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Beyond the Curb NYC

Feasibility Study for Innovative Delivery Pilot Projects

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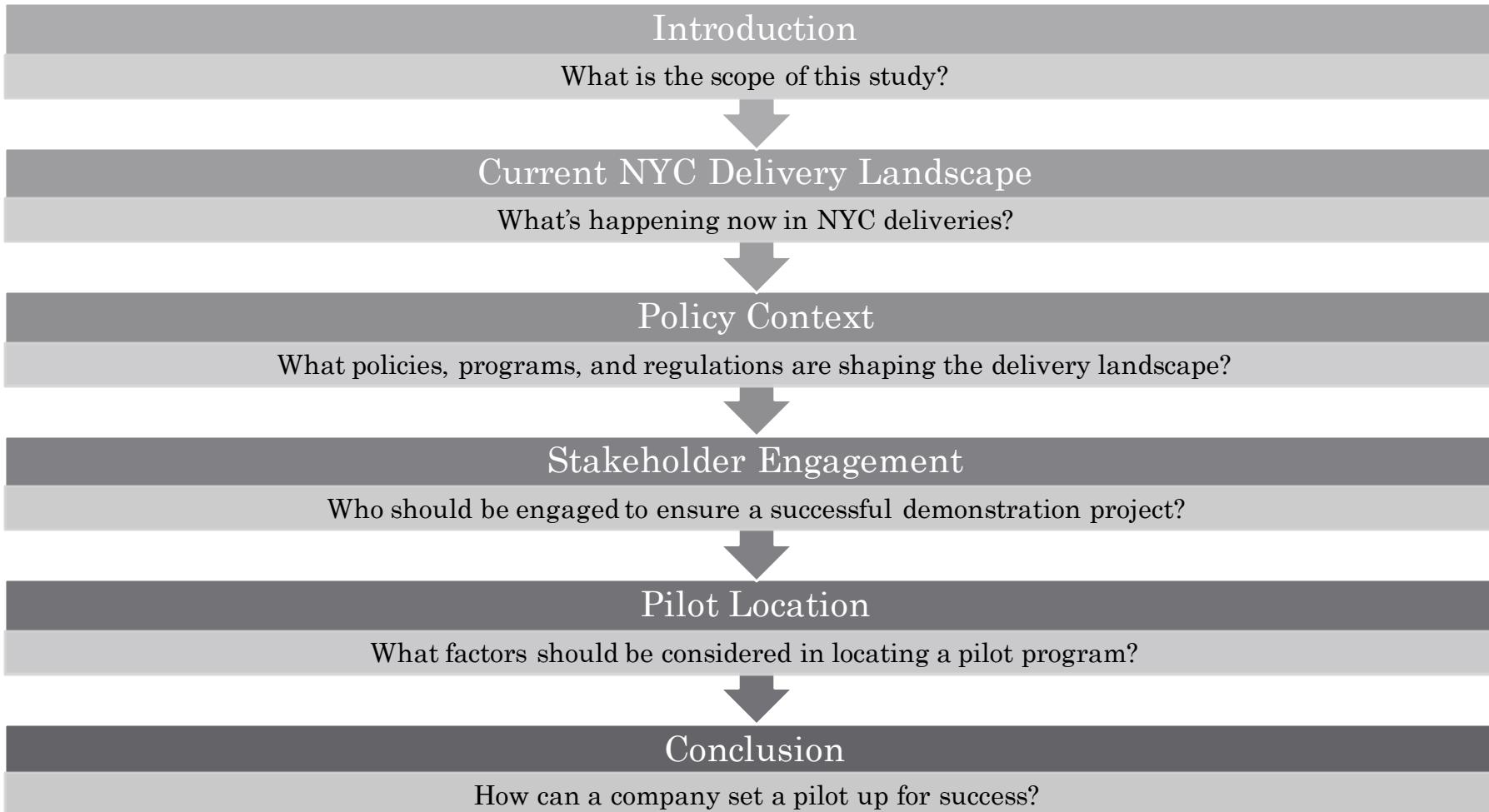
Introduction

What is the scope of this study?

