Local Law 184 of 2019 Submission

Department of Citywide Administrative Services (DCAS)
May 18, 2020

NYC DCAS
Citywide Administrative Services

Executive Summary

New York City (NYC) has been a leader globally in private sector off-hour deliveries (OHD), a freight demand management tool that shifts deliveries from daytime (6am-7pm) to off-hours (7pm-6am). OHD has shown benefits including reducing truck traffic and congestion at peak hours, improving business operations and improving air quality. To date, NYC Department of Transportation (DOT) has committed to partnering with 900 retail locations in congested areas across NYC, including Midtown Manhattan and Downtown Brooklyn, to shift to off-hour deliveries. Participants saw delivery speeds increase by 50% during off-hours compared to morning (8-10am) deliveries and by 130% compared to midday or evening (10am-4pm; 4-10pm) deliveries.

As part of Local Law 184 of 2019, NYC Department of Citywide Administrative Services (DCAS) was tasked with exploring the feasibility of off-hour deliveries to city facilities in Manhattan south of 60th Street and two other highly congested areas throughout the City. The law also calls for a phased implementation at feasible facilities between August 2020 and May 2021. This report includes the seven required sections called for in the local law.

This report has been informed from the important learnings from the NYC Department of Transportation and Local Law 189 of 2017; with input and thought partnership from NYC Department of City Planning, NYC Department of Transportation and internal DCAS teams. Further collaboration with agency and external partners was limited by staff resources diverted to respond to the COVID-19 pandemic response. Partner availability will be of utmost importance in order to further assess feasibility and successfully implement OHD at feasible sites.

Following an initial study and exploration of the feasibility criteria, DCAS has found that off-hour deliveries to city facilities, and other freight demand management practices such as delivery consolidation, have the potential to benefit New York City as a whole through:

- reduced congestion during daytime hours
- improved air quality due to more efficient deliveries and less truck idling
- improved street safety during peak hours

In addition, the City of New York would benefit from:

- more efficient and reliable deliveries, saving time for City employees receiving deliveries
- more efficient services provided by internal city warehouse and delivery teams, and
- potential reductions in the cost of transporting goods bought by the City through efficiency gains for private transporters
- increased contactless deliveries, reducing health risk to employees if unattended OHD are made possible

Implementing off-hour deliveries to city facilities requires consideration of several factors including:

- Transporter characteristics including City vs. non-City transporters, ability to shift schedules, verification of driver credentials and others
- Building characteristics including location, ownership, lease characteristics, loading zone or dock availability, security presence, freight elevator availability and others

- Goods characteristics including perishability, volume and type of goods, existing contract language and vendor participation, among others
- Receiving characteristics including feasibility of unattended deliveries, screening processes, existing agency delivery requirements and others

There are several key challenges that may affect off-hour delivery implementation at city facilities including:

- *Data availability*: there is little data available on deliveries after the point of purchase. Coordination is often done between the purchasing team and the vendor directly, with limited data collected. At the point of receipt, some mailroom staff maintain receipt logs, but there is no centralization or standardization across the City. This makes it difficult to identify deliveries best suited for OHD, to partner with vendors, identify delivery scale and frequency, as well as realize all the expected benefits from shifting to OHD.
- *Labor regulations*: switching to OHD may have labor impacts if work schedules need to change or existing staff who work during off-hours are asked to play a role in delivery receipt
- *Limitations in leased sites*: Many building leases require deliveries to be made during typical business hours due to loading dock and freight elevator operator availability. At sites where the City is a primary tenant, it may be possible to negotiate this term; while sites with a smaller City footprint may continue to require daytime deliveries.
- *COVID-19*: City agencies and potential industry partners have been engaged in COVID-19 response and mitigation planning, restricting the ability to coordinate and plan for OHD implementation. It is not known when agencies and other partners will have available resources to dedicate to OHD planning.
- *Existing procurement practices*: For purchases made without existing citywide contracts, agencies often change vendors regularly. This makes it more difficult to sustain relationships with verified vendors and transporters for OHD.

Taking into account these challenges and the current impact of COVID-19 on DCAS and citywide operations, DCAS recommends the following path forward, dependent on partner availability:

- Introduce language allowing for off-hour deliveries into new procurement contracts and lease language
- Identify quick wins to allow for contactless deliveries with existing delivery practices to reduce risk to staff
- Establish a project team made up appropriate representatives including, but not limited to, NYC Department of Citywide Administrative Services (DCAS), NYC Department of Transportation (DOT), Office of Management and Budget (OMB), Mayor's Office of Contract Services (MOCS) and the Mayor's Office of Operations. The project team will be tasked to:
    - Develop framework for City agencies and building managers to write delivery service plans (DSPs) that include delivery consolidation, off-hour deliveries and improved data collection practices.
    - Analyze available data on purchasing and deliveries through agency data and the MOCS PASSport system to identify top receiving locations and vendors.

- Build partnerships with industry and work with vendors that have large City contracts to shift to OHD.
- Engage appropriate contacts across agencies who can lead delivery consolidation and shift to OHD on-site.
- Manage shift to off-hour deliveries where possible with internal city delivery teams including DCAS Central Storehouse.
- Identify sites in Lower Manhattan for off-hours delivery pilot.
- Pilot off-hour deliveries at identified city sites in Lower Manhattan.

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Local Law Background

Local Law 184 of 2019 (LL 184) calls for the Department of Citywide Administrative Services (DCAS) to submit a report for the framework of the feasibility of city facilities in the central business district (defined in the law as Manhattan south of 60th Street) and two additional highly congested areas of the City, to be determined by DCAS. This report is the first of five required reports to be submitted to the speaker of the City Council and the Mayor pursuant to the requirements of LL 184.

The Local Law was sponsored by Council Members Costa Constantinides, Ydanis Rodriguez, Stephen T. Levin, Mark Levine, Helen K. Rosenthal, Ben Kallos, Andrew Cohen and I. Danek Miller.

About the Study: Goals

The study aims to develop a framework for the feasibility of city facilities in the central business district and highly congested areas receiving off-hour deliveries (deliveries between 7pm and 6am).

The report itself is not a recommendation for or against the implementation of OHD within city facilities; it is a discussion of an opportunity and feasibility of using off-hour deliveries to city facilities to support the City's congestion reduction goals and to modify the traffic patterns within daytime delivery.

