment requirements

Need	Description	Requirement description
Proprietary PCI weighting system	A flexible pavement condition index (PCI) that allows DOT to assign different weights to different distress types based on NYC-specific conditions	NYC's unique road conditions require a customized approach that accounts for high variability in use, degradation, and context (e.g., curbside lanes, arterials, bike lanes).
Regular data collection	Annual or more frequent street-level data collection on pavement and markings conditions	To meet federal biannual inspection requirements and enable predictive maintenance through more frequent, data-driven insights.
Flexible distress classification system	A customizable framework for identifying and quantifying surface distresses such as fatigue cracking, rutting, and potholes	Different street uses and local conditions require the ability to adapt how distresses are defined, classified, and weighted.
Markings inventory	A comprehensive, geospatial database of crosswalks, lane striping, bus and bike lane markings, etc.	NYC currently lacks a centralized database of roadway markings, which hinders safety planning and capital projects.
Markings condition assessment	A system to evaluate the current state of roadway markings, likely using LiDAR for worn or low-contrast markings	To monitor wear and compliance, enabling timely repainting and ensuring safety, especially in high-traffic areas.
Bike lane assessment	A separate inspection process or model to evaluate bike lanes independently from main vehicle lanes	Bike lanes experience different types of wear and are often missed in vehicle-mounted data collection, requiring distinct treatment.
Alternative procurement pathways	Use of pre-approved vendors with existing contract vehicles or cooperative purchasing agreements	Traditional procurement timelines are too slow to meet project goals within the Urban Innovation Fellowship period.

Potential impacts

A comprehensive digital twin

AI for city streets has the potential to scale far beyond pavement and markings to include a wider range of assets such as streetlights, traffic signals, signage, benches, bike racks, and other forms of street furniture and hardware. By expanding computer vision capabilities to automatically detect, inventory, and assess the condition of these assets, DOT can build the foundation for a comprehensive digital twin of the City's transportation infrastructure. This digital twin would serve as a dynamic, data-rich model of the streetscape, enabling planners and engineers to simulate scenarios, optimize maintenance schedules, and coordinate capital projects more effectively. Ultimately, scaling to this level would provide an integrated view of the City's infrastructure, improving decision-making, enhancing resiliency, and ensuring that every investment contributes to safer, more efficient, and more sustainable streets.

A scalable solution to aging infrastructure

AI for city streets has the potential to serve as a nationwide model for how local governments can monitor aging infrastructure that is under increasing strain and in constant need of inspection and repair. By automating the inspection process with computer vision, cities can shift valuable resources away from repetitive, labor-intensive data collection and toward the work of planning and executing repairs or prioritizing other more complex situations. This reallocation not only accelerates maintenance cycles but also allows agencies to be more strategic, ensuring that limited budgets are spent where they have the greatest impact. As communities across the country face the pressures of deteriorating infrastructure and climate change, NYC's approach demonstrates how AI can transform inspection from a bottleneck into a catalyst for smarter, more proactive infrastructure management.

What is a digital twin?

A digital twin is a virtual replica of a physical asset, system, or environment that is continuously updated with real-world data. It allows users to simulate, monitor, and analyze performance in real time, bridging the gap between the digital and physical worlds. In cities, digital twins can model infrastructure such as roads, buildings, or utilities to support better planning, maintenance, and decision-making.

Next steps

- **Procurement:** This step will focus on navigating the procurement process to move from pilot to implementation. Catrina will work with the DOT contracting office to identify viable contract pathways and ensure compliance with City procurement rules while maintaining project momentum. Given the complexity and length of traditional procurement, Catrina will prioritize approaches that streamline the process, allowing the agency to secure the necessary tools and partnerships without delaying deployment. While it is not unusual for traditional procurement to take over a year, a faster procurement ensures Catrina's ability to see the project through from end to end and lead deployment and integration.
- **Implementation:** After procurement, Catrina will integrate the selected product into DOT's existing technical framework. This will include establishing data pipelines, ensuring compatibility with current asset management and reporting systems, and developing processes for field teams to act on the insights generated. Integration will also require building staff capacity, refining workflows, and creating feedback loops so the system can continuously improve. The goal is to embed the new technology seamlessly into daily operations, transforming it from a pilot tool into a sustainable, citywide resource for infrastructure management.

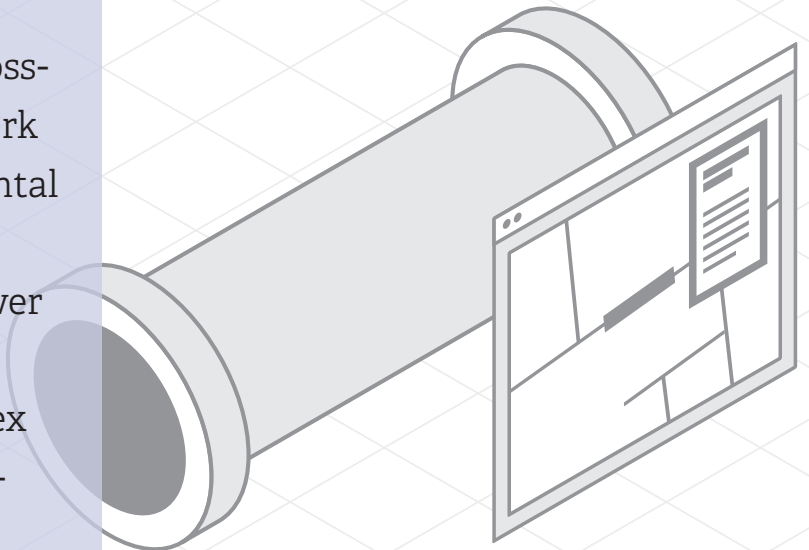


CASE STUDY

New York City Department of Environmental Protection (DEP)

Transforming water infrastructure and air quality policy

Through AI-powered pilots, human-centered design, and cross-sector collaboration, the New York City Department of Environmental Protection is transforming how the City manages water and sewer infrastructure and enforces air quality policy — turning complex operational and regulatory challenges into actionable solutions that strengthen efficiency, equity, and climate resilience.



Fellow

Anh Nguyen



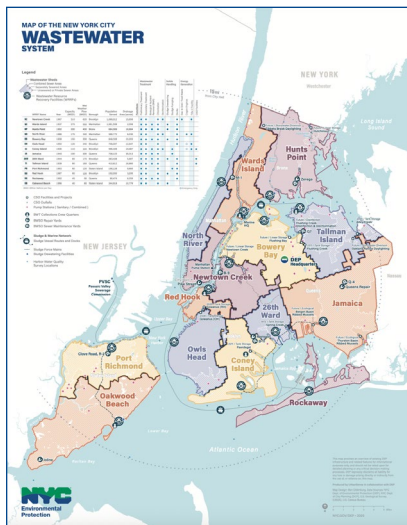
Water main repair at 109th Street and Manhattan Avenue

Introduction

New York City relies on one of the largest and most complex municipal water and sewer systems in the world. A network of reservoirs, aqueducts, tunnels, and mains delivers approximately 1.1 billion gallons of drinking water each day to nearly 9 million residents, while a parallel sewer system conveys and treats roughly 1.3 billion gallons of wastewater daily before returning it to the environment. Much of this infrastructure was built decades ago: nearly 60 percent of water pipes are more than 80 years old. As climate change intensifies rainfall, heat, and coastal flooding, these aging systems are increasingly tested, as seen during events such as Superstorm Sandy and Hurricane Ida. At the same time, persistent air pollution continues to contribute to over 2,000 premature deaths and

5,000 hospitalizations annually, underscoring the interconnected pressures on urban infrastructure and public health.

At the forefront of these challenges is the NYC Department of Environmental Protection (DEP), whose mission extends beyond water to include air quality regulation and environmental protection. DEP is advancing strategic initiatives that align with New York City’s long-term sustainability and climate goals. Its greatest strength lies in its people — the engineers, analysts, and field crews who keep essential services running. Empowering these teams with modern technology and data-driven tools is key to ensuring that New York City remains resilient for generations to come.



Maps of NYC wastewater and water delivery systems

Anh Nguyen is working with DEP's dedicated public servants and external partners to bring innovation directly into the agency's operations, from water infrastructure management to air quality compliance.

Goals

While DEP's infrastructure is extraordinary in scale, it is increasingly constrained by legacy technology systems, manual operational workflows, and accelerating impacts of climate change. Anh's Fellowship focuses on three major areas that represent critical opportunities for innovation:

- **Accelerate water and sewer asset digitization:** Applying computer vision to streamline the manual process of digitizing complex engineering drawings, reducing backlogs, and improving data accuracy.
- **Modernize inspections:** Using LiDAR and 360° imagery to enhance inspections of above-ground assets, supporting faster repairs and more proactive storm-water management.
- **Design a digital platform for warehouse air pollution rule:** Designing a digital compliance platform that enables reporting for warehouses under the Indirect Source Rule, streamlines review for DEP, and provides transparency to the public.

