New York City can use our 2,000 acres of roadway to prevent flooding and adapt to climate change, support transportation alternatives and better goods movement, and expand access to economic opportunity. Here’s how.
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The next mayor of New York City has an unparalleled opportunity to reshape the city in ways that dramatically improve the equity, health, prosperity, and sustainability of all New Yorkers by reimagining one realm alone: our streets.

Over the past few decades, beginning in earnest with the Bloomberg Administration and PlaNYC, and increasingly in response to the COVID-19 pandemic, the city has taken steps to ensure the public right-of-way of our streets is safe and offers more to people by reducing the amount of space dedicated to cars, and increasing the amount of bike lanes, pedestrian-only “Open” streets and plazas, and dedicated bus lanes. These are laudable achievements, and the process underway to develop the NYC Streets Plan also holds great promise to continue this shift towards safer and more accessible streets. While these steps are important, our streets remain unsafe, polluting, auto-dominated and fall short of the immense potential of what they could be. We can foster dramatic improvements across the city if we take a comprehensive, network approach to re-envisioning the purpose and use of our streets.

In its compelling *NYC 25x25* report, Transportation Alternatives offers a vision in which 25% of the city’s streets are converted from private auto use to public use, including dedicated bike and bus lanes, pedestrian, school, and community spaces, loading zones, transportation hubs, and metered parking spaces, among other uses. The report clearly lays out what is possible if we reconfigure just a portion of our streets. *Re-Envisioning the Right-of-Way* builds on *NYC 25x25* and re-envisions the right-of-way as an interconnected network of publicly beneficial systems:

- **Transportation systems** that support a network of protected bike and bus-only lanes, while enhancing the delivery of goods to address and manage the expected growth of e-commerce
- **Social systems** that provide our communities with gathering places, local food production, and economic development opportunities
- **Natural systems** that restore nature in our communities to control flooding of our streets and subways, reduce urban heat, and enhance the health and biodiversity of our ecosystems in the face of the climate crisis, and provide opportunities for New Yorkers to explore and spend time in nature
As the tragic impact of Hurricane Ida has demonstrated, streets and paved areas in the time of climate crisis can become damaging and deadly conveyors of water from extreme precipitation events. With proper design and planning, however, streets can and must be part of the solution.

We advocate for a complete reset in how we’ve come to think of streets and their purpose. This represents a departure from the belief that streets are the designated realm of vehicles and toward the belief that they are a shared public resource that can bring about increased public benefit.

Different approaches can be applied to different streets. Re-Envisioning the Right-of-Way analyzes which streets could be best for particular uses, including “Thru Streets,” “Activity Streets,” and “Neighborhood Streets.”

There is much that can — and must — be achieved by leveraging and expanding the existing authority within the NYC Department of Transportation (NYC DOT),
building on collaborations with other government agencies, and investing in a new model of streets with revenue generated by capturing their value.

We are beginning to capture glimpses of the future of our city’s street right-of-way. This future involves increased and more beneficial use of public space. With leadership, planning, collaboration, and a little imagination, we can bring about a better and more resilient New York City.

Where we are now, and where we could be

Satellite image of Northern Blvd in Queens by Google Earth, rendering by Local Office Landscape and Urban Design

WHAT’S IN THIS REPORT

- **An effort to demystify the right-of-way**, including a legal analysis — carried out in partnership with Cozen O’Connor — outlining who is responsible, what can be done on different streets, what regulations need to be changed, and what laws need to be enacted to allow certain street uses

- **An illustrative timeline** demonstrating how the right-of-way and perceptions of it have changed over time

- **A series of global case studies** that illustrate the range of possibilities for NYC’s streets

- **A re-envisioning of NYC streets** as a network of systems that are interrelated, serve multiple functions and allow us to achieve goals rooted in health, equity, prosperity, and sustainability

- **A classification of city streets into three types** to better understand the range of current and potential future uses of the right-of-way

- **A set of recommendations** that will help to achieve the vision laid out in the report
Key Recommendations

○ Reorient the NYC DOT to become the NYC Department of Transportation & Public Space
  ○ Enhance mission and develop new operating division with local reach
  ○ Build on existing collaborations
  ○ Grant NYC DOT the Authority for Automated Enforcement

○ Phase out free parking on city streets and dedicate revenue to right-of-way transformations
  ○ Reforming parking policies to end free parking can and should begin immediately

○ Reduce the Amount of Space in the Public Right-of-Way Dedicated Solely to Privately-Owned Autos
  ○ Invest in a robust public transit system
  ○ Build the five borough bikeway and invest in greenways
  ○ Use the streets plan to streamline parking and travel lanes
  ○ Expand ongoing successful programs
  ○ Ensure effective curbside management that reduces congestion and pollution

○ Develop a Comprehensive Vision for city Streets:
  ○ Transportation System
    ○ Expand dedicated bus lanes and busways
    ○ Build the Five Borough Bikeway
    ○ Rethink goods movement in the age of e-commerce
  ○ Social System
    ○ Expand city community engagement efforts
    ○ Develop a neighborhood “front yard” program with slow zones
    ○ Ensure permanent open streets and open restaurant programs are equitable and sustainable
    ○ Explore Options to Expand Market Concessions in the Right-of-way
    ○ Explore Ways to Expand Community Gardens into the Streets
  ○ Natural System
    ○ Significantly expand green infrastructure in streets to collect stormwater
    ○ Use streets to restore nature in our communities
Introduction: A Little More New York

Take a step down from the curb onto a New York City street and you’re stepping onto one of the most important and valuable resources in the world.

Streets are the circulatory system of our city, connecting workers to jobs, goods to people, friends and family members to each other. Whether on foot, by bike, scooter, bus, or car, streets keep the city moving and are essential to its vibrancy.

Whose Streets?

Since the introduction of the automobile, a strong and clear division has increasingly grown: sidewalks are for people and streets are for vehicles. If on foot or two wheels, you very much enter the street at your own risk. Over time, the City’s streets have transitioned from places of mixed, vibrant activities to places overwhelmingly dominated by vehicles.

“Public right-of-way” designates the streets as a place to benefit the public. The legal designation guarantees the right to move freely on public streets.
Recent reports, such as Transportation Alternatives NYC 25 x 25 and RPA’s Five Borough Bikeway, make the case for a less automobile-centered vision for the right-of-way. This vision welcomes people back into this public space by implementing uses that provide greater public benefit. This can be achieved by re-programming the space and adjusting the amount of space dedicated to space-efficient modes like public transit and cycling, and public gatherings. Additionally, programs like Open Streets and Open Dining — which have arisen out of necessity during the COVID-19 crisis — have demonstrated these visions can quickly become an enduring reality.

What is missing, however, is the question of what outcomes we could set in motion for New York if we looked at the entirety of the city’s 32,000 acres of roadway as an interconnected network of public space. This network, if reimagined, could transform the city in ways that provide maximum benefit to the greatest number of people.

By looking at our network of streets with fresh assumptions rather than as places that prioritize vehicle movement and storage, we can begin to leverage this space in ways that improve communities and our environment.

**We have the opportunity to re-envision street space as a network of systems that is greater than the sum of its parts:**

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**Related Report**

Jun 2020

The Five Borough Bikeway

Critical infrastructure connecting New York City

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**Transportation System**

A safer and more efficient transportation system that favors expanded public transit as well as bikes, scooters, feet, and other alternative modes over autos, while still ensuring space and efficient curbside access to support goods movement
Social System

A social system that supports local economies and food production, while offering more neighborhood space.

Natural System

A natural system that helps to manage stormwater, regulate extreme heat, and expand the reach and benefits of parks and natural areas into more neighborhoods.

How we choose to use public space can help us meet shared policy goals and objectives including reducing greenhouse gas emissions; addressing climate impacts such as flooding from storms and threats to public health from extreme heat; restoring networks of nature in the built environment; equitably expanding parks and public space into all neighborhoods; and supporting neighborhood-level economic opportunity and food security through novel uses; all while maintaining the overarching connectivity that streets enable.

No other built system in our city allows us to do so much at once.

The future we see is represented in the following vision statement:

The right-of-way on our city streets is a multi-purpose, public amenity that serves the greater good through diverse and flexible uses that include: mobility in all modes with reduced dominance by automobiles; ecosystem services such as stormwater management and urban cooling; community gathering and expression; and recreation, each in balance with the economic and individual needs that the right-of-way helps to support. The city serves as a guardian for these uses and helps to ensure the values of health, equity, safety, and sustainability are imbued into the policies and programs involving the right-of-way.
Health, equity, safety, and sustainability

This rendered image of Northern Boulevard Boulevard – where NYC DOT has already begun the process to re-envision the street – demonstrates potential features of a right-of-way that is managed as a network of systems: a street canal serves to manage stormwater from cloudburst rain; a parking lot is repurposed as a wetland park that filters stormwater from the neighborhood watershed through new habitat; slow streets in the neighborhoods have reduced lanes and lower speed limits for new residential greenway routes; streets are closed in ways that connect subway and bus transit plazas; raised vegetable beds in the street provide additional community garden space for sidewalk farming bioswale and rain garden bump-outs slow traffic and capture and filter stormwater runoff; more street trees provide urban cooling and also capture stormwater; separated bus lanes support efficient public mass transit.