About the Study: Requirements

According to Local Law 184 of 2019, the first required report must include seven sections including "such study shall include… the following:

1. *A discussion of the problems that currently exist with respect to daytime deliveries at city facilities;*
2. *A discussion of the existing models of off-hour delivery programs in both the public and private sectors;*
3. *Recommendations for actions that the city could take to expand off-hour deliveries at city facilities;*
4. *An assessment of the feasibility of deploying personnel to receive off-hour deliveries to city facilities;*
5. *Recommendations for actions that the city could take to enable off-hour deliveries at city deliveries without the presence of personnel;*
6. *Recommendations for actions that the city could take to reduce adverse impacts on communities adjacent to city facilities receiving off-hour deliveries, including through the use of low-noise equipment and operating procedures;*
7. *Recommendations for processes through which building and facility delivery and service plans could best be created, implemented and refined over time for city facilities, including through delivery scheduling, vendor consolidation and safer and more environmentally sustainable freight vehicles."*[1]

1 https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3704306&GUID=26DF19B6-B53E-44D8-9AAB-45D61EF3E7BA&Options=ID%7cText%7c&Search=off-hour

This report is broken into seven sections based on the above requirements.

About the Study: Definitions

Key definitions impacting this report and ultimate implementation of OHD at city facilities are:

- "City Facilities" is a facility used or occupied or to be used or occupied to meet city needs that is located on real property owned or leased by the city or is operated by the city or pursuant to a written agreement on behalf of the city. Following the recommendations of DCAS Office of the General Counsel and the City's Law Department, the following facilities were not included in analysis: Court facilities, MTA facilities (including TBTA and NYCT facilities) , Brooklyn (BPL) and Queens Public Library (QPL) facilities, CUNY facilities, School Construction Authority (SCA) facilities, and Economic Development Corporation (EDC) facilities.
- "Central Business District" is defined as the area lying south of and including 60th street in the borough of Manhattan. Based on the city facilities definition above, there are 623 identified city facilities south of 60th Street, whose primary use is used for city purposes on city owned or city leased properties.
- "Highly Congested Areas" are areas outside of the central business district with high levels of traffic congestion and high densities of city facilities. DCAS has partnered with NYC Department of City Planning to identify highly congested areas for study focus.

Section 1. Discussion of current problems that exist with respect to daytime deliveries at city facilities

The key stakeholders involved in daytime deliveries are the City staff members at the City agencies involved in the request, procurement, and the receipt of the packages; delivery service providers (or transporters) including internal transporters from DCAS' Storehouse as well as external vendors; street users including drivers and cyclists; and sidewalk users including pedestrians and truck operators making deliveries.

The following lists the current problems of daytime deliveries at city facilities.

Service time

Daytime deliveries made at city facilities need to contend with the limited, and typically defined, weekday business hours of operation. City facilities typically operate from 8am - 5pm, with the bulk of deliveries accepted within a few set hours of the day. Many City agencies are housed within leased facilities which typically further restrict the accessible operating hours of loading docks and freight elevators to daytime hours for each tenant.

There are a number of operational logistics involved in daytime deliveries. City facility staff (also known as "receivers") that are authorized to receive shipments, need to coordinate with the transporter to accept the delivery in appropriate loading / unloading area, confirm delivery of products, sort the packages and route to the proper recipient. There is also the potential of deliveries being brought to the City facilities outside of the designated time; which creates a sense of unreliability among the parties and disruption of regular operations within the day. Some agencies rely on mailrooms to handle package and delivery receipt, while others have more varied operations depending on the number of facilities, type of typical delivery and capacity of the mailroom.

From the perspective of the transporter, service time includes the time a driver spends in finding parking, coordinating with City staff, loading and unloading the packages (further challenged if obstructions impede the path of travel and sidewalk traffic), and navigating the path to the appropriate City facility delivery location. At sites with loading docks, activities such as finding parking and managing street or sidewalk can be avoided, but tight delivery windows can cause delays if a driver arrives to late or too early and the delivery is rejected, or the driver is forced to wait.

Safety

Transporters must compete for street space with other users including drivers, cyclists and pedestrians. Limited loading docks and commercial loading zones mean that transporters often have to resort to potentially unsafe behavior including double parking, parking in bike lanes, or parking in available space on street corners such as bus stops or fire hydrants. These behaviors can cause a variety of challenges and potentially dangerous situations for pedestrians, cyclists, car drivers and transporters alike.

While temporary double parking in vehicular travel lanes is a legal practice for commercial vehicles, trucks often instead double park in bike lanes, which is not legal. This behavior can be very dangerous for cyclists, particularly during peak periods where there are high numbers of both bikes and trucks on the road. Double parking requires cyclists to merge into car traffic to navigate around a truck.

Parking in available street space designated from other uses such as bus stops or fire hydrants can also be very dangerous or disruptive to other operations. Buses need to access the curb in order to facilitate boarding and alighting, particularly for riders with mobility challenges; fire hydrant access is vital for public safety. Additionally, large trucks parking on street corners can also block sight lines of pedestrians or cyclists from drivers. This lack of visibility can make intersections very dangerous for both car drivers, cyclists and pedestrians.

In areas where streets are congested, pedestrians (including the elderly and disabled) in general face significant disruption from daytime truck traffic. Searching for space to make deliveries, trucks may block crosswalks, which are the safest crossing point on a road for pedestrians. Blocked crosswalks also mean that those who rely on curb ramps, such as wheelchair users or people with strollers, cannot access them and may have to detour to safely cross a street. Furthermore, transporters unable to find parking resort to double parking or circling the block to find an available parking space, practices which both increase general traffic congestion.

In Manhattan in particular, some freight operators use sidewalk space (which is also used by street vendors) as staging zones for local deliveries, organizing packages on the sidewalk for local delivery with handcarts. While this practice can make deliveries more efficient and reduce truck traffic, it also means that there may not be sufficient space for people to pass, particularly those in wheelchairs or with ambulatory challenges who cannot navigate past obstacles.

Operational Challenges

The lack of a centralized delivery drop-off and processing center or standardized protocols across facilities pose challenges to operationalizing off-hour deliveries at city facilities. While some city facilities may already be capable of receiving deliveries during off-hours, the process, tracking methods and the quantification of items is likely not routinely collected for analysis to improve efficiency. With the wide variation of policies across city facilities and across the City, approaches and timeline to shift to off-hour deliveries may vary based on current agency practices. Support for the shift to off-hour deliveries will have to be discussed with each agency individually.

At DCAS, the Central Storehouse located in Middle Village, Queens is limited in the number of deliveries that can be performed in a day due to the traffic congestion and the time to travel throughout the City. With deliveries occurring typically between 7am – 3pm, traffic can be a factor for receivers in that the capacity of deliveries that are able to be transported in a trip is limited.

Economic Impact

From the perspective of the transporter, the financial cost of doing business with the City in congested areas can result in parking tickets or other fines due to the need to double park or illegally park. They similarly must spend a significant amount of time in traffic in order to make deliveries. This is inefficient and increases the cost of delivering goods and may drive up the cost of using an external transporter. The increased cost for the transporter is likely to be passed on to the City in the cost of the goods purchased to account for inefficient transport during daytime hours, parking tickets and other hidden costs.