These initiatives share a common purpose: to improve and optimize how DEP manages its data, infrastructure, and compliance systems. Together, they demonstrate how technology can augment human expertise, not replace it, enabling staff to deliver cleaner water, cleaner air, and a more resilient New York City.

Approach

Water and sewer asset management

Uncovering opportunities for meaningful change

Managing all of DEP's water and sewer assets, which includes 6,800 miles of in-city water mains, 7,500 miles of sewers, 109,000 fire hydrants, 151,000 catch basins, and 350,000 manhole covers, is a difficult and labor-intensive task. But which parts of these operations are truly painful? What optimization attempts have been tried before, and why did they fall short? What organizational or system constraints must be considered? And where are the opportunities for meaningful change with reasonable resources?

With the goal of getting to the core of the problem and envisioning solutions that could deliver real value, Anh spent her first few months at the Bureau of Water & Sewer Operations embedded in discovery. Through user interviews, shadowing sessions, field visits, and ride-alongs, she embodied a human-centered design approach, observing firsthand the complexity of DEP's operations while gathering insights and ideas directly from those closest to the challenges.

To summarize the asset management workflow, DEP determines what work to perform on its assets through two main triggers: 311 complaints from residents and programmatic work tied to strategic initiatives. Every day, field operations teams set out on the road to inspect and repair assets.

For larger projects, such as replacing entire water mains or sewer lines, DEP employs contractors through the Department of Design & Construction (DDC). Once construction is completed, contractors send as-built engineering drawings to DDC, which forwards them to DEP's Capital Planning division for review. Once approved, the drawings are sent to the GIS analysis team, which digitizes them into the GIS network.

This GIS map serves as the central "source of truth" for the agency. Field and Distribution Operations rely on it to locate assets during inspections and repairs. Capital

Planning analyzes it for infrastructure planning. Analytics teams use it to build predictive models. Compliance teams reference it to generate regulatory reports.

Manual digitization of complex documents in a constrained system

Today, the GIS data maintenance team spends substantial time interpreting, verifying, and digitizing complex engineering drawings. Despite the team's dedicated efforts, the volume and complexity of incoming updates often exceed available capacity, creating persistent challenges in keeping data current, particularly when the team is short-staffed.

Machine learning, particularly computer vision and optical character recognition, offers promising paths to interpret drawings and generate outputs that editors can validate before publishing to GIS. However, the challenge lies not only in analyzing the variety of drawing types and symbols (there are many ways to denote a manhole), but also in the quality of source documents, which often requires editors to manually cross-check information using multiple tools. Finally, the solution can only be successful if DEP can integrate the results into its GIS system in a way that allows editors to review, adjust, and publish updates more efficiently than the current manual process.

This evolving landscape presents an opportunity to explore new approaches — whether through automation or closer integration with design systems—that could reshape how updates are managed in the future.

Co-creating and enabling computer vision solution

Anh led the evaluation of potential solutions, beginning with in-house development using existing computer vision tools. However, none fully fit DEP's specific needs. Around the same time, DOT Fellow Catrina Cuadra completed a pilot with a company using computer vision to scan infrastructure assets. The vendor had heard similar needs from other City agencies and was eager to co-develop a solution for GIS digitization.

To bring the proof-of-concept (POC) to life, Anh explored alternative pathways within New York City's

innovation ecosystem. This included a series of scoping calls and preliminary agreements with both the NYC Office of Technology & Innovation's (OTI) Smart City Testbed and the Environmental Tech Lab (ETL). Initially, both programs expressed enthusiasm for supporting the custom POC. However, as discussions progressed, it became clear that neither mechanism could ultimately host it. OTI determined that its mandate is limited to pilots that collect new data from physical infrastructure, rather than those focused on digitizing existing data. Meanwhile, the ETL reconsidered due to procedural concerns around solutions not yet fully developed.

While these reversals delayed the timeline, they also highlighted important lessons about the current limitations of the City's innovation support structures and underscored the need for more flexible frameworks to test emerging technologies within government systems.

In parallel, Anh worked closely with internal DEP stakeholders, some of whom had participated in earlier attempts to automate GIS digitization with consultants and Esri. Those efforts had proven technically and operationally difficult at the time, leading to understandable skepticism about whether it was feasible to automate the end-to-end digitization process. Some believed that backlog issues could be solved by simply hiring and training additional editors rather than changing the process and thereby potentially increasing efficiency itself. Earning their trust required not only demonstrating how modern AI tools differ from past approaches but also positioning the project as a complement to their expertise.

Further complicating the landscape is an ongoing agency-wide GIS network upgrade from ArcMap (Geometric Network) to ArcGIS Pro (Utility Network). While the upgrade promises long-term benefits, it introduces uncertainty in the short term, as workflows are expected to change, but details and timelines remain fluid. This made it challenging to define technical specifications and integration points with confidence.

Finally, one of the most persistent issues identified by users is network performance. Even the most skilled editors face delays due to slow system response times — a frustration that affects productivity and morale. While this issue is primarily related to DEP's IT infra-

structure rather than this project, it highlights the value of continued investment in core system performance as part of ongoing digital modernization efforts.

Leveraging computer vision for manual field inspection

As progress on GIS digitization advanced through computer vision, Anh began exploring other parts of asset management that could benefit from this technology. The visual inspection process of DEP's assets quickly emerged as the obvious choice.

Currently, when field operations receive an inspection request, they start with a desk review, using tools like Google Street View to visually assess the asset's condition and confirm whether the inspection is still necessary. Then, once in the field, inspectors manually identify defects such as missing components, cracked or broken castings, or damaged cement around assets. In some cases, they arrive to find that assets have disappeared altogether, having been paved over during unrelated construction.

Another team, the collection system investigators, also employs a similar manual inspection process. Staff visit properties to measure impervious surfaces and distances from nearby catch basins, recording their findings in spreadsheets since no centralized system exists to capture this data. As New York City faces increasingly frequent flooding and heavier rainfall events, these manual methods can no longer keep pace with the City's stormwater management needs.

By leveraging LiDAR and 360° imagery combined with computer vision, DEP can transform how visual inspections are conducted — saving countless staff hours and improving accuracy. This solution can automatically detect asset defects for field operations and identify impervious surfaces, curb reveals, and catch basin proximity for stormwater management. It can also flag changes to these conditions. The result would be not only a comprehensive and continuously updated inventory of above-ground assets, but also stronger alignment between the physical world and DEP's digital map. This enhanced mapping would further reinforce GIS digitization by ensuring that asset drawings match their precise geographic coordinates.

What is the Environmental Tech Lab?

The Environmental Tech Lab is an initiative of the Partnership Fund for New York City designed to help DEP source and test new technologies that can improve the City's water and wastewater systems. ETL identifies companies with solutions relevant to DEP's operational and climate challenges, then facilitates short-term proof-of-concept projects to evaluate their impact. By streamlining scoping, coordinating with DEP staff, and managing requirements such as insurance and cloud security review, ETL creates a structured pathway for DEP to explore innovative tools that could strengthen the City's environmental infrastructure.

Anh is leading the POC for this field-inspection technology in close collaboration with DEP field operations staff and the vendor. Unlike the custom GIS digitization POC, which fell outside the ETL mandate, this pilot uses an existing, commercially available solution, allowing ETL to support DEP and the vendor through critical steps such as insurance verification and cloud security review. Acting as both strategist and connector, she ensures the solution is grounded in real user needs and operational realities. Together, the team is translating frontline challenges into clearly defined use cases and aligning technical capabilities with measurable outcomes. Anh is also helping select pilot locations that reflect the City's operational diversity, factoring in active work orders, flood-prone zones, and recently paved areas, to ensure the POC delivers actionable insights from day one. The ETL is simultaneously guiding DEP and the vendor through the crucial steps of verifying insurance and conducting a cloud security review to enable the POC.

Air quality policy

Warehouse Indirect Source Rule

The rapid growth of e-commerce in the United States has fueled an unprecedented demand for warehousing and distribution centers. Many of these facilities are opening closer to residential neighborhoods, bringing increased freight traffic and concerns about traffic congestion, air pollution, and public health impacts.

In February 2025, the New York City Council introduced a new bill, Intro 1130, which, if enacted, would direct DEP to promulgate an Indirect Source Rule (ISR) to address emissions from vehicles accessing warehouses. The rule targets facilities larger than 50,000 square feet, requiring them to take actions that reduce pollution generated by the vehicles they attract.

Under the proposed framework, warehouse operators would register their facilities and submit annual reports detailing truck activity and the mitigation measures they have implemented. Each warehouse would be assigned a compliance obligation, measured in points proportional to the pollution generated by the vehicles serving the facility. Because the bill is still under development, the eligible mitigation options are actively being defined; however, they are expected to include actions such as converting fleets to lower-emission vehicles and shifting deliveries to cleaner modes like maritime freight or cargo bicycles. DEP staff would analyze reports, conduct audits to verify accuracy, and track compliance. The public would also have access to reported data and could submit 311 complaints if they observe discrepancies or potential noncompliance.