We are all familiar with the official state slogan “I Love NY,” the logo for which was designed in the back of a taxi cab in New York City in 1976. Implementing this vision will give us all a little more New York to love.
Demystifying the Street Right-of-Way

 WHAT IS THE RIGHT-OF-WAY?

“Right-of-way” (ROW) is a legal term that refers loosely to a street, road, highway, or other stretch of infrastructure that is open to everyone for conveying themselves, their vehicles, and goods from one place to another. In spite of the fact that the ROW is the city’s largest public resource, there is no widely used, city government-authenticated definition.

Streets, however, are defined in multiple ways. The New York city Administrative Code defines a street as “any public street, avenue, road, alley, lane, highway, boulevard, concourse, parkway, driveway, culvert, sidewalk, crosswalk, boardwalk, viaduct, square or place, except marginal streets,” but does not include mention of the right-of-way.\(^1\) City Planning’s Glossary of Zoning Terms defines a street (emphasis added as, “any road (other than a private road, highway, parkway, avenue, alley or other way shown on the city Map, or a way at least 50 feet wide and intended for public use which connects a way shown on the city Map to another such way or to a building or structure. A street refers to the entire public right-of-way (including public sidewalks).”)\(^2\)

Perhaps the best description of New York City’s public right-of-way comes from the groundbreaking 2005 report *High Performance Infrastructure Guidelines*, which describes it as follows:
The public right-of-way organizes the massive flow of energy and matter that courses through the city on a daily basis. Right-of-way components include the roadway, sidewalks, sub-grade systems, and landscaped areas, and the design of each of these components profoundly affects our experience of the city... On its surface, the right-of-way rationalizes and choreographs the complex circulation of automobiles, buses, bicycles, and pedestrians, prioritizing them through its geometry, lane markings, crosswalks, and signaling – allowing each to yield to the other in a safe mix. The streetscape is also shared public real estate for the social and economic activity that enriches civic life. City streets double as play space and rallying grounds, while sidewalks serve as zones of casual interchange, shopping, dining, and display. Below grade, the right-of-way houses a complex and vital network of utility infrastructure. Pipes and conduits convey potable water, gas, electricity, and telecommunications, while others carry off storm- and wastewater. Finally, the right-of-way is host to nature and natural processes. Trees, vegetation, and soil interspersed throughout the streetscape offset the sharp edges and hard surfaces of the built environment.
Put simply, the public right-of-way is a public amenity that allows space for a multitude of public benefits, including the unimpeded movement of people and goods; sites for social gathering, expression, and economic activity; areas for landscape and ecosystem services; and a host of infrastructure from a variety of utilities.

**A LEGAL ANALYSIS OF THE NYC STREET PUBLIC RIGHT-OF-WAY**

**Who owns the right-of-way, and who decides what can and can’t be done with it?**

Like the definition itself, the answer is not straightforward. The Charter of the City of New York secures the city grant of jurisdiction over streets, among other public places, and allows it to grant franchises, permits, and licenses for that property. The City Charter places the vast majority of streets in the control of NYC DOT — specifically to the Commissioner who serves the Mayor — though there are exceptions like streets in city parks, which fall under NYC Parks’ jurisdiction. There are also streets and bridges under the jurisdiction of state authorities and agencies, such as the Metropolitan Transportation Authority (MTA), Port Authority of New York and New Jersey (PANYNJ), New York State Department of Transportation (NYSDOT), and New York State Parks.
Who's in charge?

While NYC DOT is generally responsible for City streets, a variety of other agencies, private partners, and land owners have specific roles and responsibilities related to different issues and uses, such as storm drains, Greenstreets, or curb cuts, among others. This diagram, developed by NYC DOT and reprinted with permission, summarizes the jurisdictional overlap on, under, and around city streets.

Under city law, and granted by the Charter, the Mayor — through their appointment of the NYC DOT Commissioner — is endowed with much of the authority over streets and their operation. Below are areas considered to be the powers and duties of the Commissioner that are particularly consequential for the public right-of-way.
NYC DOT can grant the right to construct or maintain certain types of structures in the right-of-way, a concept known as revocable consent. Traditionally, for things like private bike racks, planters, accessibility ramps, and underground cable conduits, this is granted for a term of ten years, and may be renewed. Sidewalk cafes have their own revocable consent rules and procedures. According to the Administrative Code, they are allowed in commercial, industrial, and certain special zoning districts, and must follow rules that govern their operation, as well as requiring permits from other agencies like the Department of Health and Mental Hygiene and the Department of Buildings. On most NYC streets, the New York City Police Department (NYPD) is responsible for enforcing safety. The NYPD not only enforces traffic laws and parking violations, but also issues permits for parades and use of amplified sound in the right-of-way.

- Making the rules and regulations for pedestrian and vehicular traffic on city streets
- Making all decisions around signs, signals, markings, and other devices that help to guide, direct, or regulate vehicular and pedestrian traffic
- Concurrently with the police department, enforcing all laws, rules, and regulations prohibiting, regulating, directing, controlling, or restricting the parking of vehicles and the movement of vehicular and pedestrian traffic on city streets
- Enforcing laws, rules, and regulations concerning vehicle parking and movement and conduct of vehicular and pedestrian traffic
- Presenting/recommending to the mayor:
  - The city traffic plan
  - Methods to improve traffic conditions that adversely affect the welfare of the city, outside of rules and regulations
  - Proposed amendments to resolutions, rules, or regulations of any city agency which affect traffic conditions in the city, and proposed legislation to implement them
  - Proposals for the improvement of existing streets, street widenings, and new streets
- Regulation of infrastructure in, upon, across, over, or under public streets/roads, parks and public spaces
- Development and coordination of planning and programming for all forms of mass transportation within the city

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Click here for a full list of the NYC DOT Commissioner’s powers and duties.

Case Study — Cheonggyecheon Stream Restoration, Jung-gu, Seoul, South Korea

Managing Stormwater: Transformed, Public, Ecologically Restored Green and Blue Space

![Image: M. Johnson]

Cheonggyecheon Stream Restoration — Key Features:

1. Elevated highway removed to daylight and restore stream
2. Ecological corridor: Provides ecosystem services for collecting, storing, and filtering stormwater, cleaning the air, and mitigating warmer temperatures
3. One-way roads along the central greenway maintain truck, car, and bus transportation service

The Cheonggyecheon restoration project was centered on revitalizing the Cheonggyecheon Stream that had been covered for decades by a highway overpass. The city of Seoul used its own resources to bring new life to the downtown by enhancing the urban environment. The restoration of the Cheonggyecheon Stream led to the revitalization of central Seoul, unleashing the potential for green public space.
History of the Right-of-Way in New York

Over the course of New York City’s history, the use and definition of the right-of-way has evolved in response to economic, social, and cultural inflections. As new technologies and priorities emerged over time, the changing needs of New Yorkers translated to shifts in the physical and legal landscape of city streets. This timeline will present several stages in the history of the right-of-way in New York to encourage creative conceptualizations of future uses and priorities.

Native Paths

The right-of-way managed by Native people existed for people and animals along narrow paths used to access fishing, hunting, and other settlements. One scholar described them as “deeply sunken by long-continued use” which suggests that Native people prioritized and reinforced specific paths that connected to desirable points of economic and sustaining activity through shared expertise. A key component of this era is the prioritization of paths according to uses that support their users.87

Projected Network of Paths of the Lenape People
Colonial and Early America

As colonists began shaping the continent and region, they widened the right-of-way along existing paths to facilitate trade and the movement of goods. One scholar examining the New England context describes that, “early settlers in New England found ‘trodden paths’ connecting the villages of the Pequot, and also extending far inland. These formed, in fact, their only means of travel from their seashore settlements and served the purpose of opening up the country.”

Other scholars have described the process by which settlers identified native pathways and widened specific paths to make more room for commerce. These pathways partially formed the basis of the road network we know today in Lower Manhattan.

This era highlights how both pedestrians and goods movers use right of way, and commercial interests begin expanding and increasing the intensity of use. It also shows how the legacy use is supported or expanded over time as new users seek to shape the space. The emphasis of streets or paths is on connectivity and movement in a linear form.
1811 Commissioners Plan and Erie Canal Completion

The 1811 Commissioners Plan established the grid system for Manhattan by delineating legible blocks for real estate development and setting street widths. This plan explicitly focused on streets as publicly-owned land in relationship to privately-owned lots in the grid. So, the right-of-way was defined as that which is not private property.