Section 2. A discussion of the existing models of off-hour delivery programs in both the public and private sectors;

Off-hour deliveries for facilities owned, managed, or leased by the City of New York can follow traffic management models developed through existing programs here in New York City and around the world. As consumption patterns change among households from shopping at brick and mortar stores to online, more trucks are using the city's grid while more people are hailing cars through apps to travel throughout the city. According to the NYCDOT, 324 million tons of goods were delivered by truck in NYC in 2017, and that number is expected to grow to 481 million tons in 2045. Today, nearly 97,000 trucks enter NYC with nearly 25,000 entering Manhattan. Approximately 20,000, or 80%, of those Manhattan-bound trucks travel between 6am and 7pm Off-hour deliveries is one measure to deal with congestion currently clogging City streets and future congestion.

While there are several examples of off-hour deliveries being implemented in partnership with private sector businesses, the NYC DCAS and NYC DOT teams were not able to find any public examples of off-hour deliveries being implemented within the public sector.

General Approaches

Broad approaches to off-hour deliveries include area-based policies, industry-based policies, facility-specific policies and noise mitigation policies.

Many of these strategies were identified as part of a University of Illinois at Chicago study of off-hour deliveries in 2014 called "Off-hour Delivery: A Pilot Project for the Chicago Region" which included a literature review of deliveries during off-hour hours.

Area-based policies can include joint delivery service (JDS) and joint staging areas (JSA). Under JDS, multiple carriers' deliveries are consolidated and then distributed to customers. This requires coordination among transporters and provides an advantage to smaller firms who are nimbler and can modify their existing operations quickly. Food carriers were found to be the companies most likely to use JDS.

On the other hand, JSA uses centralized facilities for longer haul carriers. Goods are transported to a facility during off hours, which also provides drivers with sleeping accommodations. Goods are then relayed to their destination in smaller trucks. New York City DOT has a partner who uses this model with smaller coffee shops around New York City.

Policies can also target specific industries to incentivize deliveries during off peak hours. An example of this strategy is focusing incentives on the restaurant industry to receive deliveries during non-peak hours. The incentives benefit transporters and receivers through direct tax deductions, designated parking, security and toll savings at bridges and tunnels. Off-hour deliveries can also be incentivized through the implementation of the Central Business District Tolling Program (Congestion Pricing), which charges vehicles for entering the Central Business District during peak hours. The addition of this fee acts as an incentive for transporters and receivers to shift delivery windows in order to reduce cost.

Facility policies target specific, large facilities that generate a lot of deliveries. By focusing on the facility, these policies can address barriers related to leases that prohibit deliveries outside of business hours. Coordination among facility tenants is probably one of the easiest policies to implement given the contained, shared arrangement among tenants and facility management, particularly at city-owned facilities. The cost of implementing the policies can be shared among multiple customers.

Noise policies target drivers, facility operations, materials and technologies. Policies that address the actions of drivers and receivers can be administered through industry codes of conduct, though enforcement requires a strong partnership with industry. Other policies can guide transportation firms on low-noise equipment and materials that adequately absorb sound. Enforcement also plays a role; agencies will need to investigate complaints and enforce local laws to ensure residences and business are not disturbed due to nightly deliveries. Enforcement, however, adds staffing and equipment costs on the City's side.

London

London was an early adopter of policies to divert business and passenger travel to off-hour deliveries across a broad area of the city. In 2003, the City created a Congestion Charge Zone in Central London, charging all drivers who enter the area by motor vehicle between the hours of 7am and 6pm, Monday through Friday. The initiative, also known as congestion pricing, was an early example of congestion management approach that has been adopted in many other cities worldwide in the intervening years. Although London's congestion zone does not prohibit day-time deliveries, it offers a concrete incentive to deliver goods outside of peak hours.

Outside of congestion pricing, Transport for London (TFL), the local government body that has oversight for much of the road and rail transport systems in the London metropolitan area, has worked with businesses since 2015 to re-time deliveries in the city. Their program has helped businesses at more than 500 sites reschedule 166,000 deliveries to non-peak times. Like NYC, London is largely dependent on truck deliveries. More than 90% of all freight is delivered by road, and one-third of traffic are delivery vehicles between 7am and 10am.

TFL touts cost savings as one of the biggest advantages of delivering in off hours, in addition to environmental benefits. These cost savings accrue through gained efficiencies and certainty in transport times. The agency estimates that delivery times are reduced by more than 18% when made off-hours. In terms of environmental benefits, TFL measures improvements to air quality through the program – reduced emissions are directly related to reduced delivery and service times by reducing the amount of time trucks spend idling in traffic. For example, one business in London saw a 30% reduction in CO_2 emissions and a 30-minute time savings for each direction in overall journey time by moving deliveries at two locations to just one hour earlier. Another un-named food company was able to reduce its fleet by 18 vehicles by consolidating and switching deliveries to off hours. Finally, London has also been using participation in off-hour deliveries in a marketing scheme to promote businesses that switched delivery times, potentially bringing additional customers.

New York City

The New York City Off-Hour Deliveries Program was originally conceived as a pilot project between 2007 and 2010 and led by the New York City Department of Transportation (DOT), US Department of Transportation (USDOT), Rensselaer Polytechnic Institute, Rutgers University, ALK Technologies and New York University. It served as a traffic demand management intervention focused on 25 businesses in midtown Manhattan who shifted the delivery of goods to their more than 400 locations from peak hours (between 7am and 4pm) to off-hour hours (between 7pm and 6am).The pilot included 8 transporters in addition to the receiving businesses.

The pilot was considered a success, resulting in some participants fully implementing an off-hour deliveries policy at their business locations. Benefits were shared between the businesses receiving goods and the businesses delivering them. Goods delivered outside of store operating hours provided a reliable window for staff to prepare the goods and stock shelves without interruptions to operations. Receivers benefited from more certain delivery times as transporters experienced faster drive times through less crowded streets. Receiving businesses also gained direct savings in reduced delivery costs.

Transporters reported overall improvements to delivery efficiencies, including reduced delivery times and costs for fuel and parking fines. Disruptions to delivery schedules were reduced as delivery windows became more predictable. The utilization rate for trucks increased and drivers experienced fewer disruptions along their delivery routes.

More specifically, the pilot program resulted in a decrease in Manhattan driving times by 50% to 130%. The service times in drop-offs also improved, resulting in a reduction of the median delivery time to 25 minutes during off-hour hours from over 60 minutes for those delivered during peak hours. Improvements in service times were attributable to parking closer to buildings and shorter waits for freight elevators. Outside of delivery efficiencies, participating businesses also paid fewer parking fines.

The pilot program's success led to the continuation of the program through the NYC DOT, with NYC DOT committed to partnering with businesses to serve 900 locations with OHD to date. The program is voluntary and while pilot participants received a financial incentive, current participants do not.