Potential compliance issues with a complex law

Warehouse operators may struggle to understand applicability and requirements, or face increased administrative burden in collecting and submitting data. Both issues could lead to inadvertent non-compliance, triggering audits, notices of violation, and costly corrective actions. Regulators also face resource constraints. Without streamlined systems, enforcement staff risk being overloaded by tedious tracking tasks, undermining their ability to focus on high-impact analysis and enforcement.

These concerns are not hypothetical. When a similar rule was implemented in California, both warehouse operators and regulators cited heavy administrative burdens and difficulties managing submission volumes. Drawing lessons from that experience, DEP recognized the need to design a more user-friendly and efficient compliance process from the start.

Developing a solution that not only enables but facilitates compliance

Anh is leading the design and development of an online compliance platform for the ISR at DEP's Bureau of Environmental Compliance. This system will serve as both a reporting tool for warehouse owners and operators and an enforcement system for DEP, enabling structured two-way communication between regulated facilities and the agency. The tool will be used by warehouse owners and operators, DEP staff, and the public. With any new law, there are often compliance challenges, so working closely with City staff, Anh is developing a platform to translate the new policy into clear system requirements, user flows, UX design, and a high-fidelity prototype that demonstrates how reporting, review, and follow-up will function when the rule goes into effect. The platform will connect with other City systems to enable seamless data sharing and coordination, while also exploring how AI and machine learning might be applied to validate truck trip data and improve the efficiency of report review processes.

She evaluated whether DEP should build the platform in-house or license an existing one developed by South Coast Air Quality Management District, reviewing technical requirements, customization needs, and expected maintenance work. Her analysis showed that building in-house would be the more cost-effective, flexible, and controllable option: a decision the agency has since adopted. The resulting platform will feature an intuitive, guided experience to help warehouse operators navigate complex reporting requirements and estimate the impact of their mitigation strategies. For DEP staff, it will provide robust dashboards and analytics tools to assess compliance, identify potential issues, and manage audits and follow-ups efficiently. The public will also have access to reported data, ensuring transparency and accountability across all stakeholders.

Goals & next steps

Building a smarter, more resilient DEP

Across these initiatives — GIS digitization, visual inspection automation, and the Indirect Source Rule platform — the goal is clear: to modernize DEP's operations and strengthen New York City's environmental resilience through intelligent, data-driven tools. By introducing AI and digital platforms into legacy workflows, DEP is creating the foundation for a future where information flows seamlessly, decisions are guided by real-time data, and staff can focus on the work that matters most.

Accelerate water and sewer asset digitization

Where editors once had to pore over drawings line by line, the goal is to give them a tool that acts as an intelligent partner. Computer vision and machine learning can lift some of the burden of repetitive work, letting staff focus on quality assurance and edge-case analysis. Success means more than just reducing backlogs: it means faster capital projects, more accurate planning, and the confidence that when a crew heads into the field, the map on their tablet reflects the real world.

As the project moves forward, DEP and Anh are re-evaluating the best path to launch the AI for GIS Digitization proof of concept. After initial discussions with innovation partners, it became clear that the Environmental Tech Lab was not the right fit to support this type of custom solution. DEP is now exploring Challenge-Based Procurement and other flexible mechanisms that balance fairness, competition, and innovation — ensuring that the agency can engage qualified vendors while maintaining the agility needed to test emerging technologies effectively. In parallel, DEP staff have developed a machine learning prototype to address one step of the digitization process, which is currently undergoing internal testing. Insights from this effort will inform the broader proof of concept and help ensure a thoughtful balance between in-house innovation and external partnerships.

This next phase will focus on defining the procurement framework, refining technical requirements, and

ensuring that the process enables a solution that truly works for DEP's editors, engineers, and field operations staff. Equally important, this phase will result in a reusable playbook — capturing procurement pathways, evaluation criteria, and implementation lessons — to guide future AI and technology initiatives across the Bureau.

Modernize inspections

DEP's field crews are the first responders to the City's infrastructure needs. The goal is to equip them with timely, accurate asset data so they can spend less time searching and more time solving problems. Success means faster repairs, fewer wasted trips, and the assurance that crews can prioritize what matters most: keeping New Yorkers safe and the system reliable.

The visual inspection proof-of-concept, leveraging LiDAR and 360° imagery with computer vision, will automate asset condition assessment and stormwater management data collection, giving DEP a continuously updated view of above-ground assets. This effort will not only support faster inspections but also strengthen GIS data quality by aligning digital records with real-world conditions.

Design digital platform for Indirect Source Rule (ISR)

For the ISR, the goal is not only compliance but trust. Warehouse operators should feel guided, not burdened, by the reporting process. Enforcement staff should be able to focus on the worst offenders rather than drowning in paperwork. And the public should have access to clear data that demonstrates progress toward cleaner air in their neighborhoods.

Because the platform is contingent on the law passage, its full development and launch will align with the regulations' adoption and implementation timeline. In the coming months, DEP and other City staff will continue to refine the ISR policy. With that, the system requirements and prototype will evolve until it is time to test and launch it as the law goes into effect. A successful platform will balance these needs, turning regulation from a source of frustration into a tool for shared accountability.

Develop DEP's first AI toolkit

The GIS digitization and visual inspection initiatives are not only advancing DEP's operations; they are also laying the groundwork for DEP's first AI toolkit. Anh is using these projects as testbeds to define how the agency thoughtfully explores, develops, and evaluates AI solutions.

The toolkit will include templates and frameworks for identifying use cases, running proofs of concept, and measuring success, alongside standards for data governance and integration into City systems. It will also embed responsible AI practices to ensure transparency and fairness.

Building on these early efforts, Anh is also exploring new AI applications, such as using computer vision to identify lead water service lines and support proactive replacement programs. Together, these initiatives are shaping a scalable and ethical approach to AI that can guide DEP's work for years to come.



CASE STUDY

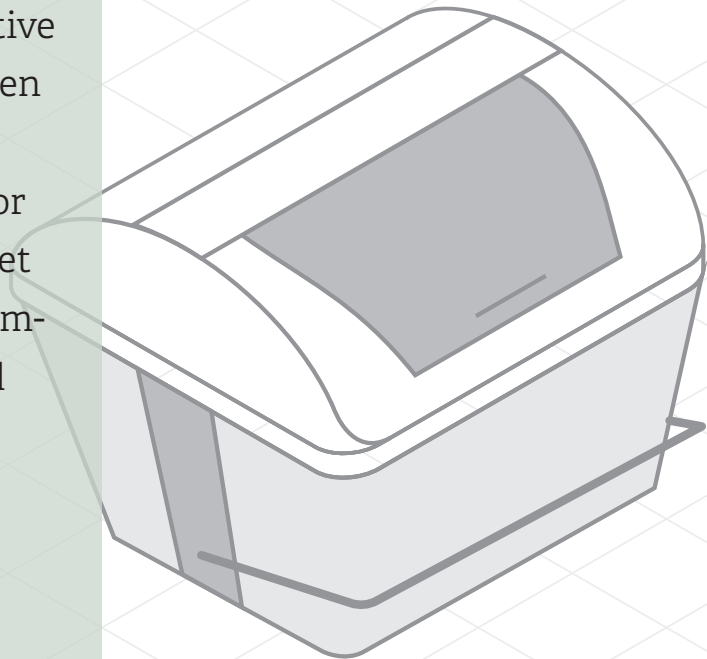
New York City Department of Sanitation (DSNY)

Scaling waste containerization citywide

Harnessing the power of predictive geospatial models and data-driven planning, the City will be better equipped to identify locations for thousands of stationary on-street waste containers citywide, streamlining operational resources and helping millions of New Yorkers containerize their trash sooner.

Fellow

Stephen Albonesi



Introduction

The New York City Department of Sanitation (DSNY) keeps New York City clean, safe, and healthy by collecting, recycling, and disposing of waste, cleaning streets and public spaces, and clearing snow and ice from approximately 19,000 lane-miles of city streets. DSNY collects approximately 24 million pounds of waste per day from residents and regulates the collection of an additional 20 million pounds produced by businesses. Together, these 44 million pounds of daily waste are equal to the weight of 140 Statues of Liberty, and, when stacked one foot wide by one foot high, the trash would extend 37 miles — approximately five miles longer than the perimeter of Manhattan.

Trash crisis

Despite its vast and increasingly data-driven waste collection operations, the City is still updating its requirements for waste disposal that, for decades, allowed most residents, businesses, and institutions to pile their waste in black bags on sidewalks for collection. The practice stemmed in part from the unique and challenging constraints posed by the City's built environment: it lacks alleys and underground areas to store waste, and there is substantial and ever-growing competition for curbside space. Over the years, the use of black bags for waste collection resulted in an increase in rodents, odors, polluted stormwater runoff, and sanitation worker injuries — and negative local and global perceptions of the City's cleanliness.