Beside setting the street widths for each type of street (avenues vs. regular street vs. wider street, the commission did not mention the types of uses permitted on the street. It does state that, “it gave the Commissioners ‘exclusive power to lay out streets, roads, and public squares, of such width, extent, and direction, as to them shall seem most conducive to public good.’ ”

The Commissioner also described the importance of the Plan for improving the health of the city.

This process can be seen as the first time the right-of-way is written into citywide policy. It serves as a foundational component for our understanding of the right-of-way today.
Introduction of the Car and the Transition of Streets

The turn of the century saw a transformed right-of-way due to the increasing prevalence of mechanized transportation, both individual automobiles and transit. The introduction of the subway in and existing elevated rails created more space for the increasingly popular automobile on city streets. The dangers of the fast-moving automobile sparked significant debate and even outrage about who and what streets should be for.

This period represents the beginning of a right-of-way that separates uses and carved out an increasing amount of space for cars over pedestrians and other slower modes of transportation. Another component to consider is the burying of utilities in the roadway to create more resilient infrastructure and a more open streetscape. The development of parkways and other highways in the first part of the 20th century enabled suburban growth that further encouraged automobile use and prioritization in the city’s rights-of-way.

Overall, this era marks the beginning of a right-of-way that separates uses and prioritized cars over pedestrians and other slower modes of transportation.
Post-WW2 to the Early 2000s

Federal policies to promote highway construction and suburbanized housing development cemented cars as the primary mode of transportation for much of the region by increasing the demand for space dedicated to them alone. Efforts to contest this trend within NYC had some success with the growth of neighborhood associations, but efforts to reverse the prevalence of cars were few and far between.¹¹
Contemporary Context

Since the start of the 21st century, the city has begun reimagining the hierarchy of street uses by implementing several new initiatives to reshape the city’s right-of-way, many stemming from the Bloomberg Administration’s landmark sustainability effort PlaNYC. Under NYC DOT Commissioner Janette Sadik-Khan, the city advanced several key initiatives with a strong focus on safety like protected bike lanes, the pedestrianization of streets for new plazas, Select Bus Service, speed cameras, and the launch of a citywide bike share program, CitiBike.

The de Blasio administration built on these efforts by continuing to expand the bike network and advancing Green Wave as part of its Vision Zero initiative. The development of green infrastructure, such as the Million Tree Initiative and efforts by the Department of Environmental Protection to install green infrastructure throughout the city highlighted how natural systems could intertwine with transportation and public space systems to promote a multi-functional and co-beneficial right-of-way.

This era in the history of the city’s right-of-way city’s represents a recalibration of streets towards pedestrian and cycling uses. Taken in conjunction with more recent transitions driven by the COVID-19 pandemic, namely the outdoor dining program, we can understand the right-of-way as continually malleable and able to incorporate a breadth of activities from the movement of people and goods to recreation, dining, and commerce.\(^{12}\)
What Our Streets Could Be: A Network of Systems

Recent innovations on city streets over the past decade plus have given us a glimpse of what our streets could be. All too often, however, the result is a patchwork of good ideas: bike lanes that run for a stretch before running out; bioswales and rain gardens scattered in some neighborhoods while absent in others; and pedestrian or bus-only stretches limited to certain segments of certain streets. Aside from vehicle traffic and parking, there is no comprehensive or continuous network of street space dedicated to other uses beneficial to the public.

If we think of our streets as the interconnected network of public space that they are, what could we envision for them?

The greatest opportunity lies in the fact that this is a network, allowing us to push and pull on it in ways that most effectively create benefit. “Blue streets” could capture and hold stormwater with green infrastructure, mitigating the deadly and damaging impacts of extreme rain and reducing pollution in our waterways, while also cooling the
temperatures of urban spaces baked by extreme heat; a comprehensive network of busways and bikeways could serve as a viable alternative to autos moving people and goods around the city, connecting more neighborhoods to opportunity; and neighborhoods could reclaim more space for gathering, playing, and growing.

The following considers our city streets as a network of systems, operating independently for certain purposes, yet together for the public good — including transportation systems, social systems, and natural systems.

**Transportation Systems**

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MOVING PEOPLE

- SBS bus routes
- RPA’s proposed SBS bus routes
- Protected bike lanes
- RPA’s proposed Five Borough Bikeway
Bus and Protected Bike Lanes

Dedicated bus lanes and protected bike lanes are two examples of how streets can prioritize alternative transportation to cars. While the amount of dedicated bus lanes and protected bike lanes has grown in recent years, much expansion is necessary to create a truly connected network. This map shows the current networks along with RPA’s Five Borough Bikeway and Select Bus Service (SBS) route expansions.

Perhaps the most important function of the right-of-way is facilitating the movement of people in the most efficient, affordable, and sustainable way.

Today, cars take up the vast majority of space on the right-of-way, moving the least amount of people. Instead of prioritizing the least productive, most space-intensive mode, we can rethink the allocation of space and reap the benefits of more activity space, cooling trees, storm mitigating systems, space to gather and interact, and anything else we can imagine.

Looking forward, the greatest opportunity to capitalize on the ROW and move the greatest number of people will be through increased and improved surface public transportation (buses and streetcars), alternative transportation modes (bikes, scooters, etc), and by foot. This is not to say that there will be no future for private vehicles on city streets. Taxis, for-hire vehicles, and individually-owned vehicles are very likely to remain a part of the city fabric and future ROW possibilities should include space for vehicles, prioritizing electric over fossil-fuel powered ones.

But transportation policies and programs should prioritize the valuable space of the ROW for dedicated bus lanes, busways, and street cars, and protected lanes for bikes and other alternative modes. As we move to more efficient mobility we are freeing space for social systems and natural systems that will be explained in detail below.

Case study — Portland Greenways, Portland, Oregon

Neighborhood Greenway Street: Safe, Continuous Cycling and Pedestrian Space
Portland Greenways — Key Features:

<table>
<thead>
<tr>
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<th>Key Feature</th>
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<tbody>
<tr>
<td>1</td>
<td>Cross-streets closed off to vehicular traffic</td>
</tr>
<tr>
<td>2</td>
<td>Green infrastructure and other habitat enhancements</td>
</tr>
<tr>
<td>3</td>
<td>Separated bike lanes and new policies reduce the traffic speed to 20 miles per hour</td>
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Portland’s neighborhood greenways are a series of connected residential streets designed to prioritize bicycling and enhance conditions for walking. They function as critical alternative transportation for the city of Portland by creating safe streets where people want to bike, walk, and play. To date, Portland has more than 70 miles of neighborhood greenways.
Our streets provide a critical service in ensuring the movement of goods, including materials that enable us to meet our basic needs of food, clothing, and shelter, as well as a plethora of additional goods and services that keep us healthy, happy, and thriving.

Each day, 1.5 million packages are delivered in New York City. The vast majority of these goods — almost 90% — arrive and are moved around the city via trucks from ports, warehouses, and distribution centers in our region and beyond. Essential to smooth deliveries is the network of truck routes designated by the NYC DOT. These routes, however, were designed to limit the access of trucks in residential areas. E-Commerce
has begun to shift trends in goods movement, away from mostly large deliveries to centralized retail locations and toward a mix of multiple, smaller, and more frequent individual deliveries to individual residences. Put another way, more of the street right-of-way is being used by trucks for movement of goods and deliveries in all types of neighborhoods, and this is expected to increase. According to the NYC DOT, the amount of freight moved on city streets is expected to increase 68% by 2045.

The shift toward e-commerce has shed light on the need for changes in how we manage curbside activities and loading zones. As the street right-of-way is reconfigured in coming years, care must be taken to preserve functional truck routes to ensure efficient deliveries. Without this, the city faces a future of increasingly truck-clogged streets and curbsides. New and emerging opportunities, such as urban micro-distribution and a growing fleet of cargo bikes, could recalibrate how goods are moved and what space is needed, creating opportunities for changes in the right-of-way.

**Related Event**

Jun 2021

Impacts & Opportunities of E-Commerce in the NY Region
**Commercial Streets**

In addition to big commercial areas like office districts and shopping plazas, New York City neighborhoods are criss-crossed with commercial streets that are home to countless small businesses that support the local economy. This map shows commercial streets and commercial overlay zoning areas.

The public right-of-way of our city streets can also serve to boost local economies by supporting entrepreneurs and small businesses.
The concept of street markets predates modern history and has been found as far back as 3,000 BCE in the form of bazaars or souks which lined the streets of ancient cities in the Middle East, Northern Africa, and Western Asia. The term “street food” stems from the food that was typically sold to a given cities’ residents of limited wealth whose homes did not have hearths or ovens in which to cook food. Today, street food is a thriving part of everyday life in New York City, sold in food trucks and carts along city streets. Other vendors, including artists, craftsmakers, and other entrepreneurs sell their wares directly to the public seasonally at holiday fairs and markets throughout the city, and at flea markets and permanent indoor markets as well. While New York City has recently increased the cap of street vendor permits by 4,000, limits on space and capacity to enforce leave many food vendors, small business owners, and entrepreneurs waiting for opportunity or operating illegally.