New York City is also scheduled to adopt congestion pricing to enter the core of Manhattan in 2021 after receiving Federal approval. Advocacy and planning for congestion pricing in NYC began in 2007 under Mayor Michael Bloomberg, but the charge was initially blocked by the New York State legislature. Similar to London, congestion pricing may provide a disincentive to receivers and transporters to continue deliveries in the congested core of NYC during daytime hours.

Toronto and Nestle Canada

Nestle Canada, the world's largest food company, engaged researchers in 2015 to quantify the costs and benefits of implementing off-hour deliveries for its ice-cream division. The researchers at the University of Waterloo found that significant efficiencies and savings could be

gained through rescheduling deliveries for its ice-cream fleet. Three to 10 percent of routes, and double the number of trucks, could be cut by evenly balancing deliveries during peak and non-peak hours. However, in order to implement a revised schedule, 25% to 80% of customers would need to be willing to accept nighttime deliveries. The optimized schedule could not be achieved with smaller shares committing to a new delivery shift. Information was not available about how many customers were willing to accept off-hour deliveries.

Section 3. Recommendations for actions that the city could take to expand off-hour deliveries to city facilities

The following lists the actions the city should take in order to assess and implement off-hour deliveries to city facilities.

1. Confirm list of stakeholders and establish data collection process and delivery service plan

Teams across the City hold a stake in delivery processes. While current practices vary across agencies, individual teams are usually responsible for identifying the goods they need, coordinating purchases with fiscal and procurement teams, and then receiving them directly or in coordination with mailrooms. At many agencies, there is no centralized tracking or scheduling of deliveries; in many cases, teams are responsible for communicating directly with vendors. In addition, key stakeholders are building managers (including DCAS and private owners), the DCAS Central Storehouse and staff, other City warehouses (such as DOHMH and NYCEM), security personnel, contract holders (including individual agencies as well as DCAS and MOCS for citywide contracts), and OMB. Each of these stakeholders plays a part in developing new approaches to deliveries, approving necessary costs, collecting needed data and developing new SOPs.

Shifting to off-hour deliveries for city facilities that receive large volumes of goods could help to reduce local truck traffic by noticeable amounts. In order to identify major receiving locations and vendors across agencies and locations, consistent data collection points regarding individual deliveries occurring in a day at city facilities should be established. As a result of data collected at a site, coordinating vendor deliveries made for different city agencies located in the same building could provide an opportunity to streamline processes, create delivery efficiencies and encourage vendor consistency.

Additionally, delivery service plans (DSPs) can help to consolidate the total number of deliveries, and improve efficiency within a building, group of buildings used by a single agency, or even a group of buildings used by different agencies in a given part of the City. At a high-level, DSPs help to provide insight into the existing delivery landscape, and identify where efficiencies can be realized through consolidation, or identify deliveries appropriate for the off-hours. More detail on DSPs is available in section 7 of this report.

2. Further assess implementation of unattended off-hour deliveries at each site

Deliveries made in off-hours typically fall into two categories – attended and unattended. Attended deliveries means that there are staff on-site from the receiving organization to manage the delivery; which typically occurs during daytime deliveries. Attended deliveries are also appropriate for high-value goods or those that need immediate attention upon delivery.

Unattended deliveries mean that there are no on-site staff from the receiving organization while the delivery is being made. There are several typical methods used to manage unattended off-

hour deliveries, discussed below. Additionally, for City buildings that have security or other overnight staff, a modified unattended delivery policy may be possible. While these staff may not be responsible for screening goods, they may be available to oversee delivery or ensure that delivery staff only access designated areas.

In our current social distancing environment, unattended deliveries can help reduce the risk of COVID-19 exposure to all involved. Several factors should be considered in implementing unattended off-hour deliveries, dependent on whether the delivery personnel are a city employee or a private transporter, as well as building infrastructure considerations.

City Staff Making Deliveries

There is a possibility that deliveries made from the DCAS Central Storehouse to City agency locations by City workers can be done without the receiving agency staff being present. Preliminary steps would include:

- establishing protocols and security measures for City workers to access appropriate facilities during off-hour to deposit goods
- screening procedure after receipt
- tracking procedure confirming delivery and receipt
- designating a secure space for inventory

Private sector staff making deliveries

Considerations for deliveries by private transporters may be different than for City staff, likely dependent on delivery location and the level of access needed to a site. Agreements could be made with a subset of transporters to assure consistent delivery teams who can be screened (if necessary, for entrance to building) prior to deliveries being made. Otherwise, the preliminary steps necessary for private sector deliveries are similar to those for deliveries made by City staff:

- establishing protocols and security measures for private transporters to access appropriate facilities during off-hour to deposit goods
- screening procedure after receipt
- tracking procedure confirming delivery and receipt
    - could include barcoded pallets that list all items included on pallet
- designating a secure space for inventory

Agencies or the City could also set required delivery windows, such as 4am-6am, to ensure that goods are not unattended for long periods of time. If a transporter cannot make the delivery during this window, the agency would have the ability to refuse the delivery and require it to be made during the established window timeframe, in order to increase security and efficiency. If deliveries are attended by city staff, the use of a time window can reduce the impact of schedule shifts. For instance, a city staff member that is typically scheduled to work 6am-2pm may be asked to shift to a work schedule of 4am-12pm instead in order to accommodate scheduled off-hour deliveries. This can reduce the impact on staff by allowing for smaller shifts in work schedules instead of requiring a full switch to an overnight schedule. Delivery window reservations and tracking can be managed through a delivery management system.

Infrastructure Considerations

During a daytime delivery, goods may be received and stored directly; during unattended off-hour deliveries, goods are typically left in a designated location for storage in the morning. Alternatively, transporters can be given access to end point storage locations in some sites, depending on access requirements and architecture. This is typically done for perishable items requiring cold storage.