City priority

In 2022, the City committed to containerizing citywide waste. The following year, DSNY released *The Future of Trash*, a year-long study that found that containerization is viable on 89% of all residential streets and for 77% of residential waste tonnage. The report concluded that containerization is not a one-size-fits-all approach and must accommodate New York City's variation in building densities and waste outputs.



The City's decades-long reliance on black bags for waste collection has increased the prevalence of rodents, odors, polluted stormwater runoff, and sanitation worker injuries.

Credits: DSNY



What is an Empire Bin?

Empire Bins are 800-gallon containers — about half the size of a car and capable of holding 48 large black garbage bags — that have been affixed within the curb lane of the street using small alignment blocks. Empire Bins were designed, manufactured, and installed by Contenur, a Spanish waste container company using recycled high-density polyethylene.

Empire Bins are assigned to specific buildings and can only be unlocked by that building's waste managers using provided access cards. In M9, the bins are serviced three days per week by one of DSNY's custom-built automated side loader (ASL) trucks.



Credit: DSNY

First-of-its-kind pilot

Beginning in June 2025, DSNY began piloting stationary on-street waste containers throughout Manhattan Community District 9 (M9), in West Harlem, making it the first fully containerized community district in New York City. The pilot requires residential buildings with 31 or more units to place trash in “Empire Bins”, the City’s new European-style stationary on-street containers. During the pilot’s planning phase, residential properties with between 10 and 30 units could choose between using Empire Bins or individual bins for their waste. Of these, slightly more than half of all 10-30-unit buildings opted into the pilot program. Schools are required to use Empire Bins for all waste, recycling, and compost.

In total, the pilot includes more than 1,100 Empire Bins used by 36,000 dwelling units and 18 schools, or approximately 78 percent of the district’s housing. Since the pilot’s June 2025 launch, rat complaints have decreased in M9, and interest in the program has steadily grown within and beyond the district.

The challenge

As outlined below, M9 Pilot planning — which largely preceded the Fellowship — was divided into three key phases: 1) Desktop Analyses, 2) Field Data Collection, and 3) Data Verification. Collectively, these phases required significant manual effort and field work by dedicated DSNY resources that will be difficult to scale across all 58 remaining community districts citywide.

Desktop analyses

Informed by prior field surveys and analyses conducted for *The Future of Trash*, DSNY began by conducting desktop estimates of the volume of waste generated by qualifying residential buildings as well as the percentage of available on-street parking that would be occupied by Empire Bins on each block. This data was provided to field staff to determine siting on a building-by-building basis. With a more sophisticated and granular model, DSNY theorizes that Empire Bins locations within the right-of-way can be more accurately determined during the desktop phase, and potential conflicts can be identified prior to conducting field work.

Field data collection

To determine the accuracy of desktop estimates and identify where bins should be placed, DSNY field teams visited every M9 address with 10 or more units multiple times and manually measured and photographed waste piles, building street frontages, and physical obstructions in the right-of-way, such as street trees and fire hydrants. The teams even door-knocked and spoke with residents to validate less reliable information. Taken together, these surveys required more than a thousand manpower hours over several months.

Data verification

For the purpose of container access and lock management, DSNY required every participating residential building's waste manager to submit an online form with property-specific information, including the building's address and number of units. Automated validation was not built into the forms, so most information had to be manually verified and updated by DSNY, a time-consuming and arduous process.



Sanitation supervisors measured tree branch heights and waste pile dimensions in M9 to determine where Empire Bins would fit.

Credits: DSNY

Goals

More efficient and scalable blueprint

The objective of Stephen's Fellowship is to analyze and evaluate M9 Pilot district implementation, identify opportunities to improve implementation efficiency, and develop strategies, processes, and tools for scaling the program beyond M9. The Fellowship is broken into the following core tasks:

1. Documenting, evaluating, and recommending opportunities to improve the accuracy and efficiency of pilot-related workflows
2. Determining and identifying whether new data sources can improve the accuracy of citywide property and streetscape analyses
3. Developing a more automated and predictive GIS model for siting Empire Bins citywide
4. Evaluating alternative data sources and processes to determine if property contact information can be more accurately auto-populated, verified, and updated

Potential impacts

Faster deployment and cleaner streets

Ultimately, DSNY estimates that tens of thousands of Empire Bins will be installed across the City, affecting over 1,200 schools and 1.8 million households (59% of all units). At a citywide level, Stephen's project has the potential to inform important strategic decisions regarding which districts to prioritize for future rollouts and how to optimize the deployment of agency resources. Optimizing the Empire Bin data layers and desktop siting accuracy will accelerate DSNY's ability to roll out on-street containers for millions of New Yorkers across the City.

Approach & progress

Developing a roadmap

Stephen began by collaborating with senior Containerization Team leadership to develop a five-phase strategy to guide the duration of the Fellowship. The strategy includes comprehensively documenting and evaluating the M9 Pilot; determining what can be improved using better data and process changes; and developing, refining, and delivering better tools and methods to deploy this initiative across the City.

The project's five-phase strategy

Concept (2025 Q1)	Define the problem and the challenges. Inventory and document pilot data assumptions and work streams.
Plan (2025 Q2)	Classify workstream steps in terms of effectiveness and identify those that can be optimized.
Develop (2025 Q3 –2026 Q1)	Create a set of scalable strategies, processes, and tools for each workstream and estimate savings.
Test & Iterate (2026 Q2–Q3)	Validate proposals to ensure that they create a measurable improvement as the pilot is scaled to other neighborhoods.
Deliver (2026 Q4)	Finalize the strategy and plans, including building and validating any improved new tools and processes.

Documenting the pilot

Stephen conducted a comprehensive retrospective analysis of the M9 Pilot to provide recommendations for the citywide rollout. He scrutinized existing methodologies and assumptions pertaining to waste generation volumes and trash setout locations on the curb; conducted site visits with field supervisors to observe on-site surveying processes; interviewed key operations and analyst staff to identify their pain points and ascertain needs; and analyzed thousands of field log records to calculate the time and resources utilized for pilot work phases. He then synthesized and communicated this information in a workflow map that serves as DSNY's most detailed and comprehensive accounting of the pilot.

Evaluating pilot success

Stephen evaluated each pilot planning step in terms of effectiveness using a five-point rating scale. A step's effectiveness was determined based on its ability to be accomplished with a high degree of accuracy and using resources that are scalable citywide.

Stephen found that desktop estimate steps were scalable but could be more accurate and robust, particularly for larger buildings with more variable waste outputs. Meanwhile, manual site surveying and property contact validation steps were found to be accurate but not scalable.

Stephen's evaluation process validated DSNY's hypothesis about the immense potential benefit of creating a desktop GIS model to predict Empire Bin locations citywide. It became apparent that such a model could greatly improve district-wide and property-level decisions regarding the rollout of Empire Bins, allowing the department to be more informed and targeted with its manual surveying work.

With the evaluation of the pilot planning steps well documented and agreed upon, Stephen and the rest of the Containerization Team were then able to confidently target priority areas to develop tools and strategies for improvement, optimization, and efficiency.

Developing tools and strategies

Predictive container siting model

Developing a predictive GIS container siting model is Stephen's highest priority. Utilizing relationships he cultivated within DSNY's GIS and Data Analytics Teams, Stephen worked with key geospatial staff to draft a GIS model development plan and preferred analysis approach. Once the plan was finalized, Stephen ensured that model inputs were comprehensive and accurate. This required inventorying all known and potential siting constraints in the right-of-way (fire hydrants, street trees, catch basins, etc.), associated clearance requirements defined by multiple City agencies, and available open data. Through conversations and field visits, Stephen aggregated and hierarchically categorized DSNY siting guidelines, such as an agency preference that bins not be placed in

front of primary entrances to residential and commercial buildings. Stephen then verified the accuracy and usability of dozens of datasets and wrote data processing steps to ensure that the most relevant data points are included in the model.

Where data is publicly unavailable, Stephen is identifying the need for proprietary external data and cross-departmental strategic coordination. He is also investigating other solutions, such as creating entirely new citywide datasets from scratch using novel technologies and more precise GNSS receivers. In the case of identifying building entrances, for example, Stephen is exploring using computer visioning with the Data Analytics Team. Stephen is similarly collaborating with Fellows Catrina Cuadra and Anh Nguyen with the intention of incorporating data from their computer visioning pilots into the model. Stephen also initiated discussions with NYC Parks regarding their use of LiDAR to determine tree branch heights, which could be beneficial to the siting of Empire Bins.

Automating property contact validation

Stephen is also advancing efforts to streamline the property contact verification process to improve coordination with building owners and managers and ensure accurate and timely delivery of Empire Bin access cards. He held several listening sessions with staff who managed online property manager forms and validated publicly submitted information. This process clarified issues with the existing system and surfaced improvement opportunities.

Stephen has since inventoried, compared, and reviewed various property-related databases from agencies such as the Department of Buildings and the Department of City Planning. Based on this process, Stephen has identified preferred reference databases that he anticipates assembling into a master database to validate submitted property information.

