

# Off-Hour Deliveries



## Purpose

- Demonstrate feasibility and benefits of off-hour deliveries (OHD) under New York City conditions
- Reduce truck traffic from city streets during congested daytime hours
- Improve business operations of participating vendors and receiving businesses
- Improve air quality

## Outreach

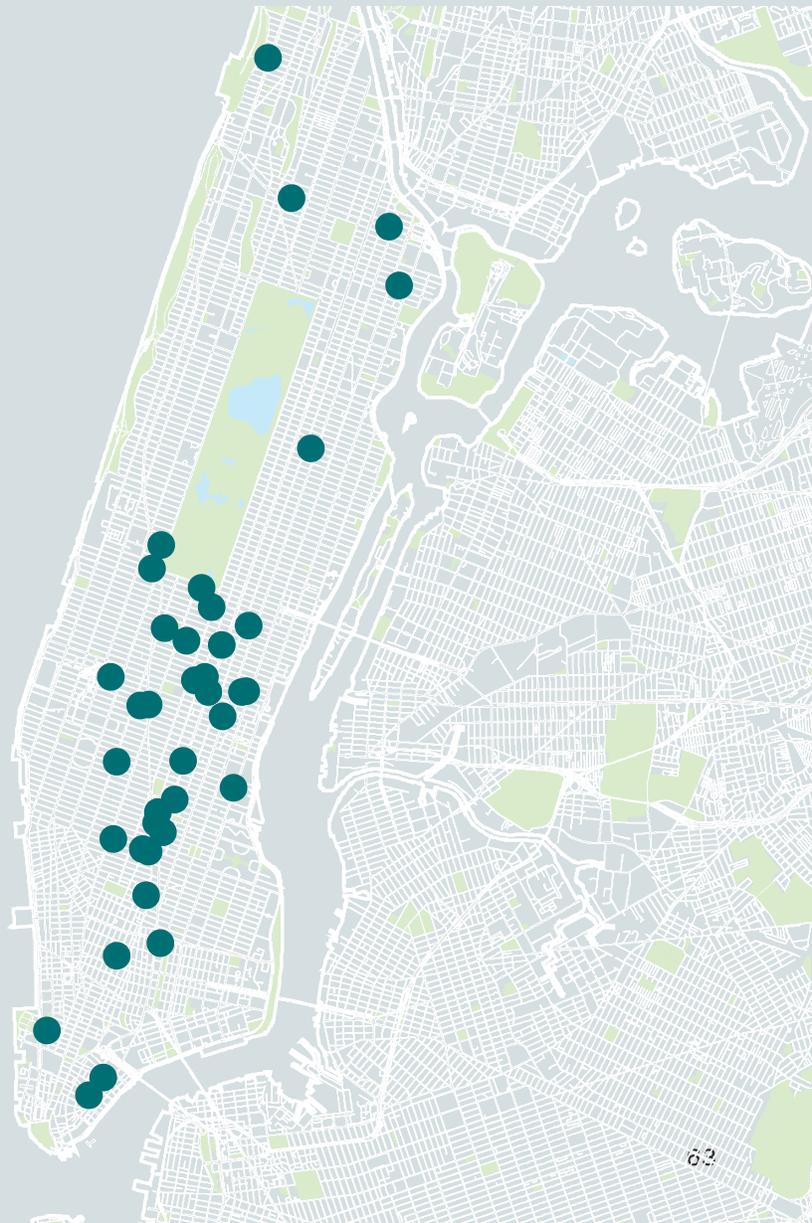
- DOT participated in outreach meetings with trucking industry representatives, New York State Department of Transportation (NYSDOT), the Port Authority of New York and New Jersey (PANYNJ), the New York Metropolitan Transportation Council (NYMTC) and the research team in June and December 2009
- DOT served as the lead coordinating agency for the pilot and worked with the trucking industry to provide education on the OHD pilot program
- DOT met with industry advisory groups to better understand carriers' and receivers' concerns related to shifting to OHD
- DOT met with public agencies to help facilitate the development of the pilot program