Objectives

- Develop a guiding document for companies seeking to pilot last-mile delivery initiatives in NYC that align with supporting advancements in policy and technology
- Assess approaches to implementing innovative delivery solutions that:
 - Optimize curb space utilization through more efficient and effective deliveries
 - Support the use cases for rightsizing delivery modes by incorporating lightweight, human-powered electric vehicles (EVS) and EVs with smaller footprints
 - Relieve roadway congestion
 - Improve air quality in NYC communities
 - Meet the growing demand for deliveries in NYC
- Identify challenges to launching pilots in NYC and recommend best practices to overcome them

Structure



Background: Going Beyond the Curb

- White paper: “[Going Beyond the Curb: Policies & Best Practices](#)”
 - Prepared for FedEx by CALSTART
- Researched dynamic curb management policies and practices that enhance efficiency, access, and safety.
- Identified new technologies and policies to unlock the potential of curb space.
- Provided recommendations for city agencies and industry to facilitate adoption of new technologies and strategies.
 - Establish early, ongoing communications across municipal departments
 - Earn support of local organizations
 - Phase in new technologies and practices (e.g., through pilot projects)
- Scope was national and international.
- This study builds on the white paper by focusing in on NYC.

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Background: Key technologies

- Electric cargo bikes
 - Goods are dispatched from warehouse or larger trucks to bikes for last-mile delivery
 - Reduces local emissions and traffic congestion
- E-pallets
 - Secure container with electric assist used between delivery truck and recipient
 - Reduces curb dwell time as drivers don't need to sort through individual packages
 - Can be compatible with other modes e.g., cargo bikes
- Lockers
 - Goods are transferred from a larger vehicle
 - Reduces number of stops a delivery truck must make
- Microhubs
 - Staging area for transfer of goods from larger vehicles to right-sized and/or zero-emission modes
- Digital curb management
 - App-based reservations, payments, and enforcement of parking and commercial loading



Photo source: NYC Department of Transportation



Photo source: FedEx

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Current NYC Delivery Landscape

What's happening now in NYC deliveries?

Current NYC delivery landscape

- With transit ridership down and home package deliveries at an all-time high, NYC is more congested than ever before. This creates a huge opportunity for innovative delivery solutions to reduce vehicle traffic and curb dwell time, improve efficiency and reduce GHG emissions.
- 168 million freight tons are moved throughout NYC per year.
 - An 68% increase is expected by 2045
 - 89% of these goods are delivered by truck
- Private medium- and heavy-duty vehicles account for 11% of transportation-related GHGs in the city and contribute to other issues such as congestion and vehicle crashes.
- NYCDOT is exploring innovative strategies to manage these impacts.
 - Neighborhood Loading Zone (NLZ) Program
 - Commercial Cargo Bike Pilot Program
 - Off-Hour Deliveries (OHD) Program
 - Off-Street Consolidation
 - BrightDrop E-Pallet Demonstration



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Neighborhood Loading Zone Program

- Provides dedicated curb space for:
 - Commercial deliveries
 - Taxi and car service drop-offs
 - Loading and unloading personal vehicles
- Aims to reduce double parking on narrow residential streets, improve safety and efficiency
- There are currently 26 zones across the five boroughs.
- NYCDOT is currently conducting outreach to identify additional locations based on community needs.

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Commercial Cargo Bike Pilot Program

- Reduces GHG emissions, congestion and double parking by using bikes instead of trucks for last-mile delivery
- Launched in 2019 with three participants and 100 bikes
- Increased to 6 participants and 350 bikes in 2021
- Includes dedicated curb space for staging (cargo bike corrals)
 - Cargo bikes can also load and unload wherever commercial vehicles can
 - Also relies on the city's bicycle lane network
- Has proven effective, with cargo bikes delivering packages at a 2:1 or even 1:1 ratio compared with box trucks

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Off-Hour Deliveries Program

- Aims to shift truck deliveries from peak hours to non-peak hours (7 pm to 6 am)
 - Includes attended deliveries and unattended (goods left in a secure location)
 - Reduces emissions by reducing peak hour congestion and truck idle time
- Currently active in Downtown Brooklyn, Lower and Midtown Manhattan, and Jamaica, Queens where curb space is limited, and pedestrian volumes are high
- DOT provides education, technical assistance, and is exploring incentives to expand the program

Photo Source: NYCDOT



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Off-Street Consolidation

- NYCDOT seeks to partner with private garage operators to pilot off-street distribution hubs for loading, unloading, and transfer to last-mile modes.
 - Would remove some of this activity from the street, curb and sidewalk
- Microhub model: larger trucks deliver to an off-street hub for package sorting and shifting to lightweight vehicles, reducing emissions and alleviating demand for curb space.
 - Compatible with other solutions such as cargo bikes and lockers

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BrightDrop E-Pallet Demonstration

- GM's BrightDrop EP1 is a secure package container with electric propulsion assistance
- Reduces the need for package sorting at curbside (packages are pre-sorted into pallets based on destination)
- Enhances security of packages in the last 100 feet
- Compatible with EV600 electric cargo van
- Current FedEx pilot program in NYC's Diamond District
 - High-value packages, high density of deliveries



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Policy Context

What policies, programs, and regulations are shaping the delivery landscape?