In order to identify secure locations for unattended deliveries, designated space needs to be identified that transporters (city staff or private sector) can leave goods when making off-hour deliveries. These methods vary in the cost to install, and an evaluation of suitability by site would be needed to identify approximate cost and the most suitable method. Some methods for secure unattended off-hour deliveries include:

- *Double doors*: the driver is provided with a key (or similar access code) to an exterior door that leads to a small storage area separated from the rest of the facility by a second door. This enables the driver to make deliveries without disruption to current operations or access to undesignated areas (thereby decreasing liabilities). Goods are then screened and stored when receiving staff arrive to the site the next day.
- *Virtual Cages*: restricts areas that transporters are not able to access through the use of sensors. This is an option when a physically separate space is not available and could take place in a portion of a lobby or similar space.
- *Key deliveries*: the driver is provided with a key to the establishment which enables the drivers to deposit the goods at a preset location, e.g., inside a walk-in refrigerator. Alternatively, door keys can be stored in a manual/electronic key box which the driver can be provided with a password or security code to open the key box and use the door key to open the establishment. The key box enables the city facility to control who has access to the establishment; periodically changing the key box password will ensure security.
- *Security cameras: S*ecurity camera could be installed to monitor unattended deliveries in off-hours. Footage could be reviewed simultaneously if there is other security monitoring on-site, or periodic reviews could be done of older footage.
- *Electronic doorman:* A city staff member as a remote operator, assisted by security cameras and radio and/or phone, can grant access to the establishment to authorized transporters. These systems require identification checks to ensure that only authorized individuals are allowed access. This could also align with existing background check processes, such as those required to deliver to the World Trade Center, to streamline operations and reduce duplication of efforts. While an electronic doorman would require investment in the technology, it would allow for a single staff member or team to manage multiple sites, reducing the total number of enforcement and security staff needed across the City. It would also allow for in-person monitoring while maintaining social distance, if necessary.

3. Shift a subset of existing city delivery fleet to perform off-hour deliveries

Currently there are several City-owned and operated warehouses throughout the New York metropolitan area, including DCAS' storehouse in Middle Village, DOHMH's warehouse in New Jersey and NYCEM's warehouse in Bushwick. Each of these has typical procedures for receiving goods and making deliveries to other City sites.

The NYC DCAS team reviewed DCAS' storehouse operations and found that there is a possibility that a subset of existing DCAS delivery fleet and staff could be shifted to work schedules that enable increased off-hour presence (between 7pm – 6am) to make deliveries possible during less congested times from the DCAS Central Storehouse to partner city facilities. Typical work schedules in the DCAS Central Storehouse are from 7am to 3pm; schedules could be shifted to include evening or overnight hours. While operations will still be necessary during the day, analyzing current demand and delivery patterns can help to identify which deliveries could be made during off-hours to the increase efficiency of delivering during less congested times. Off-hour deliveries should use the maximum capacity of a delivery team in order to ensure the highest benefit. Deliveries could also be scheduled so that a team delivers to less congested areas of the City during daytime hours, and then makes needed deliveries to highly congested areas and Manhattan south of 60th during the off-hours. This would allow for schedules that overlap the 6am or 7pm boundary, instead of requiring teams to work a full overnight shift.

Shifting schedules would require review with DCAS Administration and Human Capital teams, Office of Labor Relations (OLR) and potentially union representatives, but could help reduce the City's contribution to congestion and increase the efficiency of deliveries from City warehouses.

4. Consolidate deliveries within a city facility or building with multiple city tenants

Based on preliminary conversations with several city agencies, package deliveries are typically not centrally tracked across agencies. As a result, there is a likelihood of multiple small deliveries in any given week from the same vendor to a single facility or to nearby facilities. Tracking these deliveries centrally within an agency, within buildings with multiple agencies or across nearby facilities would allow for improved consolidation and a reduction in the total number of daytime trips to a given city facility or group of facilities within close proximity.

Additionally, utilizing the established DCAS Central Storehouse or other City-owned warehouses as a consolidation center for specific items will reduce the overall number of trips being made to buildings in highly congested areas. External vendors could make deliveries to the warehouse and then city staff teams could be dispatched during off-hours to make deliveries where possible. This would require an analysis of the warehouse's physical capacity, as well as existing delivery capacity.

5. Modify new or renewed leases and contracts to permit off-hour deliveries

A number of city agencies currently lease office and other types of space in privately owned buildings, including warehouse space, childcare facilities and other uses. Many of these buildings have policies that do not currently allow deliveries outside of typical business hours, or even outside of limited (and specific) time windows. Similarly, new or renewals of existing citywide contracts provide an opportunity to include a provision to accept off-hour deliveries during the procurement process. Negotiating leases and citywide contracts to include the option for off-hour deliveries would increase the number of sites available across the City.

In addition to providing existing vendors and facilities the opportunity to shift to OHD, the City could also give preference to vendors that can demonstrate the ability to conduct OHD. NYC DOT, in partnership with New York State Energy Research and Development Authority (NYSERDA) and the New York State Department of Transportation (NYSDOT) sponsors the Trusted Vendor Program (TVP), a recognition program for trusted shippers, carriers and vendors that have fulfilled the required conditions of safe and community-friendly off-hour deliveries. This program could be expanded to include vendors with large city contracts who fulfill the necessary requirements.

6. Develop incentives for agencies to coordinate off-hour deliveries

Behavioral considerations will need to be considered in implementing off-hour deliveries. Agencies and city personnel may be resistant to shift the status quo and modify current working hours. Appropriate incentives could be developed for agencies to switch to off-hour deliveries, such as public recognition or prioritized delivery times. The Trusted Vendor Program could be a model to recognize city facilities and agencies that have successfully adopted the off-hour policy. Alternatively, disincentives (financial or otherwise) could be considered as well.

Section 4. An assessment of the feasibility of deploying personnel to receive off-hour deliveries at city facilities;

Current Analysis

A thorough analysis of current staffing job specifications and civil service titles staffed at city facilities should be completed prior to deployment. This includes understanding the number of employees currently working overnight or in overlap with off-hour delivery windows (before 6am or after 7pm), as well as the roles that would be needed in executing attended off-hour deliveries. This analysis should also include consideration of the scope of existing titles that work overnight to determine if staff in these titles can be utilized to reduce the need for schedule changes.

In consultation with legal and union representatives, the following factors must be considered: the current collective bargaining contracts that affect city employees involved in the delivery process; the existing permitted work schedules (start and end times), barriers to modifying work schedules, and requirements for night time differential pay if deliveries cannot be accommodated with minor schedule shifts. This may also include non-City workforce union considerations such as elevator operators or loading dock attendants at private facilities.

Operational Considerations

Provided that staff schedules can accommodate the designated off-hour delivery times, an evaluation of the volume and type of goods delivered is needed to inform the number of required staff per shift, and any time constraints needed to accept or process the delivered goods (i.e., perishables may need to be processed immediately upon receipt). Obtaining information about current deliveries being made including vendor, delivery time and the volume of goods received citywide at city facilities has been a challenge. Much of this information is not currently tracked, and the re-deployment of agency partner staff during the COVID-19 pandemic response has also limited the ability to conduct analysis with existing information.

In order to better understand and track the existing delivery landscape, a delivery tracking system could be used to identify deliveries to shift to off-hours. Some aspects of this may be part of the upcoming PASSport releases through the Mayor's Office of Contract Services (MOCS), but the system was not designed with this use in mind.

Behavioral and emotional considerations will also be a factor in deployment of personnel that require a modification to their existing work schedule. Existing city programs to support employees' well-being will continue to be available, but additional considerations for managers or workplace accommodations may be necessary. As part of the discussion, advantages or incentives that can be realized by staff should be aggregated and shared among relevant stakeholders.