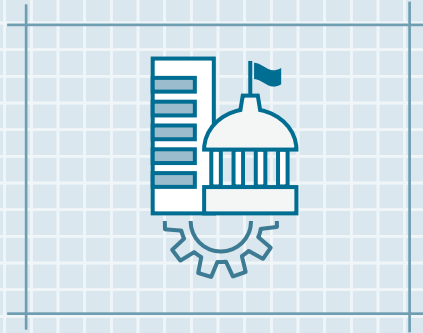
Stephen is re-examining the online property contact forms to understand where content can be clarified and streamlined, fields can be auto populated, and additional information can be solicited to reduce the need for manual DSNY site surveys and outreach.

Next steps

In the next several months, working closely with the DSNY team, Stephen expects to complete a predictive GIS model prototype. At that point, the model should be able to more accurately determine the length and location of usable curblines for every applicable property citywide and identify where there is insufficient space to accommodate Empire Bins. These early results will be compared to actual M9 bin installation locations to identify opportunities to improve the model's accuracy.

As more data becomes available, Stephen will collaborate with the GIS Team to incorporate it into the model for potential application in Brooklyn Community District 2, the next district to receive Empire Bins. Alongside this work, Stephen will identify how to integrate the model into existing siting-related workflows and identify and develop the applications and tools that office- and field-based teams use to interface with the model.

Stephen will simultaneously begin building out necessary reference databases to streamline the property contact validation process while translating findings from the overall pilot evaluation process into more efficient operational workflows to guide all aspects of future district rollouts.



Updating the public-private “API”

We like to think of local government procurement as an Application Programming Interface (API). Instead of handling data transfers between software providers, procurement manages the flow of public money, goods, and services between government and other entities. While this procurement API ought to enable seamless, secure, and transparent interactions, all too often procurement is slow, hard to use, full of paperwork, and opaque — a clunky legacy application with limited interoperability.

Through procurement reform, we can begin to bring the process closer to an ideal API — creating a unified, accessible, rules-based interface between government, the private sector, and nonprofits.

By standardizing processes across agencies, centralizing and improving data collection, and enhancing interoperability across departments, procurement becomes more transparent, efficient, and accountable.

This approach not only reduces administrative burden and duplication but also enhances competition and public trust by ensuring that procurement processes are open, traceable, and responsive — mirroring the clarity and scalability of a well-designed API.

What is procurement?

Procurement is “the process the City uses to buy, purchase, rent, lease, or otherwise acquire any goods, services, or construction. It also includes all functions for obtaining any good, service, or construction, including planning, description of requirements, solicitation and selection of sources, preparation and award of contract, and all phases of contract administration, including receipt and acceptance, evaluation of performance, and final payment.” (Source: [NYC MOCS](#))

What is Challenge-Based Procurement?

Challenge-Based Procurement (CBP) is an approach to procurement designed to solicit innovative solutions to the City’s challenges. It allows a city agency to test solutions and seamlessly scale up successful ones without conducting a new solicitation.

When using CBP, an agency issues a challenge instead of a typical, prescriptive solicitation document (e.g., an RFP). The challenge clearly defines the problem the agency is trying to solve, the agency’s goals, and the constraints it faces in solving the challenge, but does not prescribe a solution.

An agency can select one or more solutions received in response to the challenge to test or pilot. At the conclusion of the pilot period, the agency can choose to continue to work with any vendors who implemented promising solutions at a larger scale, without initiating a new procurement.

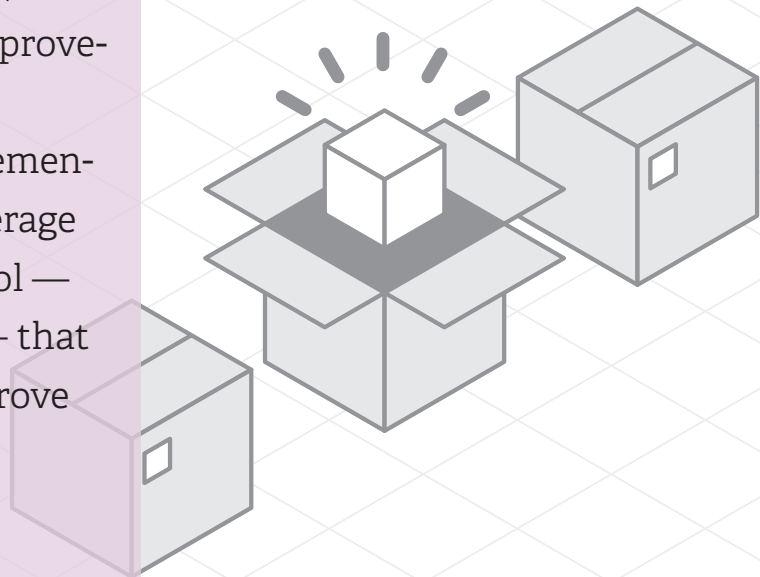


CASE STUDY

Mayor's Office of Contract Services (MOCS)

Procurement reform for innovation

By combining bold, innovation-focused procurement reforms, behind-the-scenes process improvements, and a user-centered approach to reform and implementation, New York City can leverage procurement as a strategic tool — instead of a barrier to avoid — that enables innovations that improve New Yorkers' lives.



Fellow

Calgary Haines-Trautman

Introduction

Last year, New York City procured over \$42 billion in goods and services (MOCS 2025 Citywide Indicators Report), more than most states' entire budgets in the United States. Ensuring that this massive procurement system is equitable, transparent, and efficient, the Mayor's Office of Contract Services (MOCS) is the oversight and service agency responsible for the City's procurement process and the City's digital procurement solution, PASSPort. MOCS also pursues reforms that make it easier for City agencies to deliver on their missions and easier for nonprofit organizations, Minority and Women-Owned Business Enterprises (M/WBEs), small businesses, and start-ups to do business with the City.

MOCS works in partnership with over 40 City agencies to ensure that their procurements follow the procurement rules established in the New York City Charter and laid out in the City's Procurement Policy Board (PPB) Rules. Because of the size of the New York City government, each City agency has their own procurement office. This distributed procurement model allows the City to operate efficiently, but also poses challenges to coordination and ensuring that best practices are followed throughout the City.

Working within the Reform Team at MOCS, Calgary's projects are aimed at identifying and implementing reforms that support innovation in New York City, ensuring that these reforms are effective, accessible tools for a wide variety of agencies tackling the City's challenges.

Challenge

Procurement, the process that government uses to purchase goods and services, may be an obscure government function to many New York City residents, but it touches every aspect of life across the five boroughs. Procurement determines how taxpayer money is spent, influences how policies become on-the-ground reality, and impacts day-to-day quality of life. When it works well, the City can use procurement as a strategic tool to advance key initiatives, invest in New Yorkers, and



NYC procurements: 11 key steps for agencies

Image Credit: MOCS

enable innovations that help the City run efficiently and deliver better services.

In practice, however, procurement is often seen as a bureaucratic hurdle for vendors and agencies. Because the City is spending taxpayer dollars and has a responsibility to guard against wasteful spending, fraud, and corruption, the resulting risk calculation often leads to slow, burdensome processes.

As New York City seeks more effective and efficient solutions to urban challenges, procurement is key to deploying innovations at scale. In our age of rapidly advancing technology and increasingly pressing challenges, however, procurement struggles to keep up. Slow timelines and a lack of internal tech knowledge and capacity mean that innovations in government are often far behind those in the private sector. Residents see how government falls short, and this erodes trust in government's ability to solve problems, support a functioning city, and provide a high quality of life.

For the City to embrace and enact innovations — to move quickly, test ideas, and iterate — it must also embrace new procurement methods and user-centered approaches to reform. Emboldened by Cornell Tech's *Pilot: NYC* report, a plan to make New York City the hub for urban innovation, New York City adopted a new procurement approach in the fall of 2024: Challenge-Based Procurement. Challenge-Based

What is human-centered design?

Human-centered design is an approach for **creating or improving products and services** that focuses on the needs of the people involved. Human-centered designers design *with* people, not just *for* them.

Rather than leading with a set of pre-determined requirements to build a product, in human-centered design, designers start with a problem, conduct research with the people who will use the product, and co-create solutions and requirements that meet their needs. Building prototypes, testing with users, and iterating based on feedback are also key aspects of a human-centered design process.

Procurement allows agencies to define a challenge rather than a prescriptive set of requirements, test multiple proposals, and seamlessly scale successful pilots. The new procurement approach also removes barriers to procuring additional work from the vendor at the pilot's end.

Changing the rules of procurement is only part of the challenge, however — promoting adoption across dozens of agencies with varying staffing levels, procurement expertise, and risk tolerance is another. Enabling innovation does not end with bold new procurement methods, either; smaller, behind-the-scenes reforms and process improvements that shorten timelines and improve outcomes also support innovation.