Our vision for the future right-of-way includes the use of public street space to create local markets where vendors can sell a diversity of locally-made products directly to consumers on the streets. Working closely with existing brick-and-mortar retailers, the city could help to facilitate a balanced approach that increases local commerce through the development of a public street market program where low-cost stalls are erected and leased to local vendors on a temporary, rotating basis. The stalls could serve as incubator spaces, much like the food truck program has incubated new brick-and-mortar restaurants in the city.

New York City’s Open Restaurants program has created much needed outdoor dining space providing needed relief to restaurateurs and diners. Though created to mitigate the COVID-19 pandemic, Open Restaurants exemplifies creative, adaptive use of the right-of-way. At the same time, we need to ensure that more private uses in the public realm — from loading zones to dining sheds — are optimized with the greatest amount of public benefit possible.

**ADVANCING LOCAL FOOD PRODUCTION**

As a sustainable urban system, community gardens have been found to provide multiple benefits to the neighborhoods in which they are located. These include increased food supply, social cohesion, and attachment to place, as well as green infrastructure benefits such as the mitigation of urban heat island effect, the capture of stormwater, and increased biodiversity. New York City is home to the nation’s largest urban gardening program, Green Thumb, which provides programming and managerial support to more than 550 gardens throughout the city. Despite the success of this program, many community gardens remain vulnerable to gentrification, privatization, and other development pressures. Many of the gardens
at risk are those found on unprotected, and thus non-public, developable land. With both a shortage of affordable housing and more than 1.5 million New Yorkers experiencing food insecurity, predominantly in communities of color and in those with limited wealth, the city could be forced to choose between one good use over the other on limited land. The public right-of-way of city streets, however, could provide ample space to increase the number of community gardens in more New York City neighborhoods, particularly those that could benefit the most from them, while maximizing the city’s ability to develop affordable housing.

CREATING THE COMMONS

Neighborhood Streets
The vast majority of streets in the City serve primarily as access to people’s homes. These are the types of streets that once served as the “front yard” for New Yorkers, before autos dominated the street.
Before autos dominated the space, the public right-of-way on neighborhood streets was a popular place for a variety of activities including stickball, hopscotch, jump rope, and other street games now more common in parks or other public spaces.

Parents could feel assured their children were safe because they were just out the window or up the block. New Yorkers lost this “front yard” when autos became the dominant use on city streets. Re-envisioning the right-of-way on city streets could create a new network of public commons that serve as the front yard for millions of residents. Each neighborhood could work together to decide what features they’d like in their yards and help to maintain them. These spaces could offer a range of uses from shaded seating areas and plazas, to protected areas for bikes, skates, and scooters, or blank canvases of concrete for chalk art, and yes, hopscotch. This system of public commons would offer something in high demand in New York City — additional space — while providing fertile ground for community building.

Case Study — Barcelona Superblocks, Barcelona, Spain

Neighborhood Active Street: Safe, Active, Community Streets
Barcelona Superblocks — Key Features

1. Shared or closed street for pedestrians and commercial/retail activity
2. One-lane road maintained for local traffic
3. Large trees preserved for shade, stormwater management, and mitigating warmer temperatures

Over the next decade Barcelona will expand its current Superblock Program and convert its entire central grid into a greener, pedestrian-friendly area almost totally cleared of cars. The Superblock Plan requires that vehicle traffic be permitted only around the perimeter, leaving streets within the district only accessible by motor vehicle to residents, essential services or deliveries. 21 streets in Barcelona’s Eixample district will become a kind of byway all-but-barring cars, and Barcelona will free up space for 21 new pedestrian plazas at intersections.

Natural Systems
Stormwater on the Surface

Buildings and streets channel rainfall rather than absorbing it. During extreme rainfall events such as Hurricane Ida, that water can cause serious flooding. This map shows the topographic flow lines and areas vulnerable to flooding during an extreme rainfall event.
Where the water was

One only needs to look at a historic map, like the famed 1874 Viele map of Manhattan, to see New York City was once teeming with streams, ponds, and freshwater springs. As the City transitioned to an urban metropolis, these increasingly polluted waterways and water features became a threat to public health and obstacles to development.

Through sophisticated engineering many of the city’s historic waterways have been filled in or buried in an intricate network of underground tunnels that today are part of the complex sewer system.

This means that during periods of heavy precipitation, the flow of buried streams and underground springs merge with stormwater from the street and untreated sewage in volumes that overwhelm the capacity of wastewater treatment plants. The result is combined sewer overflow events (CSOs) responsible for the discharge of more than 27 billion gallons of untreated wastewater and polluted stormwater into New York Harbor each year.

27 billion gallons of untreated wastewater and polluted stormwater flow into New York Harbor from combined sewer overflows each year.
Our combined sewer system means that during even moderate rainfall, the mix of stormwater and raw sewage is released into NYC waterways, not unlike an overflow drain on a bathtub. The most feasible prevention is to keep stormwater out of the sewers in the first place, by absorbing it into the ground. This map shows the catchment areas of combined sewer overflow outfalls.

These outflows present significant ecological and public health issues, as they generate algal blooms, reduce water quality and biodiversity, increase beach closures, impact fisheries, and create the potential for waterborne-disease outbreaks. More sewage and pollutants will spill into these waterways as climate change brings intensified storms, threatening communities and our natural systems.

The streets that lie above these tunnels are already part of the sewer system via the storm drains and catch basins that collect stormwater, channeling it into the underground sewer system. The remnants of Hurricane Ida tragically demonstrated what happens
when climate-induced extreme precipitation overwhelms both the underground and street-level stormwater systems.

Rain gardens, enhanced tree pits, and pervious pavement in the right-of-way, like those envisioned by DLANDstudio during the Museum of Modern Art’s seminal “Rising Currents” exhibition in 2010, can keep water out of the sewer system and help prevent it from being overwhelmed.

Our vision for the public right-of-way helps ensure city streets more effectively manage collection of stormwater and prevent its flow into the sewer system and into places with damaging consequences like our subway stations and basement homes. In addition to increased capture via green infrastructure such as bioswales, rain gardens, enhanced tree pits, and pervious pavement, the right-of-way could be used to re-introduce surface water systems such as canals or daylit streams in ways that keep water out of the sewer system while providing an amenity and reconnection to nature for the communities through which it passes. An important roadmap to advancing the goal stormwater capture and resilience in NYC, RPA supports the wholesale adoption and funding of the Wetland Management Framework for NYC, which was released in 2020 by NYC Parks and the Natural Areas Conservancy.

Simply plugging drains and allowing the water to move and collect within the street bed is another solution. These mitigation strategies will need to be designed and considered against other street goals such as removing curbs for more pedestrian friendly streets or where commercial and retail activity is located within the street beds as well.

**Case Study — Copenhagen Cloudburst Master Plan, Copenhagen, Denmark**

Neighborhood Stormwater Street: Porous, floodproof, ecosystems services
With costly intense precipitation events known as “cloudbursts” already stressing the city infrastructure, the city of Copenhagen developed an adaptive city-wide solution for managing stormwater and reducing flooding risks. The plan focuses on city-wide connected streetscape and public space solutions that combine large-scale, blue green infrastructure projects that manage stormwater at the surface with underground drainage tunnels where needed.

read the full case study
Urban Heat and Cooling

Street trees and vegetation are critical to mitigating worsening urban heat island effects brought on by climate change, but they are not distributed equitably. This map shows the percentage of each block covered in tree canopy, along with the community districts with the highest heat vulnerability index.

Just as city builders buried or filled in historic streams, waterways and wetlands to make way for development, they also cleared trees, depriving the city of the ecosystem benefits they provide.

Trees and other vegetation are essential to a healthy city. They help to cool the built environment, filter air pollutants, absorb climate change-inducing CO₂, absorb stormwater, and provide habitat for a variety of species. The New York City urban forest includes street trees that are planted in the public right-of-way. According to NYC Parks, there are over 689,000 street trees in all five boroughs of the city. Tree canopy, however, is neither evenly nor equitably distributed across NYC.
neighborhoods. In fact, Forest for All, a broad-based coalition that The Nature Conservancy helped to convene, published a report in 2021 that found lower levels of tree canopy in neighborhoods with lower access to wealth and neighborhoods with higher proportions of people of color. Many of these same neighborhoods have some of the highest vulnerability to urban heat, which is expected to worsen as climate impacts intensify. In NYC, extreme heat is the highest cause of death from extreme weather. Our vision for the right-of-way includes increased plantings of street trees and other vegetation to help cool neighborhoods and provide other benefits, particularly in those neighborhoods that have less access to trees and open space. Larger trees with greater leaf area are able to sequester more pollutants. Thicker soil sections suck the carbon out of the air. Trees and the tree canopy will keep our streets cooler, the leaves and soil will help to clean the air.
Parks

Streets link people to parks, which are essential for the health of the City’s residents. These streets could become extensions of the parks they connect to, not unlike some of the park-like greenways and boulevards that already exist. This map shows the network of parks and the streets that connect people to them.