Economic Considerations

A discussion with major vendors and transporters to ascertain the willingness and cost implications to shift delivery schedules to off-hour needs to be conducted as well. While private sector businesses have seen cost-savings related to unattended off-hour deliveries, further discussions with vendor and transporter partners would be needed to understand cost

implications for the City, such as increase or decrease in the price of goods sold to the City, or the increase or decrease in fees incurred by transporters. Industry outreach could not be completed at the time of this submission due to COVID-19 pandemic response, and will continue to be a challenge as the transportation industry focuses on delivery of critical goods.

Personnel costs could include increased pay for night differentials, additional training costs to accommodate for off-hour procedures, and infrastructure investments to ensure safety of staff. Utilizing existing overnight staff in sites that are open 24/7 could reduce additional personnel costs, if feasible following a title analysis.

Furthermore, costs associated with operating a building (e.g., heating, lighting and electricity) during off-hours should be considered as well. Discussions with building owners (where the city is the tenant) regarding additional fees incurred for the use of delivery areas or additional building security personnel need to be understood for each city facility as well.

Section 5. Recommendations for actions that the city could take to enable off-hour deliveries without the presence of personnel;

Off-hour deliveries can be made in attended or unattended deliveries. Unattended deliveries occur when the receiver (i.e., city facilities) provides access to the transporter to a safe and secure location for drop-off without staff present. Noted benefits of unattended deliveries are increased opportunities for contactless deliveries, goods that are ready for immediate processing once city staff arrives in the morning, providing more flexibility in scheduling a day's operations, and cost savings, as reported by private sector receivers.

Previously discussed in Section 3 were best practices for unattended deliveries such as outfitting a physical space with double doors, key deliveries, key deliveries with a manual / electronic key box, storage lockers, or an electronic doorman. Investments in such items will enable deliveries to be accepted without personnel being present. Additionally, private sector receivers reported unattended deliveries to be more sustainable long-term, given the lower costs than attended deliveries.

Considerations to be taken in order to enable off-hour deliveries fall into several categories: building characteristics, and delivery and operations characteristics.

Building Characteristics

The building characteristics listed below are items to consider in implementing an off-hour deliveries policy without city personnel present.

- Size of the facility*:* Larger city facilities (with greater than 250 employees) will likely have a greater need for delivery of supplies. Thus, there will be greater savings in the number of truck trips and be a more cost-effective implementation at these sites. Many city facilities are also located in close proximity to one another, so smaller sites could be grouped to minimize duplicate trips to nearby sites. These facilities are also more likely to have space available that can be outfitted to securely receive deliveries. If a group of facilities are involved, distribution could also be made during more typical business hours with low-footprint methods such as handcarts or cargo bikes.
- Consolidated delivery centers: Locations where delivery, sorting & consolidating occur at one location might be considered good candidates for off-hour deliveries without personnel presence (e.g., schools or campuses) as infrastructure retrofit investments have the potential to have a more significant impact. City-owned warehouses could also be used as consolidation space, even if located outside of highly congested areas. If off-hour deliveries are not feasible to a given facility, the use of consolidation centers can also help reduce the overall number of trips made during the day by consolidating deliveries into fewer trips to facilities in highly congested parts of the city during the day.
- Loading docks: Buildings that require the use of a loading dock typically require building personnel to be present, with personnel present to receive deliveries. While this may differ in some cases, loading dock requirements likely signal difficulty in switching to unattended and OHD deliveries.

- Designated parking spaces: Identifying parking spaces available for delivery trucks could also allow for transporters to independently and safely unload deliveries without city personnel assistance. There is potential for dedicated night curbside space to facilitate deliveries, or delivery scheduling software could help drivers to know their dedicated delivery timeslot at a loading dock. Even for daytime deliveries, dedicated loading space can help minimize the impact on congestion and improve the safety of deliveries.

Delivery Operations Characteristics

- Clear roles and responsibilities: Dependent on the type of delivery, clear roles and responsibilities need to be laid out for receivers and transporters. If a transporter is responsible for stocking shelves or unpacking a delivery, waste management may come into play. If this is a clear responsibility of a transporter, clear sorting instructions and waste locations would be needed.
- Type of goods: Without personnel to assist, feasible facilities for off-hour deliveries may depend on the type the goods being delivered. Some typical types of goods expected to be delivered to or picked up at city facilities include waste, parcel deliveries (USPS, UPS, FedEx etc.), catering, vending, paper goods, construction/ site management, fuel, special events and service activities. Discussion of the types of goods that would be acceptable for delivery should be held on a regular basis with the building, city, and vendor staff. OHD could be phased in, starting with different types of goods by building partnerships with subsets of vendors and receivers across the City.
- Screening: Security and safety are important considerations for making deliveries to city facilities. While typically on-site security staff or mailroom staff are responsible for screening goods for safety reasons, these procedures may need to be adjusted to allow for off-hour delivery. Mailrooms typically operate during standard business hours and do not allow for deliveries off-hours. While some city facilities are staffed by security 24/7, many are not.
- Quality assurance: DCAS' Bureau of Quality Assurance at the central storehouse inspects many of the goods that are purchased and delivered to city facilities. Typical procedures mean that review is typically done during the delivery process, with the receiver and transporter being on-site at the same time. A shift to off-hour deliveries would require a change in these procedures; other businesses have shifted to random sampling with clear contractual obligations for quality and procedures in place should quality not be achieved.
- Costs: The most significant cost associated with off-hour delivery is likely personnel costs. A shift to unattended deliveries would reduce this extra cost, but there may be related infrastructure costs associated with preparing for unattended deliveries. Building operations costs could be considered, such as heating, lighting and energy, but these are likely to be minimal and be offset over time since buildings will not be staffed overnight. Utilizing existing overnight personnel to oversee off-hour deliveries could increase the efficiency of existing personnel costs and minimize additional costs related with the program. There may be an increase in security costs, dependent on the approach taken.
- Building operator assistance: Transporters that need assistance may need to be able to connect to an operator during off-hours in the event that previously agreed upon protocols cannot be met. This can be done at the time of delivery or done through agreed upon procedures with the transporter and the receiving organization.