Through the Fellowship, Calgary is bringing a human-centered design approach to implement Challenge-Based Procurement and other procurement reforms. Procurement is also a common thread running through most of the Fellowship projects. Alongside delivering on these individual projects, the Fellowship's goal is to update how agencies engage with the private sector, reducing the hurdles needed to deliver on innovation projects overall.

Goals

The goals of the Fellowship at MOCS are to find and implement opportunities for reform that support innovation in the City. These reforms have taken two main paths:

- **Innovation procurement reform**, like Challenge-Based Procurement. This reform directly supports innovation by creating new pathways for piloting and scaling success.
- **Procurement reforms that support innovation**, like Public Hearing Reform and the Discretionary Grant Pilot. These reforms streamline roadblocks that impact many procurements, but especially projects that rely on efficiency to rapidly respond to problems and ensure that innovative vendors are supported by the City.

The key to realizing the promise of these reforms is implementation. At MOCS, Calgary leads implementation, using human-centered design to ensure that reforms meet agencies' needs and challenges and are usable, relevant, and helpful tools for the variety of agencies that MOCS serves.

Challenge-Based Procurement

Approach and progress: Learn from early-adopter agencies to build resources

Challenge-Based Procurement is a new procurement tool for everyone in the City — procuring agencies, MOCS, and oversight agencies. To ensure Challenge-Based Procurement's success, MOCS has taken an active role in supporting the development of challenges. This hands-on approach has also functioned as user research, informing broader resource development.

Individual agency support

Economic Development Corporation (EDC) — Waterfront inspection

As EDC is a public-benefit corporation, it does not follow the same procurement rules as City agencies. Nevertheless, the Fellowship has provided opportunities for Fellows Calgary and Meera, as well as the broader teams at MOCS and EDC, to discuss how to best operationalize Challenge-Based Procurement in EDC's context. EDC has also been a key partner in publicizing City agencies' challenges, helping to ensure they reach a wide audience.

Department of Correction (DOC) — Jail-based human services

DOC was the first to use this reform, releasing four challenges in January 2025. Calgary assisted DOC with the development of tools and training for challenge evaluation. As Challenge-Based Procurements may result in diverse solutions that require broader evaluation criteria, DOC sought support to ensure that their evaluation process was smooth and effective.

Department of Citywide Administrative Services (DCAS) — Building controls upgrade solutions

In collaboration with MOCS staff and MOCS Procurement Operations, Calgary worked to help progress this challenge through MOCS approvals for release in Fall 2025.

Mayor's Office of Food Policy (MOFP) / Department of Social Services (DSS) — PantryLink Challenge

Calgary provided support during challenge ideation and drafting, assisted with navigating the procurement process, and supported outreach strategy and delivery. Calgary drafted and tested a prototype challenge outline, which was successfully used by MOFP/DSS to structure their challenge for release in Fall 2025.

Small Business Services (SBS) — Venture Forward: New Opportunities & Services for NYC Street Vendors

Calgary worked closely with SBS to shape their challenge. Calgary collaborated on a second iteration of

a challenge outline, which was successfully used by SBS to refine their challenge, for an anticipated release in fall or winter 2025.

Reusable guidance materials and tools

- **Challenge-Based Procurement FAQ:** Calgary finalized shareable resources for agencies considering pursuing a Challenge-Based Procurement or who have detailed questions about implementation.
- **Challenge-Based Procurement and Tech Labs:** Calgary conducted research on key questions around the integration of Challenge-Based Procurement into other innovation models, such as the [Partnership Fund for New York City Innovation Labs](#), to provide future guidance and resources.
- **Challenge-Based Procurement Template:** Calgary created a template for a "standard" challenge for use by agencies during the challenge drafting phase.
- **Challenge-Based Procurement "Fit" Assessment:** Calgary is working to create a plain language checklist, flowchart, or other interactive tool that agency program managers can use to assess if Challenge-Based Procurement is appropriate for their program.

Anticipated impact: agencies independently and effectively use Challenge-Based Procurement

The goal of this project is to enable agencies to effectively and independently leverage Challenge Based Procurement by creating and sharing accessible tools and guidance that support ideation, drafting, releasing, and evaluating challenges. Through early challenges, MOCS hopes to demonstrate the effectiveness of Challenge-Based Procurement to solicit innovative solutions to the City's toughest challenges, and create a pipeline of projects using the method among a diverse range of agencies.

Public hearing reform

Approach and progress: employ an iterative, user-centered approach to deliver process updates

Calgary led the implementation of this reform. Using an iterative, human-centered design process, she created a new process, PASSPort workflows and screens, training materials and guidance, and presentations to explain the new process and build buy-in. As a result of this user-centered process, 92% of notices were posted correctly the first time during the first month of the roll-out: a high compliance rate for process reform adoption.

Calgary conducted background research to understand the scope of the changes required, then completed user research with MOCS stakeholders and agency staff to understand current practices, needs, and pain points. Calgary also gathered feedback on proposed solutions.

Because of the high level of effort required for changes to PASSPort, Calgary planned a phased implementation approach that allowed MOCS to roll out an updated process for agencies in time for the May 21, 2025 deadline, while planning longer-term updates to PASSPort that will incorporate feedback from the interim solution.

Deliverables

- New public notice and comment process for all mayoral agencies
- Short-term and long-term updates to PASSPort screens and workflows
- Training and guidance on new processes for agencies

Potential impact: reduce administrative burden

By bringing all mayoral agencies into compliance with a new public notice and comment process, this reform accelerates procurement timelines and simplifies public access to sharing opinions about potential contract awards.

What is public hearing reform?

As a result of collaboration between MOCS and the New York State Legislature, New York State law replaced the requirement for public hearings for certain contract awards with a requirement for public notice and comment. Previously, the law required that for most contracts over \$100,000, a live public hearing was required — necessitating significant administrative effort and lengthened procurement timelines that rarely resulted in significant public input. The new rule, effective May 21, 2025, shortens the public notice period and allows agencies to collect written comments online. This change eliminates many administrative challenges and is anticipated to reduce procurement timelines by 20 days, 5% on average, while preserving the public's ability to voice their opinions.

A breakdown of key terms for Public Hearing Reform.



Notice

Posting information about a proposed Contract Award or Contract Renewal in the City Record to let the public know they can provide feedback.



Hearing

Live, in-person or online meeting where attendees can testify verbally



Comment

Public submits written comments

Discretionary grant pilot

Approach and progress: shape an ecosystem of tools, resources, and communications to support discretionary grant recipients

Each year, the New York City Council awards discretionary funding to nonprofit organizations for community projects. Due to the high volume but low value of these awards, and their inherently retroactive nature, nonprofits experience long contract registration timelines and invoicing processes that can delay payments up to one year. Providing services without receiving payment creates hardship for nonprofits. To address these challenges, MOCS, in collaboration with the City Council and the Mayor's Office of Nonprofit Services (MONS), is piloting a discretionary grant program for new providers with awards of \$25,000 or less at select agencies. In the pilot, organizations sign a grant agreement, receive funding up front, and complete a grant report at the end of their grant-funded activities. Nonprofits will receive payment in 90 days with significantly less administrative burden.

Calgary is leading a service design approach to change management and the design of the DocuSign grant agreement and grant report process. By employing service design strategies like experience blueprinting, a comprehensive understanding of the end-to-end, surface-to-core components necessary for the pilot was created to ensure a smooth and coherent experience for nonprofit and agency partners.

Calgary used experience blueprinting to develop a detailed plan for DocuSign implementation, including identifying required deliverables, policies, and roles to be developed. Based on stakeholder conversations and feedback, Calgary developed user journeys to plan guidance for nonprofits.

A comparison of the payment timelines for traditional discretionary awards and the Discretionary Grant Pilot.

Current process

Funds awarded through multi-year contracts in PASSPort



- **Traditional process** requires same steps and level of documentation as larger competitive contracts
- Can take over a year for contracts to be registered in Year 1, which is required for payment
- Nonprofits are reimbursed after services are completed through invoicing

Small grant pilot

Funds awarded through grants in DocuSign



- **Pilot** streamlines process requirements to help reduce payment delays and improve efficiency
- Pilot should take ~3 months to complete
- Awardees will have full grant amount upon grant execution
- Nonprofits complete a grant report at the end of grant-funded activities

Anticipated deliverables

- Nonprofit- and agency-facing emails, guides, and trainings about participating in Discretionary Grant Pilot
- DocuSign workflow that leverages automation to move agreements efficiently and accurately through the process
- List of actionable recommendations for further pilots

Potential impact: deliver funding to nonprofit partners faster and apply learnings to start-up vendors

Guide nonprofits receiving a discretionary grant to complete the grant requirements and grant agreement on-time, resulting in on-time payments. Collect actionable feedback and implement changes for FY27 pilot.

Apply pilot learnings to resources for start-up vendors interested in Challenge-Based Procurements, who need similar levels of support to successfully contract with the City.

- Service Design, to ensure that the ecosystem of products and services offered by MOCS are coherent and support users throughout the entire procurement journey.