Policy Context

- Developing new policies that respond to an evolving technology landscape can be difficult and time-consuming.
- Agencies are reluctant to develop new policy without proof-of-concept.
 - Pilots can help develop that proof of concept and inform future policy.
- Agencies may also be reluctant to provide guidelines on what will be approved, as this could be interpreted as formal policy by companies and the public.
 - This can make it difficult for companies who prefer to respond to clear specifications.
 - In the absence of formal policies, providers should engage agencies early and often to develop acceptable technologies and strategies.

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Regulatory constraints

- Sidewalk restrictions
 - Propulsion devices not currently allowed on sidewalks (other than mobility assistance).
 - Barrier to e-pallets.
- Vehicle restrictions
 - E.g. cargo bike width restrictions smaller than standard pallet (currently 36", legislation to increase allowable width failed)
- Access restrictions
 - [Truck route network](#) (local versus through truck routes, and routes where commercial vehicles are prohibited)
- On-street parking and loading restrictions (time, location)
 - With loading space in short supply, delivery truck drivers are often ticketed for parking in a restricted area or exceeding time limits
- Zoning and land use
 - Some uses may not be allowed as-of-right in a given zone. For example, storefront last-mile distribution centers would not be allowed outside of an industrial zone. Shared-use locker facilities and dedicated last-mile distribution hubs may also face this challenge.
 - Off-street parking rules also depend on zoning rules. For example, commercial vehicles cannot park overnight in a residential garage, which constrains opportunities for overnight charging.

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What's on the horizon?

- According to the [Smart Truck Management Plan](#), NYCDOT's strategy for improving efficiency and sustainability includes the following:
 - Expanding the Off-Hour Deliveries program, cargo bike program, and Neighborhood Loading Zones
 - Promoting off-street freight consolidation
 - Piloting shared-use locker solutions
 - In August 2021, NYCDOT released a [Request for Expressions of Interest](#) to evaluate and pilot shared use locker facilities.
 - NYCDOT is exploring the potential for [Green Loading Zones](#)
 - Prioritizing goods movement along with transit in dense commercial corridors (busways/Transit Truck Priority)
 - Shift freight from trucks to maritime and rail and develop multimodal freight hubs
 - Encourage uptake of ZE delivery vehicles (ZE trucks and lighter vehicles)

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What's on the horizon? (cont.)

- [Urban Freight Lab study](#): New York City Zero-Emissions Urban Freight Market Research to reduce freight emissions 80% by 2050
- The [Open Streets program](#) was made permanent in May 2021, opening the door for new and returning locations.
 - These could become prime areas for right-sized vehicle deliveries such as cargo bikes.
- Potential future changes to zoning code to allow more flexibility for off-street commercial parking, loading, and newer uses such as last-mile distribution hubs.
 - Will take time, as it would be part of a larger comprehensive zoning update.
- Policy trajectories are in a moment of uncertainty given the 2021 mayoral election.

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Stakeholder Engagement

Who should be engaged to ensure a successful demonstration project?

Regulating Agencies

- NYC Department of Transportation
 - Regulates roadway, curb and sidewalk use
 - Sets policy for goods movement
 - Key regulator for pilot programs
 - Office of Freight Mobility
 - Office of Transportation Operations
 - Office of Parking
- NYC Department of City Planning
 - Regulates zoning and land use
 - Off-street parking and loading for different land use types
 - Allowable uses by zone (e.g., distribution)
- NYC Department of Buildings
 - Enforces DCP regulations through permitting process

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Other Key Stakeholders

- NYC Economic Development Corporation (Transportation Division)
- Community Boards
- Business Improvement Districts
- Community Development Corporations
- Advocacy groups active in environmental and/or mobility issues
 - Tri-State Transportation Campaign
 - NYC-EJA
 - El Puente
 - The Point CDC
 - WEACT
- Elected officials
 - City Council
 - Representative(s) of target pilot location
 - Members of [Transportation Committee](#)
 - Committee on Environmental Protection
 - Borough President(s) – Antonio Reynoso (Brooklyn) has been active on clean transportation