Recommendations for City Actions to Enable Unattended Off-Hour Deliveries

1. Understand each city facility's current ability to accept off-hour deliveries (e.g., personnel work schedules and roles, building management policies, hours of delivery acceptance, regulatory or neighborhood policies for off-hour deliveries)
2. Understand each city facility's building characteristics and determine if retrofit facility modifications need to be made for to allow for or increased off-hour adoption (e.g., loading areas, delivery truck parking areas / spaces)
3. Understand types of goods delivered at city facilities and proportion of goods that could be offset to off-hour (e.g., type and frequency of delivered goods, vendors, volume of delivered goods, value of goods, determine perishability of goods requiring immediate personnel attention)

Section 6. Recommendations for actions that the city could take to reduce adverse impacts on communities adjacent to city facilities receiving off-hour deliveries, including through the use of low-noise equipment and operating procedures

Off-hour deliveries provides a number of positive benefits to the community including reduced congestion and lower emissions. Studies of pilot projects worldwide address the impacts on communities adjacent to facilities, which include the increased number of delivery trucks and vans of all sizes within the area, air quality, emissions, safety, security, noise levels, health, quality of life, and street congestion. Noise has been noted to be the most prevalent concern, as truck and delivery related noise (i.e. unpacking, lift-gate, or driver-staff communication) can disturb those in the community.

As a result of the COVID-19 response, additional community outreach and research to gather location specific data was not feasible. However, best practices obtained from the City of London, Toronto and NYC DOT's Off-hour Deliveries pilot have informed the discussion listed below.

Potential Impact: Noise

While off-hour deliveries can provide significant benefits to communities and local governments by reducing congestion and increasing efficiency, noise associated with deliveries can pose potential impacts on communities, particularly if deliveries are made during off-hours. Noise can have effects on health and wellbeing, and it is important to consider the impact it may have when planning for deliveries, particularly in residential areas. While many city facilities are located in business districts, many smaller facilities such as schools are interspersed in primarily residential zones.

The three phases of mitigating noise impacts on communities are to: (1) Conduct a quantitative and qualitative noise assessment of current site conditions for each site (2) Identify noise mitigation strategies for each site to develop a Noise Management Plan (3) Engage with relevant stakeholders to develop a noise mitigation plan.

1. Conduct a Current State Qualitative and Quantitative Noise Assessment

   Information on current site conditions and delivery processes should be collected in order to identify sites with the highest adverse community impact and to understand nuances across sites, in order to inform the development of a strategic noise mitigation plan. Additional information about building characteristics, locations (including proximity to residences), delivery type/volume (pallets vs small-mid size packages) and frequency, can be a factor to prioritize buildings with the likelihood for higher adverse community impacts. NYC DOT, for instance, has found that a common issue related to noise is transferring goods from trucks onto the street. Explore mechanisms and cost to monitor and report current noise levels and sources at targeted sites.

   While a qualitative noise assessment would not measure sound, it would provide site specific information and documentation (picture, videos, notes) to support targeted site-specific interventions and provide an opportunity to solicit community feedback. Of note,

consideration should be factored in for both the actual and perceived noise levels. Points of view from the residents, local community groups or business associations, businesses, and transporters can be considered in the current state analysis.

Information from these noise assessments can also help to prioritize which city facilities to target first. Facilities in primarily commercial or industrial areas should be prioritized to start, while working with local communities to develop plans for more residential or mixed-use areas. Similarly, information from noise assessments will inform delivery times, delivery methods and the types of deliveries to prioritize in order to maximize positive benefits while minimizing negative impacts.

2. Develop a Noise Management Plan (NMP)

The noise management plan will outline the steps that can be taken to address site noise conditions and should be available to all stakeholders for input. Noise Management Plans should be internal documents that agencies follow and request from transporters. The plan should be completed by businesses and their suppliers and should outline how noise will be monitored and ensure that practices will be updated to reflect site changes specific to the location. Noise management should be included in delivery contracts with some considerations for termination of contracts, or other reinforcement strategies, if recommendations are not followed. Vendors/delivery drivers and internal city facility staff need to be aware of the plan contents, with each plan customized based on location. An NMP shows the commitment to customer service and that deliveries can be managed thoughtfully in the community.

a. Adopt Low Noise Delivery Practices

   Based on an assessment of delivery procedures at specific sites, revisions or introduction of new policies and procedures to specially address noise concerns for off-hour deliveries including truck, equipment and driver noise should be implemented. Examples include the use of rubber matting and other low-noise equipment for handling goods, reducing the amount of truck idling time, and modifying transporter staff behavior to exhibit quieter speaking habits (shouting, slamming doors, use of loud radios). Staff and driver trainings could be provided to emphasize their roles and responsibilities to support noise mitigation.

b. Utilize Signage

   The placement of signs adjacent to and at the point of delivery will provide visual reminders to drivers and staff of key actions that will reduce staff, equipment and truck noise.

c. Invest in equipment or sound mitigating structures

   Based on the results of the noise assessment, the city could determine whether strategic procurements or capital investments are needed to address persistent noise levels that are not mitigated by general best practices listed above. This could include the purchase of sound dampening materials, low-noise equipment, and the use of barriers, green facades (e.g., vegetation for green walls, climbing plants or green roof), sound insulation or other sound absorption structures where appropriate.

   Low-noise equipment includes the use of hand-powered pallet jacks or low-noise pallet forklifts. Hand-powered pallet jacks are commonly used in warehousing and transportation operations today. Low-noise pallet forklifts have

models that produce low vibration and noise levels within the body and the tires. Additionally, electric pallet forklifts may also produce less noise than traditional models.

3. Stakeholder Engagement

Honest communication and engagement are critical to the adoption and development of a proper Noise Management Plan. Ensure that there is an owner of the overall plan (I.e., single point of contact within the city) and designate a person responsible at each site to ensure the plan is regularly updated. Input should be provided by key stakeholders, including those in the community, public and private industry players, operators, delivery drivers and internal staff at the city facility.

Potential Impacts: Safety and Security

While some city facilities already provide 24-hour security, buildings should be identified that may require security enhancements such as improved lighting or video cameras near delivery entrances and loading docks. Off-hour deliveries present opportunities to upgrade security infrastructure at buildings such as adding keycard only entrances, security access that can be seen and tracked on cell phones or other secure methods.

Safety concerns surround the possibility of theft of products which could also be increased with the lack of crowds. Modifications to the transporter company's scheduling and operations need to be discussed to ensure that driver fatigue or increase risk of crashes are not an issue. To reduce this risk, priority can be made to shift deliveries to hours such as 7-11pm or 4-6am instead of overnight hours. These schedule shifts can still achieve significant congestion reduction and efficiency benefits while minimizing security or safety risks.

Section 7. Recommendations for processes through which building and facility delivery and service plans could best be created, implemented and refined over time for city facilities, including through delivery scheduling, vendor consolidation and safer and more environmentally sustainable freight vehicles.

Delivery Service Plans (DSPs) are frameworks that ensure that freight vehicle activity to and from a building is effective for the organization. DSPs can help to proactively manage deliveries to reduce the number of total delivery and service trips, particularly in the peak periods; identify areas where safe and legal loading should take place; and work with delivery companies who demonstrate commitment to freight delivery best practices. Developing DSPs will provide benefits not only to the City, but also vendors and transporters.