These fields are not regularly brought to the table in procurement spaces or, if they are, serve as an afterthought. For example, the MOCS Learning and Development Team employs plain language best practices and carefully considers the user experience of their guides, but they are rarely brought in to think through the language and workflows in PASSPort, or consider how a reform will work in practice. Decisions about user experience are often driven by engineers and lawyers who build digital products and policy with limited time for understanding and incorporating user needs.

Human-centered design

Approach and progress: demonstrating tools and approaches, sharing recommendations

New York City procurement processes and rules are complex and nuanced, requiring many steps, stakeholder approvals, and lengthy timelines. Supporting this process are the City's digital procurement system, PASSPort, and a raft of guidance documents, trainings, and one-on-one support systems. Despite the numerous resources available, procurement remains an opaque, frustrating process for many agency staff and vendors, which in turn creates excessive demands on MOCS and other City procurement professionals to provide support.

Bringing in human-centered design, and the many associated design practice areas, would help ensure that the procurement process is efficient, accessible, and results-driven:

- User Experience (UX) Design, to ensure that workflows make sense to users and help users accomplish their goals;
- Content Design, to ensure that language is clear, consistent, and organized; and

Through collaboration with other teams, Calgary has seen growing interest in human-centered design practices at MOCS. For example, the Change Management Team and Not-for-Profit Team at MOCS both expressed interest in using experience blueprinting as a method for future projects. The General Council Team at MOCS has sought advice on user testing and expressed interest in a design approach to project management.

Potential impact: a culture of user-centered, iterative approaches to reform implementation

Through the Fellowship work, Calgary aims to demonstrate the value of employing human-centered, iterative design processes and the value of user experience and service design tools in executing procurement reform implementation. Beyond mere demonstration, Calgary aims to equip MOCS staff in various departments with new tools and approaches that they can use more broadly.

Vision for long-term impact

These projects will strengthen MOCS' reputation as a service agency available to help agencies hone and accelerate innovative procurements. After this Fellowship:

- MOCS will operate with more user research, co-design with users, iteration, and user testing. MOCS staff will embed new user-centered tools into their practices.
- Agencies will be more willing to pilot innovative ideas to address the challenges they face, and will experience shorter procurement timelines.
- Vendors, particularly those with new ideas, will be more interested in pursuing government contracts and will have a more streamlined experience engaging with the City and receiving payment.
- Innovative vendors will have a clearer, more accessible, and streamlined on-ramp into working with City government.

These experiences will lead to a beneficial flywheel effect, whereby more startups want to work with government, and government gets increased and varied responses to their RFPs, encouraging competition and better results for the City.

Next steps

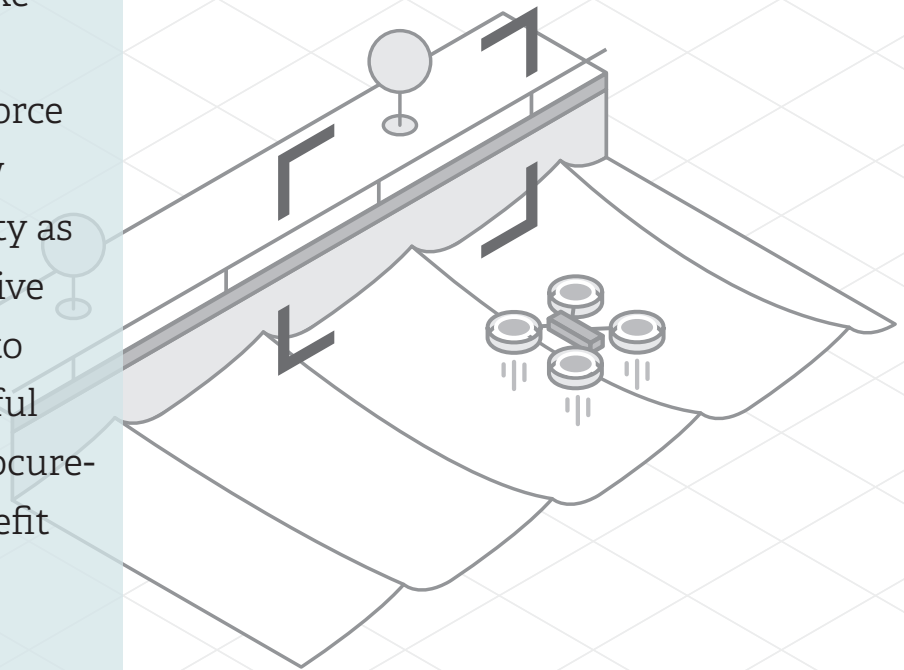
- Challenge-Based Procurement remains a through-line of the Fellowship, and Calgary will continue providing assistance to City agencies and develop additional supporting resources.
- Lead future phases of Public Hearing Reform and Discretionary Grant Pilot implementation.
- As Public Hearing Reform and Discretionary Grant Pilot conclude, further projects may explore eProcurement software and other procurement reforms.
- The beginning of the 2026 Mayoral Administration will shape MOCS's agenda for the second year of the Fellowship, and will provide further opportunities to bolster innovation and user-centered, interactive design practices in government procurement.

Streamlining the pilot to procurement pipeline

Economic development can take many forms, from traditional incentive programs and workforce development initiatives to new methods like leveraging the City as a customer to support innovative industries. The NYCEDC aims to build bridges between successful pilot programs and at-scale procurement opportunities to the benefit of the City and the business community.

Fellow

Meera Kumar



Introduction

The New York City Economic Development Corporation (NYCEDC) works to grow business opportunities and make NYC the most attractive place to start, grow, and scale a business. As outlined in the [Pilot:NYC report](#), co-authored by Cornell Tech and NYCEDC, New York City is especially attractive for companies within the urban innovation space.

Unlike other technologies, urban technology companies require not just funding, but opportunities to pilot their technology in the public realm and in partnership with municipalities. According to Cornell Tech's 2023 *Pilot:NYC report*, in 2022 alone, over 600 companies formally applied to pilot their products through one of twelve City-run or City-affiliated programs, and over 50 pilots were deployed.

Piloting new technologies is already part of NYCEDC's portfolio of work through programs like *Pilots at BAT*, which advances technologies via short-term no-cost pilots at the historic Brooklyn Army Terminal (BAT). A separate body of work, [Climate Innovation Studios](#), supports catalytic projects with technical assistance, grants, and access to industry experts.

While these existing programs have been impactful, prior to the mechanism of Challenge-Based Procurement, there was no codified way for a successful pilot to move forward into a larger procurement. This “pilot purgatory,” where successful pilots lack a pathway forward, was especially evident in Meera's prior work at Newlab, where she partnered with the City on a number of pilot projects that led to meaningful insights and notable press moments — but didn't translate directly into an RFP or a scaled-up procurement.

As a public benefit corporation, NYCEDC is not required to follow the same procurement rules as City agencies — but NYCEDC partnered with the Mayor's Office of Contract Services to implement Challenge-Based Procurement. Procurement reform gets at the heart of NYCEDC priorities: growing business in NYC, not just as a market-shaper, but as a customer. NYCEDC is especially supportive of the opportunity that Challenge-Based Procurement offers to businesses, especially start-ups, who can prove product fit through

About NYCEDC

New York City Economic Development Corporation is a mission-driven, nonprofit organization that works for a vibrant, inclusive, and globally competitive economy for all New Yorkers. We take a comprehensive approach, through four main strategies: strengthen confidence in NYC as a great place to do business; grow innovative sectors with a focus on equity; build neighborhoods as places to live, learn, work, and play; and deliver sustainable infrastructure for communities and the City's future economy. To learn more about what we do, visit us on [Facebook](#), [Twitter](#), [LinkedIn](#), and [Instagram](#).

The Innovation Industries team at NYCEDC targets job creation and sustainable growth in key sectors — life sciences, the green economy, and the tech and creative sectors — to build a vibrant, inclusive, and globally competitive economy for all New Yorkers. Meera's position on the Innovation Industries team gives her a unique vantage point into tools to support these burgeoning industries while simultaneously leveraging the NYCEDC's large portfolio of assets to identify a suitable initial Challenge-Based Procurement.

a pilot phase, rather than relying solely on historical track record.

Through the Fellowship, Meera is executing a novel Challenge-Based Procurement to make it easier for the City to implement and utilize innovative technologies while making it easier for the next great company to successfully scale through procurement.

Identifying the challenge waterfront inspection and mapping challenge

Meera's first few months at NYCEDC were spent unearthing pressing challenges that could be suited to Challenge-Based Procurement. Through over 20 stakeholder interviews, it became evident that, for areas in which technology had exponentially advanced



in the past decade, Challenge-Based Procurement could be extremely useful in answering questions like, “How might we optimize indoor temperature comfort (heating, ventilation, and air conditioning) to enable greater energy efficiency and cost savings across aging industrial assets?” or “How might we better track waste management (food, construction materials, spare parts from upgrades, etc.) across the NYCEDC construction portfolio?”