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Respond to Stakeholder Needs

- Does your pilot respond to NYCDOT priorities? For example, does it:
 - Comply with labor laws and improve working conditions for couriers and employees?
 - Reduce crashes in Vision Zero priority locations and other areas with truck crash issues?
 - Reduce emissions and improve air quality?
 - Mitigate congestion?
 - Mitigate quality-of-life issues in areas with land use conflicts (for example, residential neighborhoods near industrial zones)?
- Has your target community developed plans or goals that your pilot can help achieve?
- Is there evidence of success for your pilot from other locations?
 - What were the positive impacts for the community?

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What factors should be considered in locating a pilot program?

Variables to consider

- **Land use**
 - Is the candidate technology best for residential deliveries? Commercial? Or a hybrid?
 - Can your solution help mitigate tensions between adjacent land uses (e.g., reduce the number of heavy vehicles departing an industrial zone and traveling through neighborhoods)?
 - Is your pilot allowed in the target location as-of-right?
- **Industrial Business Zones (IBZs)**
 - May generate high volumes of locally bound goods
- **Product**
 - What types of goods are a good fit for your solution, and where are they coming from (e.g., perishables, high-value parcels, time-sensitive deliveries)?
- **Density**
 - What density of deliveries is necessary to sustain the service?

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Variables to consider (cont.)

- **Vision Zero priority areas**
 - Can your solution provide a safer alternative to heavy vehicles where crashes are most frequent?
- **Equity**
 - Would a pilot in this location contribute to an equitable landscape of innovative delivery solutions city-wide?
- **Restricted truck access**
 - Can your solution fill a gap where trucks are prohibited?
- **Open Streets locations**
 - Is your solution compatible with open streets and other pedestrian-focused programs?
- **Infrastructure**
 - Is there adequate infrastructure to support your solution (e.g. bike lanes for cargo bikes, loading zones, staging areas for transfer of parcels, charging stations)?

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Location typologies

- **Central Business District**
 - Land uses: commercial, retail, office, mixed residential
 - Density: high
 - Needs/concerns: management of curb space in high demand, congestion mitigation
 - Examples: Times Square, Downtown Brooklyn
- **Lighter or mixed commercial**
 - Land uses: retail, residential
 - Density: medium
 - Needs/concerns: support for smaller businesses, mitigation of conflicts between uses, management of curb space in high demand
 - Examples: Steinway Street, Jackson Heights, Williamsburg, the Hub in the Bronx
- **Industrial**
 - Land uses: manufacturing, warehousing
 - Density: lower to medium
 - Needs/concerns: inadequate street network, mitigation of conflicts between uses
 - Examples: Hunts Point, Red Hook, other IBZs

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Location typologies (cont.)

- **Outer neighborhoods**

- Land uses: residential
- Density: medium
- Needs/concerns: high volumes of truck traffic moving and idling at the curb. Also, how to deal with the volume of packages once out of the truck (most residential buildings don't have adequate storage space for the number of packages now being delivered to homes)
- Examples: Forest Hills, Park Slope, Upper West Side

- **Buffer zones**

- Land use: Edge communities between different typologies,
- Density: varies
- Needs/concerns: frequent conflicts between uses (e.g., residents impacted by industrial noise, air pollution)
- Examples: Red Hook, Sunset Park



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Potential areas of opportunity

- Industrial Business Zones
 - Red Hook
 - Sunset Park
 - Hunts Point
 - Long Island City
- Pedestrianized spaces
 - Permanent Open Streets locations (TBD)
 - Fulton Street (busway, trucks restricted)
- Future multimodal freight hubs (Smart Truck Management Plan):
 - Brooklyn: The Brooklyn Army Terminal in Sunset Park
 - The Bronx: Bathgate, Hunts Point
 - Queens: JFK Area
 - Staten Island: West Shore and North Shore
- Areas identified in community outreach for NLZs (current)
- Areas identified in Urban Freight Lab study

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Example location: Fulton Mall