Just as streets can be considered the city’s circulatory system, parks and natural areas can be thought of as the lungs of a city for the air quality benefits they offer as well as the space and breathing room they provide.

These vital city systems are thought of as two separate networks with little intersection between them. At best, streets serve to bring people to parks for enjoyment and use. Contrastingly, they serve as a physical or perceived impediment to park access and use. The city’s Parks Without Borders initiative has been successful at blurring the lines between where a park ends and the neighborhood around it begins by improving park entrances, edges, and park-adjacent spaces. There is more that could be done, however, and the right-of-way could play an important role in expanding experiences beyond the park and its edges, particularly in those neighborhoods so underserved by parks and open space.

The city can increase its public and open space by reimagining the public realm as one interconnected place, including parks, streets, and sidewalks. Academic research has demonstrated that walkability and safe streets lead to greater use of parks by Asian, Latino, and African American children. One method to do this is by adding additional open space by repurposing a lane of traffic to become open space, creating an opportunity for increased and equitable access. This would also spread the responsibility for open space investments and stewardship across different agencies, removing some of the burden from NYC Parks planning, operations, maintenance, programming, and community engagement staff.

Similarly, the city’s 20,000+ acres of natural areas provide critical benefits to city residents and resident wildlife. We have carved much of the built city out of the natural areas that preceded us. For those areas that remain, the public right-of-way can be used to extend the reach of natural areas through restoration, including accommodating migrating wetlands.

Related Report

Sep 2018
The New Shoreline
Integrating Community and Ecological Resilience around Tidal Wetlands
The Right-of-Way Today

In order to realize the vision of NYC streets as a network of systems, we must first understand the characteristics of these streets today, as well as the programs, policies, and opportunities that can be built upon.

A STREET TYPOLOGY

Some streets carry thousands of cars and trucks every day, serving as major arteries. Others have bustling sidewalks that help get people around, while others are quiet and lined with trees and stoops. An express bus lane makes little sense on a sleepy residential street, while a crowded shopping street may have little room for a wildlife corridor that provides space and habitat for nature to connect to nature. How should we determine what kinds of right-of-way treatments work for each street? RPA developed a street typology to narrow down the options to those that fit the uses and urban context of each street. New York City streets are divided into three types, which characterize the general purpose, uses, and design of the streets:

- Thru Streets
- Activity Streets
- Neighborhood Streets

Each of these types can be further divided, creating a robust characterization of streets and their potential uses. All public streets with pedestrian access were classified based on several attributes, including DOT functional class type, truck route status, width, surrounding land use and zoning, and nearby points of interest.
New York City Street Typology
Not all streets are the same and different types of streets merit different right-of-way treatments. RPA assessed the many characteristics of New York City streets and created a typology with five classifications: Thru Streets, Activity Streets, Neighborhood Streets, Other/Residential Streets, and Unclassified.

Thru Streets

Thru Streets are significant arterial streets where maintaining the flow of vehicles, bikes, buses, cars, and trucks is paramount. While movement may be a primary purpose, there is no reason why movement should be the only purpose of a Thru Street. They can also be commercial centers, wooded parkways, or transit corridors. There are over 3,500 miles of Thru Streets in New York City which are subdivided as:

- **Wide Streets**

  Wide streets are those over 60 feet wide, designed as major arterials with multiple traffic lanes or as stately boulevards.
Activity Streets

Activity streets are streets that have destinations that draw people from the surrounding area. These destinations typically feature commercial uses like office buildings or retail, restaurants, and services. In most cases, it is important that vehicles are able to travel along these streets, but the top priority is accommodating pedestrians and patrons. People must have room to gather, stroll, enter and exit establishments, and enjoy outdoor dining — and feel safe doing so. In most cases, vehicular traffic is still necessary to deliver people and freight to stores and businesses, and could be slowed or reduced if necessary.

Examples: Grand Concourse in The Bronx, Woodhaven Boulevard in Queens

Parkways

Parkways may also be wide, arterial streets, but with green space integrated into the right-of-way.

Examples: Eastern Parkway in Brooklyn, Pelham Parkway in the Bronx

Major Arterials

These are Thru Streets that do not fit the criteria for the subtypes above, but still serve as major arterials.

Examples: 1st Avenue in Manhattan, Victory Boulevard in Staten Island

Activity Streets

Activity streets are streets that have destinations that draw people from the surrounding area. These destinations typically feature commercial uses like office buildings or retail, restaurants, and services. In most cases, it is important that vehicles are able to travel along these streets, but the top priority is accommodating pedestrians and patrons. People must have room to gather, stroll, enter and exit establishments, and enjoy outdoor dining — and feel safe doing so. In most cases, vehicular traffic is still necessary to deliver people and freight to stores and businesses, and could be slowed or reduced if necessary.

Office District Streets

Many streets in neighborhoods like Midtown and the Financial District fall into this category. These streets are characterized by high density office uses and heavy pedestrian traffic.

Examples: Nassau Street in Manhattan, 53rd Street in Manhattan

Destination Streets

These are typical neighborhood centers, characterized by retail, restaurants, bars, and other services, all of which draw people from the area and beyond.

Examples: Smith Street in Brooklyn, 37th Avenue in Queens
 Neighborhood Streets

Neighborhood streets are low-traffic streets that primarily serve the people who live, or, in some cases, work on the street. These streets have little thru-traffic, typically feeding busier Thru Streets. The vast majority of streets in the city — 75% — are neighborhood streets. In dense, high-rise residential neighborhoods, neighborhood streets may have a fair amount of pedestrian traffic.

- **Mixed Use Streets**
  These are quieter activity streets, typically streets with a handful of retail establishments that draw people from the neighborhood.

  - *Examples: Longwood Avenue in The Bronx, Sutphin Boulevard in Queens*

- **High density residential street**
  High density residential streets tend to be lined with high-rise or large mid-rise apartment buildings in transit-rich neighborhoods.

  - *Examples: 90th Street in Manhattan, Walton Avenue in The Bronx*

- **Medium density residential street**
  These streets are found in neighborhoods with two-to-four story walkup buildings, often with good access to transit.

  - *Examples: New York Avenue in Brooklyn, Watson Avenue in The Bronx*

- **Low density residential street**
  These are streets in the lowest density neighborhoods, with mostly single-family homes. They tend to be far from transit and have low pedestrian traffic.

  - *Examples: 100th Avenue in Queens, Otis Avenue in Staten Island*

- **Non-residential neighborhood street**
  These streets are found in low density, often industrial areas, with few residences. They tend to be low-traffic overall, though frequented by trucks.

  - *Examples: 2nd Avenue in Brooklyn, Whittier Street in The Bronx*
As the primary entity managing the right-of-way, NYC DOT has a mission to “provide for the safe, efficient, and environmentally responsible movement of people and goods in the City of New York and to maintain and enhance...transportation infrastructure.”

To carry out this mission, it is organized into six operating divisions:

- Sidewalks & Inspections Management
- Bridges
- Roadway Repair & Maintenance
- Staten Island Ferry
- Traffic Operations
- Transportation Planning & Management

The division with the greatest relevance to the focus of this report is Transportation Planning & Management, which includes city street design — including Vision Zero — the development of bike, pedestrian, and public space programs, and the implementation of Select Bus Service. The following is a summary of some of the highlighted programs NYC DOT oversees in advancing greater public use of the right-of-way.

**Bike Lanes and Greenways**
Spurred by the city’s first protected bike lane in decades on 9th Avenue in Chelsea, New York City DOT has improved the quantity and quality of bicycling facilities over the past 15 years. Key to DOT’s work has been the effective redesign and reappropriation of the public right-of-way to create safer passages for cyclists. NYC’s bike network now consists of over 1,200 miles of bike lanes — including over 80 miles of protected lanes — and a growing bikeshare program that is expanding its footprint further into Queens, Brooklyn, and The Bronx. Over the past 15 years, New York has added cycling commuters at double the rate of other U.S. cities, while the rate of severe injury or fatality from cycling decreased from 5.4 per 10 million trips to 2.5 per 10 million trips. These improvements have not come without hiccups, though. The city released its 2019 Green Wave plan in response to an uptick in cyclist and pedestrian fatalities, which are dramatically on the rise again this year. The plan outlines a more aggressive target of adding 30 miles of protected bike lanes each year.