Challenge-Based Procurement has a significant advantage in more cutting-edge sectors, like drones, robotics, and AI, where the speed of innovation is much higher. The inbuilt pilot phase offers the vendor a chance to demonstrate new advancements to the agency, and research and development during the course of the pilot and procurement can ensure a bespoke solution for the agency’s exact needs. The NYCEDC Green Economy team hopes that this initial Challenge-Based Procurement will address agency-wide operational priorities and support company growth. NYCEDC’s initial challenge will be focused on waterfront inspection and mapping, asking the question, “What is the most efficient and effective way to capture, process, and prioritize waterfront imagery to enable streamlined inspections?”

Waterfront inspection background

NYCEDC operates the NYC Ferry and manages all waterfront inspections for more than 350 miles of City-owned waterfront property (representing 2/3 of the total waterfront of New York City). Inspection methodologies have not changed significantly over the past few decades, making it ripe for innovative solutions. NYCEDC intends to launch a challenge, test several solutions in situ, and then procure the most successful technologies at scale, allowing a tailored solution for its inspection needs.

Current approach for waterfront inspection

NYCEDC oversees between 30-50 discrete inspections per year. These inspections are carried out by a roster of consulting firms who lead different types of inspections depending on site needs.

To codify and manage the waterfront, NYCEDC uses the Waterfront Inspection Manual, a single comprehensive set of guidelines for the City for the inspection, assessment, and monitoring of waterfront structures, shorelines, and wetlands.

Limitations of current waterfront inspection approach

There are several limitations to NYCEDC's current approach, the most crucial being a lack of an image baseline to compare against and the time required to do each inspection.

While NYCEDC previously captured panoramic imagery in 2014 to help assist with understanding asset conditions, these images have not been updated since. Without a visual baseline, NYCEDC is unable to track change over time in a meaningful way on an asset-by-asset basis.

While innovative models for shoreline data capture do exist, utilizing technologies like drones, underwater robots, and uncrewed surface vessels (USVs) effectively entails gathering imagery efficiently, ensuring adequacy of imagery for inspection purposes, and integrating imagery with NYCEDC processes, including compatibility with NYCEDC's Waterfront Facilities Maintenance and Management (WFMMS) system. Moreover, a successful solution will not only need to capture imagery, but grade and prioritize infrastructure to enable efficient inspection.

Over the past decade, there has been a significant advancement in methods for digitally capturing high-definition imagery, even from desktop scans. With the capability to zoom in 20 times on an image, it is now possible to observe expanding cracks with a precision of one-eighth of an inch. The objective of this Request for Proposal is to evaluate these new methods for image collection to enhance the efficiency of waterfront inspections citywide.

Goals and objectives

This procurement asks the market, "What is the most efficient and effective way to capture, process, and prioritize waterfront imagery to enable streamlined inspections?"

A winning solution should be able to do the following:

- Provide visual panoramic imagery of the waterfront, enabling change detection at the clarity of one-eighth of an inch
- Provide underwater imagery of the shoreline, enabling condition assessment and change detection
- Analyze existing shoreline conditions and perform predictive analysis to enable preventative maintenance

Success in attaining these three goals will be evaluated through a pilot where respondent vendors map, capture, and deliver the following:

- Graded imagery of up to 15 linear miles of diverse East River waterfront above-water, delivered in a format such that NYCEDC staff can validate the imagery and integrate it into its workflows
- Graded imagery of three underwater sites along the East River with mixed varieties of infrastructure (hard structures, soft shorelines, pier, abutment, wetland, buried infrastructure like outfalls) delivered in a format such that NYCEDC staff can validate the imagery and integrate it into its workflows

All solutions would be evaluated post-pilot, with the most promising solutions procured at scale, through a secondary follow-on contract.

Fellowship initiatives

The goal is for the Urban Innovation Fellow to lead the launch and implementation of this inaugural Challenge-Based Procurement.

The Fellow is in charge of managing all project-related steps, from defining the opportunity in tandem with NYCEDC's Asset Management and Green Economy teams, to issuing a solicitation, overseeing the piloting, and evaluating and contracting with a vendor. Throughout this process, the Fellow will prioritize advancing NYCEDC's climate and innovation objectives while aligning with operational needs to prove out a model that can be replicated in-house and across teams.

Progress and methods

To date, Meera has concentrated on several foundational initiatives critical to the success of the broader project. These include identifying a high-impact and strategically aligned challenge area, fostering internal alignment through robust stakeholder engagement, and securing dedicated funding for implementation. Each of these efforts has laid the groundwork for a cohesive and well-supported pilot strategy.

These steps can be visualized in the attached timeline.

Challenge Development Q1 - Q2 2025	Pilot Phase Q4 2025 - Q2 2026		Scale Up Q3 - Q4 2026	
<p>Surface relevant challenge through stakeholder interviews</p> <p>Undertake Impact Spending Process to receive funding for project</p>	<p>Issue solicitation</p>	<p>(Round 1) Initial Review</p> <p>Review responses, shortlist finalists</p>	<p>(Round 2) Choose Pilot Finalists</p> <p>Pilot solutions, evaluate success</p>	<p>(Round 3) Procure Tech</p> <p>If successful, can upscale promising solution(s)</p>

Goals

Beyond project completion and awarded procurement, there are three main goals for this initiative:

- 1. Socialize creative procurement methods for innovative outcomes:** A first completed Challenge-Based Procurement for NYCEDC should compel other teams to execute their own challenges through this pilot-tested and bespoke procurement.
- 2. Improve inspection of the City's waterfront:** Ideally, tested methodologies will make their way into best practices for NYCEDC's waterfront inspection manual. It is also possible that some promising vendors will be brought on as subcontractors to existing marine engineering services projects.
- 3. Establish New York City as a hub for drones and robotics:** This project should help further center the City as a hub for drones and robotics by attracting companies in these sectors.

Next steps

Following the release of the Request for Proposals in November 2025, Meera is shifting her focus toward the execution of the pilot phase. This next stage will be dedicated to designing, launching, and rigorously evaluating pilot solutions that address the identified challenges. The overarching objective is to equip NYCEDC with a comprehensive evaluation framework and the operational tools necessary to assess the effectiveness of all pilot initiatives. By the conclusion of the two-year Fellowship, the aim is to position NYCEDC to confidently scale the most promising solution, ensuring long-term impact and sustainability. A first successful Challenge-Based Procurement should empower other NYCEDC teams to use this method for their own procurements.

The second year of the Fellowship will be focused on advancing procurement priorities including selecting and signing contracts with vendors, piloting with finalists, and evaluating all selected pilots. The goal is to leave the Fellowship with a clear best technology for maintaining this critical component of the City's infrastructure.



Looking ahead

The Fellowship was designed with four core goals in mind: (1) to build collaborative partnerships, (2) to advance innovative, priority projects in city agencies, (3) to seed a technology and design talent pipeline for city agencies, and (4) to serve as a model for other cities pursuing government innovation.

One year into the Fellowship, and at the beginning of a new Mayoral administration, the Urban Tech Hub is publishing this report to both document its progress and share what the Fellows have learned. The Fellowship's goal in the coming year is to measure the progress and impact of these projects, to help translate the lessons from these projects for other cities and agencies working on similar issues, and to provide a practical playbook for building innovation capacity.

At its core, this report aims to expand the possibilities for what local government can and should be by injecting innovative, agile processes to help it operate more smoothly and effectively. It also offers some of the practical details that startups and small businesses need to collaborate with city government, while giving others a window into how local government is evolving and experimenting behind the scenes.

Looking ahead to the Fellowship's second year, the Fellows will continue to build on the foundation laid in the first year in their respective projects, and the Fellowship will broaden its focus to sharing its learnings and refining the program's future design to ensure continued success and growth.

Following are some of the high-level challenges and questions that the Fellows have identified as necessary to success in delivering on large-scale government projects, which they are seeking to address in the coming year:

Bridge short-term needs and long-term objectives

- How can agencies better build solutions that combine deep operational expertise / discovery with nimble testing and deployment?
- How can agencies build an ecosystem of coordinated solutions, rather than isolated fixes?

Build “build” capacity

- How can agencies systematize the process of evaluating whether to buy or build? How can they attract the talent needed to build more solutions in-house, or to better evaluate outsourced solutions, and to manage outside providers? How do short-term budget concerns complicate this?

Avoid “paving the cow paths”

- How can agencies build genuinely innovative solutions, rather than just digitizing existing analog processes?
- What broader systemic reforms (legal, procurement, workforce development) are needed in order to create the conditions for genuine innovations to take hold?

Bridge agency silos

- How can agencies better share information with each other in order to achieve shared objectives (e.g., clean energy projects, development of comprehensive digital twins)?
- How might this cross-agency collaboration help spur the development of in-house agency AI teams?

Scale

- How can these projects add up to more than the sum of their parts? How can individual agency efforts unlock solutions that have impact on other agencies' operations? Other cities' operations?

As we continue our work, we welcome thoughts on the foregoing from other cities and researchers working on similar challenges. Please reach out at

urban.innovation@cornell.edu.