Some expected city benefits include:

- Saving time and money:
  - Lower operating costs by consolidating deliveries into larger, less frequent deliveries
  - Free up staff time spent receiving goods and completing activities related to procurement, such as invoice processing
  - Benefit from supply chain efficiencies and economies of scale through better pricing or negotiation
- Improve reliability
- Improve safety
  - Reduce risk of crashes or accidents on-site by reducing number of deliveries
- Reduce impact on the environment
  - Reduce emissions associated with building by having fewer trips to and from a given facility
  - Improve site environment and reduce frequency of noise impacts on community

Benefits to transporters are similar to those that can be achieved by off-hour deliveries including:

- Fuel savings from reduce mileage
- Increased certainty over delivery times
- Reduced risk of crashes
- Increased certainty over safety of unloading location
- Reduced costs from parking tickets
- Reduced environmental impact through more efficient trips

There are number community benefits as well including:

- Reduced congestion
- Improved local air quality
- Fewer trucks on the road and fewer crashes
- Reduced noise

DSPs go hand-in-hand with planning for off-hour deliveries by understanding all of the freight activity associated with a given site and working towards consolidation and increased efficiency. By understanding the full landscape of freight activity, certain deliveries can consolidated and moved to off-hours, while others can be consolidated and continue during daytime hours. DSPs

can also bring together internal and external stakeholders who can work together to improve efficiency in all aspects of the purchasing and delivery process including contracting and price negotiation, consolidated ordering and delivery timing and safety, among others.
DSPs should be done for a given facility, regardless of the number of agencies located in that facility. This can help achieve economies of scale and efficiencies across agencies by improving communication and collaboration in purchasing, as well as ensuring everyone follows best practices. Buildings located in close proximity can also collaborate during the DSP development process to identify practices or collaboration opportunities that would benefit multiple sites.

A point person or agency for coordinating DSP activities across sites would help increase the benefits to the City through streamlining delivery activity. There may also be a need for a neighborhood or area-plan that incorporates elements of a DSP in order to take into consideration unique neighborhood characteristics and activities. This may be true in Lower Manhattan, with its unique street layout and high density of city buildings.

Over time, DSPs will help to not only reduce delivery costs and local area congestion, but also can have environmental benefits such as reducing CO_2 emissions, congestion, and improving air quality. DSPs will assist with the expansion of the implementation of off-hour deliveries in highly congested areas by identifying deliveries appropriate to be shifted to off-hours, as well as reducing the overall number of trips.

The following outlines steps in creating a DSP, with considerations that the city can take to implement within city facilities.

1. Establishing a DSP Working Structure

Partnerships throughout the city agencies within the identified local law areas will be vital to establish and implement the DSP. An interagency working group, that may include facility managers, procurement staff, day-to-day staff and a tenant representative for non-agency tenants, can be convened to develop a strategy to streamline delivery practices. Additionally, a project management team will ensure coordination, steering and monitoring of the DSP.

The DSP working structure should also take into consideration a team that can coordinate elements of the plans between nearby facilities to ensure that maximum benefits and efficiencies are achieved, and that there is coordination in neighborhood impacts.

2. Information Gathering

DSP guidance has shown that one month of data collection at sites is sufficient to create baseline metrics. Baseline data should be gathered through an analysis of internal and external data. Documenting the internal processes of various city agencies will elicit commonalities and best practices that will allow for the development of tools and templates for use in the initial rollout and during expansion, beyond Manhattan's central business district. Data that would need to be collected includes activity logs, (if available, they would typically be maintained at security, reception or delivery points); facility maps; process maps that highlight procurement and payment practices as well as delivery activities. Through initial discussions, few city agencies or facilities currently collect this type

of information. A timeline for the creation of new data collection processes will need to be developed in order to understand a realistic timeframe for facilities developing DSPs and ultimately shifting to off-hour deliveries.

Delivery activities may include:

- Delivery and unloading times,
- Presence of on-site maintenance activities
- Review of on and off-street loading practices
- Documentation of delivery vehicle size/type
- Documentation of the frequency and the types of goods (e.g., stationery suppliers, vending, catering, courier collections, etc.)

  - City considerations
    - The city facilities in the targeted areas should be confirmed, along with building size, facility type and tenants.

3. Target Setting

Identification of key activities will provide insight into the metrics to be collected in order to report immediate and long-term benefits, and the cost implications of off-hour delivery implementation. The working group can propose specific metrics and time frames to achieve targets.

  - City considerations
    - Procurement teams will be a significant contributor to meeting targets through their negotiations with vendors and their transporters. Other items that could be impacted are reducing or consolidating the number of suppliers, strengthening the centralized ordering system, or increasing joint procurement of city facilities within close geographical proximity for ease of delivery.
    - Promoting sustainable freight practices can be discussed when awarding contracts during the procurement process. Current and prospective suppliers can be asked to identify and confirm use of environmentally sustainable freight vehicles in their delivery practices or discuss approaches the supplier will take to minimize traffic impacts during the day. Vendors should also be required to track mileage reductions so that the City can better understand the environmental impacts.

4. Data Collection, Monitoring, and Evaluation

On-going data collection will be required for evaluating the previously established baseline DSP targets. Regular evaluation (monthly, half-yearly or annual intervals) will provide consistency to the project and re-emphasize its importance and impact to the city. Confirmation of goals regarding reduction of delivery frequency, promoting safe and legal loading practices, and commitment to freight operators who demonstrate increased use of sustainable freight vehicles should be reiterated.

  - City considerations
    - Evaluations will also highlight instances where agency retrofit infrastructure modifications should be requested in order to improve adoption rates of the DSP.

- Improvements in delivery scheduling can be explored through the use of parking management tools with enhanced technology that can provide information on delivery space availability Delivery booking systems (DBS) may be explored to maximize delivery scheduling to offset congestion within a city facility's loading areas; and to manage deliveries away from peak hours. Delivery booking systems may also be a shared resource among the city facilities, or other building tenants, that are within close proximity to each other. City personnel and facilities may also be better prepared for large deliveries with waste management bins with delivery booking systems in place.

- Public recognition of freight operators and city agencies that demonstrate commitment to increased adoption of sustainable practices could be explored (in noise mitigating behaviors, sustainable vehicle usage, or others)

- The feasibility of creating additional consolidation centers (akin to the DCAS Central Storehouse in Queens) could be explored in the areas designated by the local law (central business district, lower Manhattan, and two other highly congested areas within the City). Consolidation centers could receive off-hour deliveries from suppliers, and subsequently coordinate smaller deliveries with green vehicles to adjacent city facilities in reliable and operationally efficient schedules. Other benefits could include off-site security screening of goods, or off-site storage which can free up space for other uses.

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