**Public Plazas**
DOT established the NYC Plaza Program over ten years ago to create community spaces using tactical urbanism strategies in partnership with business corridors. It now consists of more than 70 plazas city-wide. The program redesigned street and sidewalk space to
apportion new open space to communities and businesses. The program relies on partnerships with local business districts and community organizations who agree to maintain the spaces indefinitely. This has raised issues around the disparity in resources and capacity between plazas based on their geography and socioeconomic surroundings. Despite these challenges, the Plaza program has demonstrated how the city can redesign its public space to better meet the needs and wants of communities across New York.

**Street Seats**
The Street Seats program was established to introduce low-cost interventions on streets and sidewalks to promote more vibrant public spaces. Street Seats are located either in the road along the curb or on wide sidewalks on low-speed and low-traffic streets, encouraging New Yorkers to enjoy more of the public right-of-way with only a moderate level of design and siting considerations.

**Seasonal Streets/Street Closures (Permanent and temporary)**
The Seasonal Streets program is a newer NYC DOT program that allows community partners to identify and propose streets for temporary pedestrian prioritization during peak seasons, like Doyers Street in Chinatown. This program shuts small segments of streets from car traffic and promotes movable furniture and public art interventions to create vibrant community spaces.

**Open Streets**
NYC Open Streets is a more expansive program where NYC DOT works with communities to close blocks of streets at a time to encourage recreation and patronage to local restaurants. The city offers both temporary limited local access — which allows vehicles to slowly (five MPH) pass through — along with temporary full closure which ensures that all the streetscape is usable by communities and is closed to vehicles. This demonstrates how the public right-of-way can more actively provide space for communities, especially those without as much access to traditional open spaces like parks and plazas. During the pandemic, Open Streets served as vital refuges for people seeking to commune safely and the program is being made permanent through legislation.

**Open Restaurants**
NYC DOT’s Open Restaurants program is a citywide effort to expand outdoor seating options for food establishments on streets and sidewalks. Established as an emergency procedure to encourage social distancing while supporting the city’s restaurants, the Mayor and City Council are now in the process of making the program permanent, amending zoning text, changing local laws, developing guidelines for design and application details, etc. The permanent program is due to launch in 2023.
**Public Plaza Concessions**

NYC DOT’s Public Plaza Concession Program is a temporary program (enabled by Mayoral Emergency Executive Order #183) that allows short-term concessions on a select number of public plazas throughout the city. Activities can include a variety of commercial activities including general merchandise, crafts, specialty goods, food, and beverages, and other activities for up to 119 days. In lieu of a fee, concessionaires provide maintenance services to the plaza. The Program expires on September 30, 2021.

**NYC Streets Plan**

In 2019, NYC enacted Local Law 195 which directs NYC DOT to issue and implement a plan every five years for city streets, sidewalks, and pedestrian spaces with the goal of prioritizing safety of street users, the use of mass transit, vehicle emissions reductions, and increased access. The first plan is due to be released in December, 2021 and will include benchmarks for street improvements, such as the creation of one million square feet of pedestrian space in two years, 150 miles of dedicated bus lanes, and 250 miles of protected bike lanes, over five years, among others. Public engagement has focused on identifying which parts of the city have the most need for investments in streets and public spaces to ensure reliable and environmentally friendly transportation options.

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**Case Study — Sheffield SuDS Street, Sheffield, United Kingdom**

Green Street: Wild, floodproof, porous
### Sheffield SuDS Street — Key Features

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<tbody>
<tr>
<td>1</td>
<td>Vehicular and bus traffic are separated with designated lanes</td>
</tr>
<tr>
<td>2</td>
<td>Native plants for pollinators and other ecosystem services</td>
</tr>
<tr>
<td>3</td>
<td>Pedestrian pathways created between planted rain gardens</td>
</tr>
</tbody>
</table>

The “Grey to Green” scheme in Sheffield is the UK’s largest retro-fit SuDS project, and also the UK’s largest inner city “Green Street.” The scheme has been implemented along the length of an inner city dual carriage-way, which runs along the edge of Sheffield city center. Traffic lanes were removed and given over to extensive areas of rain gardens and bioswales, and widened pavement spaces for pedestrians. One of the main functions of the scheme is to reduce and slow down surface-water runoff. In 2007 the whole of this part of Sheffield was flooded, causing major disruption and economic damage. The grey to green scheme is designed as part of a wider strategy to reduce the amount of surface-water runoff reaching the River Don.
Realizing the Public Benefits of the Right-of-Way

As this and other reports signify — including Transportation Alternatives’ NYC 25 x 25 and our own Five Borough Bikeway — there is no shortage of alternatives or good ideas for how we can better use the public right-of-way of our city streets. We have begun to shift towards some of those uses. If the city is to realize the greatest potential for streets to benefit the public, however, we must first understand what obstacles — legal, political, and physical — may stand in the way. This section explores these obstacles, including through a legal analysis, and concludes with a set of practical and achievable recommendations, provided there is political will and public support.

Policy and Legal Considerations

Transportation System

Current programs and project precedents include Better Buses, BQX, NYC Bike Program, and Neighborhood Loading Zones.

<table>
<thead>
<tr>
<th>Use</th>
<th>Primary Agency</th>
<th>Current Program/Project Precedent</th>
<th>Rulemaking or Legislative Changes Necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Busways/Dedicated Bus Lanes</td>
<td>NYC DOT</td>
<td>Better Buses</td>
<td>None</td>
</tr>
<tr>
<td>Streetcars</td>
<td>NYC DOT</td>
<td>BQX</td>
<td>Unclear</td>
</tr>
<tr>
<td>Protected Bike Lanes</td>
<td>NYC DOT</td>
<td>NYC Bike Program</td>
<td>None</td>
</tr>
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</table>

Social System

Current programs and project precedents include Street Vending Program, Public Plaza Concession Program, Open Restaurants, Green Thumb and other GrowNYC Community Gardens, Open Streets, NYC Plaza Program, and Neighborhood Slow Zones.

<table>
<thead>
<tr>
<th>Use</th>
<th>Primary Agency</th>
<th>Current Program/Project Precedent</th>
<th>Rulemaking or Legislative Changes Necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor Kiosks/Market Streets</td>
<td>NYC Department of Consumer Affairs, NYC DOT</td>
<td>Street Vending Program, Public Plaza Concession Program</td>
<td>Necessary to expand or develop new program</td>
</tr>
<tr>
<td>Street Restaurants</td>
<td>NYC DOT</td>
<td>Open Restaurants</td>
<td>Necessary to expand or develop new program</td>
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### Natural System

Current programs and project precedents include Green Infrastructure Program and Street Tree Planting.

<table>
<thead>
<tr>
<th>Use</th>
<th>Primary Agency</th>
<th>Current Program/Project Precedent</th>
<th>Rulemaking or Legislative Changes Necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Gardens</td>
<td>NYC DOT, NYC Parks, GrowNYC (NGO)</td>
<td>Green Thumb and other GrowNYC Community Gard</td>
<td>Necessary to expand or develop new program (changes underway)</td>
</tr>
</tbody>
</table>

#### Natural System

- **Green infrastructure**: NYC Parks, NYC Department of Environmental Protection, NYC DOT
  - Current Program/Project Precedent: Green Infrastructure Program
  - Rulemaking or Legislative Changes Necessary: None
- **Canals and daylighted streams**: None
  - Current Program/Project Precedent: None
  - Rulemaking or Legislative Changes Necessary: Necessary to expand or develop new program
- **Trees and vegetation**: NYC Parks, NYC DOT
  - Current Program/Project Precedent: Street Tree Planting
  - Rulemaking or Legislative Changes Necessary: Necessary to expand or develop new program
- **Wetland areas**: NYC DOT, NYC
  - Current Program/Project Precedent: None
  - Rulemaking or Legislative Changes Necessary: Necessary to expand or develop

### Case Study — Healthy Streets / Healthy People, London, United Kingdom

**Neighborhood Healthy Streets: Safe, Sustainable Community Streets**

**Healthy Streets / Healthy People — Key Features**

1. Shared Street: Woonerf
2. Rain gardens for stormwater management
The Healthy Street / Healthy People initiative in London aims to improve air quality, reduce congestion, and help make London’s diverse communities greener, healthier, and more attractive places to live, work, play, and do business. The Plan outlines some practice steps:

- Improving local environments by providing more space for walking and cycling, and better public spaces where people can interact

- Prioritizing better and more affordable public transport and safer and more appealing routes for walking and cycling

- Planning new developments so people can walk or cycle to local shops, schools and workplaces, and have good public transport links for longer journeys

read the full case study
Reorient the NYC DOT to become the NYC Department of Transportation & Public Space

Given the authority granted to the NYC DOT Commissioner, we recommend the agency increase its role as a custodian of public space. The function of the ROW is to connect and create places by facilitating the flow of traffic (person and vehicular) throughout the city. Some of the places occur at intersections and other locations within the ROW. While there have been suggestions to create a new office to carry-out the NYC DOTs public realm functions, we see the probable disadvantage of such an entity being in conflict with NYC DOT or requiring a transfer of or shared authority between programs, which could limit efficacy.