- Dense commercial corridor in downtown Brooklyn, third most active commercial district in the city
- Fulton Street is a designated busway through the commercial district.
 - Commercial loading zones are provided on side streets to facilitate deliveries to Fulton Street businesses.
- Downtown Brooklyn Partnership (DBP), a local community development corporation, recently partnered with Coord to produce a [curb management study](#) evaluating curb utilization in the commercial corridor and adjacent roadways.
 - Found that commercial loading spaces are on average 92% occupied, and often exceed capacity with vehicles double parking.
 - Metered parking is also at or above capacity, and vehicles frequently park in No Parking and No Stopping zones.
- DBP also released a [Public Realm Vision Plan](#) for more pedestrianization, bike lanes, and shared streets in the area.
- Strong opportunity for a pilot to meet community needs
 - Microhubs, lockers (esp. shared-use), e-pallets, or other techniques
 - Cargo bikes would be difficult as there are no bike lanes.
 - Potential community partner in DBP
 - Data available in report provides evidence of need

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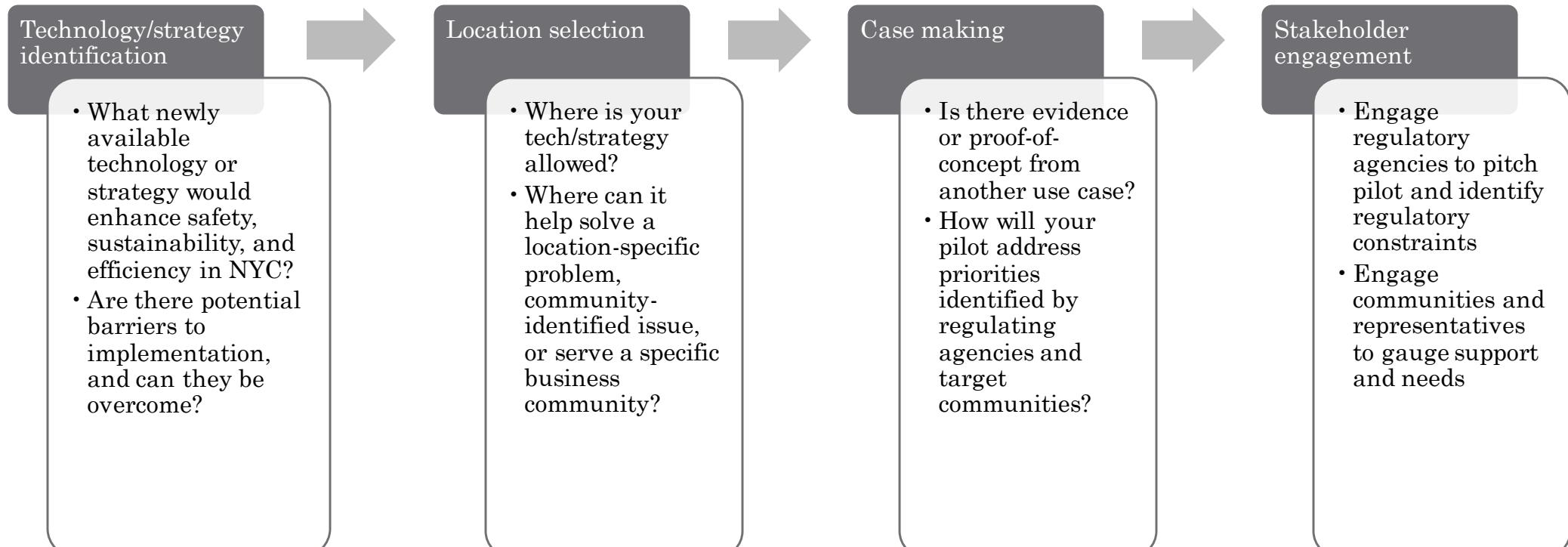
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How can a delivery company set a pilot up for success?

Pilot development process



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Next steps for delivery companies

- Key solution types of interest in the city:
 - Shared use lockers that host multiple delivery companies, including smaller and start-up companies
 - Hubs for off-street staging and consolidation
 - Expanded cargo bike presence
 - Technologies aiding secure unattended off-hour deliveries
- Emphasize solutions that:
 - Enhance geographic equity (e.g. focus on outer boroughs)
 - Support worker well-being
 - Are compatible with pedestrian-friendly programs such as Open Streets
 - Mitigate safety and congestion issues
 - Advance emission reduction goals (reduce GHG emissions by 80% by 2050)
- Look out for:
 - New policy directions after mayoral transition
 - Forthcoming Urban Freight Lab market research
 - Evolving labor laws (e.g. employee classification) and curb regulations (e.g. green loading zones)
 - Freight implications of next comprehensive zoning update

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