Further, given DOT’s experience, no other agency knows the city’s streets better or has the capacity to undertake the transformation recommended. There is precedent in this as NYC DOT takes over the sidewalk cafe process in the effort to make Open Restaurants permanent. Momentum in this direction should continue and the Street Activity Permit Office and its authority to grant permits to street activities should be moved under the Commissioner at NYC DOT. Reorienting the agency to be a better steward of the public right-of-way in the ways recommended above will require mission and staffing changes, additional resources in the city budget, as well as a greater degree of collaboration with other agencies. Additionally, given the transformative nature of ideas offered in this and other reports, as well as the NYC Streets Plan process, additional engagement at the local level will be required, and staffing should be increased accordingly.

Enhance mission and develop new operating division with local reach

NYC DOT’s mission will need to be expanded to more fully embrace the Department’s responsibility for the public space of the right-of-way. The agency’s structure will need to be reorganized to reflect this enhanced mission. A new operating division focused specifically on the public realm should be elevated under a new Deputy Commissioner and fully staffed with budget increases. The division would manage the publicly beneficial activities including the Open Streets, Seasonal Streets, Open Restaurants, and other related programs, as well as collaborative work on green infrastructure. NYC DOT Borough Offices will provide critical information to strengthen this division.
Build on existing collaborations
Within NYC DOT there are various divisions that work together to address the various opportunities that can be met within the public right-of-way of city streets. The division of green infrastructure works closely with the NYC Department of Environmental Protection and the NYC Parks Department to integrate green infrastructure into the street where there is a high priority. Within NYC DOT, the Pedestrian Unit, Urban Design, and Public Plaza program collaborate on identifying sites and developing designs and new standards for improving the benefits of the public realm, including streets, plazas, under the elevated [EL] sites, etc. These existing divisions should fall under the new operating division. There should also be better coordination with the Freight Mobility group, in order to achieve the vision of better goods movement.

Grant NYC DOT the Authority for Automated Enforcement
Safety is an essential element of a new vision for the right-of-way and as we consider additional uses in our streets, better enforcement is necessary. Automated enforcement (e.g., red light and speed cameras) is proven to dramatically reduce violations, but in order for the city to expand it, state legislative action is required. Therefore, the mayor and City Council should advance legislation that grants NYC DOT the authority to expand automated enforcement.

Phase out free parking on city streets and dedicate revenue to right-of-way transformations
With over three million parking spaces on the public right-of-way of city streets — the vast majority of which are free of charge — parked autos represent the most significant obstacle to achieving the vision presented in this report. Eliminating parking spaces is controversial and will need to be done over time, in tandem with improvements to public transit. Reforming parking policies to end free parking can and should begin immediately. In taking these steps, NYC can emulate other cities like London, Paris, Copenhagen, Zurich, and Sao Paolo, internationally, and cities like San Francisco here in the United States who are increasing their share of paid parking.

The NYC DOT Commissioner has the authority to establish metering zones throughout the city. The funds collected from street meters — along with fines from violations — can flow into a “traffic improvement fund” which pays for all costs associated with the meters, and enforcement of parking rules and regulations. Remaining revenue can be used to improve traffic conditions. Working closely with the
City Council, the increased revenue from additional parking meter zones can be used to implement the vision presented in this report. Transportation Alternatives’ NYC 25x25 report estimated that expanding demand-based metered parking to 780,000 spaces could bring in at least $1 billion annually. Metered parking could be phased in over time, starting with those neighborhoods best served by transit, and in ways that allow for multiple day usage in residential neighborhoods. Additionally, as demand for electric vehicles rises, the city will need to develop a more comprehensive vision for where charging infrastructure should be located, at the curb and in garages, in ways that balance public use at the curb and equitably expand EV-usage in all neighborhoods.

**Reduce the amount of space in the public right-of-way dedicated solely to privately-owned autos**

The primary uses of streets today are private vehicle storage, connecting the various parts of the city (by private vehicle, and connecting to the surrounding region. To achieve benefits outlined in this report, officials will need to recalibrate current space allocations. We do not recommend reallocating all of the ROW away from private vehicles or even the majority, but rather finding compatibility among a variety of uses that serve the public good. We support the coalition formed by Transportation Alternatives that calls for the conversion of 25% of space for cars in the right-of-way into space for people by 2025. To get there, we will need to do the following:

- **Invest in a robust public transit system**
  The domination of city streets by the automobile will remain a reality until there is a robust and comprehensive public transit system to effectively move more people in better ways to more places. Fully implementing agency capital plans, expanding transit and transit options like the proposed Triboro, and expanding Busways are critical steps to ensuring viable alternatives to autos in the city.

- **Build the Five Borough Bikeway and invest in greenways**
  In addition to a robust public transit system, an interconnected system of protected bike lanes as envisioned in the Five Borough Bikeway plan, and those that are being developed through city greenways, will further help to reduce the demand for driving.

- **Use the streets plan to streamline parking and travel lanes**
  To create the capacity for other publicly beneficial uses in the right-of-way, space currently dedicated to travel lanes and parking will need to be reduced. NYC DOT
Develop a comprehensive vision for city streets

This report lays out a vision for reimagining how we use our city streets and promotes ideas for how to achieve them. The New York City Government, with the support of residents and stakeholders, will ultimately need to coalesce around an official vision and determine the path to design and implementation. The NYC Streets Plan is a good start, and will need to be expanded beyond its focus on bus lanes, bike lanes, and pedestrian space. The plan should also incorporate additional uses, such as the stormwater management and park extension systems previously described. Such a vision

- **Expand ongoing successful programs**
  The Policies and Programs section above outlines some of the city’s leading programs that are using the right-of-way in ways that maximize public benefit. These programs provide a strong blueprint for some of the proposals in this vision and should be invested in and expanded throughout the city, in close consultation with local residents and stakeholders.

- **Ensure effective curbside management that reduces congestion and pollution**
  New York City residents have increasingly turned to e-commerce to purchase goods and services. This increases the number of deliveries while generating significant amounts of waste — all of which places greater demands on the ROW. As NYC DOT addresses freight, the agency must continue to work with city and State agency partners to consider ways to reduce truck traffic, implement policies and programs that support charging fees, penalties, and strengthen other regulations that allow the same volume of delivery in fewer trips and incentivize more sustainable goods production and movement. This could include consolidating package delivery, limiting packaging bulk, and other strategies that improve efficiency without compromising commerce. In addition, curbside management policies, such as geofencing ride-hail pickups, appropriate allocation of loading zones, adequate day-lighting to ensure turning safety, and performance pricing must be explored and implemented. Finally, NYC’s shift to commercial waste zones should be evaluated and enhanced to minimize conflicts at the curb.

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will require collaboration across agencies to develop a long-term comprehensive vision for city streets with annual targets and a plan for implementation, informed by stakeholder input and through robust community engagement.

The following are specific recommendations for each system described above:

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**Transportation System**

- **Expand dedicated bus lanes and busways**
  RPA’s Fourth Plan provides recommendations around improved bus service and surface transportation. In particular, it encouraged NYC to launch new Select Bus Service routes, and build light rail and streetcar lines. As the success of the 14th Street Busway has demonstrated, dedicating the street right-of-way to surface transit is an effective way to provide better service to more people, while reducing congestion. The process to develop a Streets Master Plan will help to advance these concepts, but must go beyond mandates.

- **Build the Five Borough Bikeway**
  NYC should embrace the concept and recommendations in RPA’s 2020 report *The Five Borough Bikeway.* Achieving this vision will require structural changes to decision-making and governance around bike lanes, and will include both near- and long-term actions.

- **Rethink goods movement in the age of e-commerce**
  As e-commerce increases the amount of goods coming into the city and changes how goods are transported, new approaches will be needed to ensure safe, equitable, efficient, and responsible movement of goods. New York City should form an e-commerce task force that brings together all of the agencies that will have a role in adapting the city to new modes of goods movement. This should include, but not be limited to, NYC DCP, NYC DOT, NYCEDC, and DSNY (NYC Department of Sanitation), to consider how land use, goods movement, and waste management can be aligned to ensure that e-commerce does not choke our streets with additional congestion or waste. Expanding enhanced freight management programs like the Neighborhood Loading Zone program, the Cargo Bike Pilot, and the Off-Hour Deliveries program is essential to balancing access at the curb. Expansion of these programs fall primarily within the authority of NYC DOT but could require rulemaking or legislative changes to scale it beyond the city’s borders. The city should be guided by research and recommendations put forward by the National Association of City Transportation Officials (NATCO).
- **Expand city community engagement efforts**
  Whether the city expands existing programs or develops new ones, community engagement will be essential to ensuring the success of these programs. City agencies will need additional resources and staffing to fully understand the needs of a given neighborhood and their opportunities for the right-of-way. The city should commit additional resources for meaningful community engagement to advance a neighborhood-supported vision for the right-of-way.

- **Develop a neighborhood “front yard” program with slow zones**
  NYC DOT should work closely with residential neighborhoods throughout the city to consider how to bring more community space to neighborhood city streets. The program can build on the Open Streets and Plaza programs, but be tailored to residential streets, creating opportunities for gathering and play. Neighborhoods with limited public and park space should be prioritized. Slow zones should be expanded to these streets, or the five MPH rule of limited local access Open Streets could apply. Legislation may be required to clarify zoning, local laws, and design guidelines. Close engagement between the City and neighborhoods can help to ensure alignment with safety and other social needs, which may differ from community to community.

- **Ensure permanent open streets and open restaurant programs are equitable and sustainable**
  As these two programs become permanent, the city should ensure they are equitably distributed and made accessible to people of all abilities. Open Restaurants in particular should ensure there is equitable use of the public right-of-way through program guidelines and design (taking care not to displace more public uses like bike lanes). Program success should be monitored over time and improved based on measures of success.

- **Explore options to expand market concessions in the right-of-way**
  NYC DOT should work closely with interested Business Improvement Districts to consider a Street Market Concession Pilot Program that builds on the successes of the temporary Public Plaza Concession Program and finds opportunities to expand it into the right-of-way of the street. As New York City recovers from the economic impacts of the COVID-19 crisis and brick-and-mortar retail rebounds, a well-managed street market program could invite additional opportunities for local artists, craftsmakers, and social entrepreneurs to get a start. Clear guidelines about what can be sold, what streets the program can operate on, how many licenses could be granted, fees or other
maintenance requirements, and enforcement would all need to be determined, and would need to comply with legal requirements that ensure a thriving brick-and-mortar retail environment.

- **Explore ways to expand community gardens into the streets**
  NYC DOT should work closely with NYC Parks and GrowNYC to consider how street and public plaza space might support additional community gardens. Pilot projects could be carried out in communities with limited access to open space and/or food security issues. Rulemaking or legislative changes would likely be required to clarify zoning, local laws, and design guidelines.

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**NATURAL SYSTEM**

- **Significantly expand Green infrastructure in streets to collect stormwater**
  The impact of Hurricane Ida in New York City was tragic and avoidable. The following steps should be taken as part of a comprehensive program to use the streets to capture stormwater.

  - **Bolster green infrastructure program**
    NYC DEP’s Green Infrastructure program has been short of meeting its own goals. Green infrastructure already installed only manages less than a third of the volume established as a benchmark in 2010 when the program was created. When the program was launched it set a goal of managing 1.7 billion gallons a year (BGY) by 2030 (revised to 1.67 by the consent order in 2015). The latest annual report indicates the city anticipates reaching 507 MGY by the end of 2021, a time at which the program will be past half its implementation timeline. The pace of the program should be ramped up significantly, and the original goals and milestones should be reevaluated. To inform new milestones and updated programs, the co-benefits of green infrastructure including flood loss avoidance, reduced property damage, and diminished exposure to health risks should be factored in a new citywide cost-benefit analysis. This should include an emphasis on moving capital project design and implementation swiftly through greater efficiencies in process and collaboration.

  - **Build green infrastructure on every suitable city street**
    The right-of-way of city streets presents the greatest opportunity for the expansion of green infrastructure with a shared focus on flash flood avoidance and water quality enhancements. From rain gardens to bioswales to enhanced tree pits, there is no reason why green infrastructure could not be present on every city street that could support it (based on site conditions). Even with current street geometries and
configurations, there are opportunities for rethinking the materials we use for our streets that would facilitate water management.

Initially, green infrastructure should be prioritized on those streets where the greatest risk of flooding and runoff could be abated. Legislation could be required to expand the program to more places and incorporate novel approaches like daylighting streams or constructing wetlands. Ramping up this approach in concert with updated stormwater rules and expanding the capacity of the city’s drainage and stormwater systems can help to alleviate flooding and improve water quality.

- **Design streets to contain, not just drain stormwater**
  
  With more frequent and severe rain events, cities are going to have to adapt to living with excess water. While past and current policies require street designs that shed and drain water (in catch basins and pipes as described above) as efficiently and quickly as possible, future designs will be looking to streets to contain the water in the areas that can support it, based on site conditions (location of utilities, etc). Streets are designed to be approximately 6” from sidewalk grades. If we allow water to collect and pool in the streets, we can prevent more significant flooding downstream (or at the end of the pipes).

  Additionally, streets are designed and built using predominantly impervious materials and surfaces like asphalt roadbeds, concrete sidewalks, steel curb edging, and more. By swapping impervious for porous surfaces, however, our streets become facilitators to green infrastructure and an amenity. Porous asphalt, porous concrete, pervious pavers, and other permeable materials can meet structural requirements for supporting trucks and vehicles while allowing water to seep into gravel, soil, and aquifers below the ground.

- **Develop a city task force to explore opportunities for water streets**
  
  The Mayor should convene an interagency task force to study and consider opportunities for the creation of Water Streets, which could include daylighting (restoring to the surface) streams, the development of canal networks, or introducing features on certain streets that hold and convey water during storms and after. While perhaps the most dramatic of stormwater management approaches, the co-benefits of daylighting, including urban cooling, recreation opportunities, habitat creation,
the facilitation of human-nature connections, and tourism opportunities among others, ensure a dividend on the investment in addition to stormwater management.

- **Update stormwater maps**
  NYC’s Stormwater Resiliency Plan included maps that identified the areas at greatest risk of flooding from extreme precipitation. Future updates to these maps must account for localized precipitation events at intensities greater than 3.5” per hour, as modeled by the extreme scenario. Similarly, these should also factor assumptions about levels of sanitation and maintenance as a way to anticipate impacts resulting from clogged basins, debris, and garbage impeding water reaching the sewer and drainage systems. These maps should be updated to reflect data from Ida and model higher levels of rainfall and then used to advance stormwater and green infrastructure policies.

- **Use streets to restore nature in our communities**
  The “built environment” is defined by the fact that nature has been replaced by development. By all but eliminating nature from our communities, we have suffered detrimental effects from minimized health to the dramatic and tragic impacts of climate change such as extreme heat and flooding. Nowhere is this more prevalent than in communities of color and those with limited wealth. The following recommendations envision use of the street right-of-way to help equitably restore the balance between the built and natural environments and the quality of life improvements that come with restored balance.

- **Extend the boundaries of parks to streets**
  The City should continue to build on the very successful NYC Parks initiative Parks Without Borders to continue to grow the program and better integrate the space between parks and street right-of-way. For example, traffic calming measures could be used on park gateway streets to ensure that people on foot or on wheels can safely access parks. Additionally, investments in the right-of-way shouldn’t end at the boundary of the park. The city should invest in connections between the right of way and NYC’s robust nature trail system and ensure that the 300+ miles of nature trails on NYC Parkland are accessible on foot and by public transit.

- **Maximize reforestation on streets**
  The City should follow the guidance and recommendations of the 2021 NYC Urban Forest Agenda including increasing forest canopy to at least 30% by 2035. New street trees, as well as care of existing trees, will be essential to reaching that goal and the street and sidewalk right-of-way can provide ample space for plantings. Priority plantings should be made in those communities that currently lack in street trees and urban forest overall. Both the local and citywide planning efforts encouraged
Taken together, these recommendations offer a rare opportunity to rethink the city and how it operates through a vast, interconnected network of systems on our city streets. The space is there, the knowledge to carry this vision out is there, all that is needed is leadership to see this vision through.

- **Pilot a citywide wetland street program**
  With 520 miles of coastline, New York City is a coastal city developed at the expense of wetlands, nearly 70% of which were drained or filled to create areas of neighborhoods today. As climate change induces sea level rise and increases the frequency and intensity of coastal storms, remaining wetlands will need a place to migrate. The streets of coastal flood zone neighborhoods could help to support migrating wetlands, and ensure the protection, restoration, and care of the city’s remaining wetlands. The City should consider a pilot program that identifies appropriate streets in coastal neighborhoods that could accommodate wetlands, either at street ends or along the edges of existing wetlands. NYC DOT, Parks, DEP, and the Department of City Planning should work together to determine which areas are most relevant for a pilot and determine funding sources and responsibility for maintenance.
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ENDNOTES

4. N.Y.C. Charter § 383
5. N.Y.C. Charter § 2903
6. N.Y.C. Admin. Code § 19
9. Image: A modern redrawing of the 1807 version of the Commissioners' grid plan for Manhattan a few years before it was adopted in 1811. Wikimedia
10. Image: Times Square in the 1920s, AP
11. Image: Cross Bronx Expressway, Jason Paris
12. Image: Brooklyn Waterfront, 2021, RPA
18. Landscape and Urban Planning, Volume 183, 2019, Pages 36-49
19. cityharvest.org
26. N.Y.C. Charter § 2903