## Approach

- Identified and approached industry leaders who could help recruit companies to participate in pilot
- Selected industry partners for the pilot representing retail, food stores, restaurants and carriers
- Stimulated OHD interest through financial incentives for carriers and receivers
- Facilitated unassisted delivery systems to minimize off-hour staffing needs of receiving businesses
- Monitored progress of OHD with GPS-enabled cell phones
- Recognized pilot participants and launched an outreach campaign to expand OHD
- Interviewed receivers and carriers after the pilot to document their experience and gauge their willingness to continue operating in the off-hours

## Results

- Median speeds for deliveries from customer to customer in Manhattan were 50% higher during off-hours than the morning period (8-10 a.m.) and 130% higher than the midday period (10 a.m. - 4 p.m.) and evening period (4-10 p.m.)
- Median service times in the off-hours were as low as 25 minutes for one delivery whereas median service times from 7 a.m.- 4 p.m. all exceed one hour for one delivery
- No parking fines reported during pilot, reduced from frequent costs of about \$1,000 per month per truck
- Drivers overwhelmingly supported OHD, citing ease of delivery, reduced congestion, and lower stress levels
- Restaurant receivers preferred having products waiting for them in the morning rather than anticipating the arrival during the day and found that OHD improved staff productivity since food preparation was not delayed by late daytime deliveries



Trucks and commercial vehicles are critical to the economic vitality of New York City, as they account for the vast majority of freight movement into and within the city. Due to congestion on the city's streets and highways, combined with the volume of freight movement, trucks and commercial vehicles both significantly contribute to traffic congestion and experience higher costs as a result of wasted time, missed deliveries and parking tickets. These costs are passed on to receivers and ultimately raise the cost of doing business and cost of living in the city.

The concept of OHD, in which goods are delivered in the evening or early morning hours rather than during the business day, presents an opportunity to address the issues of costs, congestion and air quality. Implementing an OHD program, however, presents many difficulties, including rescheduling work shifts, providing a means for businesses to receive deliveries when they may not have employees on duty, and overall coordination between carriers and receivers.

The OHD pilot originated in a request from the New York City Chapter of Supply Chain Management Professionals to the NYSDOT in 2002. NYSDOT issued a Request for Proposals and selected, Rensselaer Polytechnic Institute (RPI) to research the potential for OHD in New York City. RPI's research led to a focus on food and retail deliveries in Manhattan. A consortium of RPI, Rutgers University, the Rudin Center at New York University, and ALK Technologies Incorporated received funding from the U.S. Department of Transportation in March 2007 via their Commercial Remote Sensing and Spatial Information Technology Applications Program. DOT served as the lead coordinating agency for the pilot and worked with the trucking industry to provide education on the OHD program and to reduce participation barriers in the pilot.

This project team brought together advisory groups of industry and public agencies to facilitate development of an OHD pilot. An Industrial Advisory Group helped the project team better understand carriers' and receivers' concerns related to shifting to OHD, while a Technical Advisory Group of public agencies advised

on policy obstacles and opportunities related to the proposed pilot. DOT participated in outreach meetings with trucking industry representatives, NYSDOT, PANYNJ, NYMTC and the research team in June and December 2009 where the policy implications of the pilot and its possible effects on current truck traffic were explored further.

The pilot program was a pioneering opportunity to test OHD in a real-life, complex urban setting. Recognizing the setup costs of the pilot, as well as the changes required to their daily business operations, DOT recruited businesses to voluntarily receive OHD through the use of financial incentives. This is a departure from previous studies which charged carriers more to deliver during regular hours, and highlights the critical role that receivers play in making OHD possible. DOT also identified and enlisted industry leaders to help encourage businesses to participate.

Off-hour deliveries in the pilot occurred between 7 p.m. and 6 a.m. OHD was facilitated for some companies by the use of unassisted delivery systems – thus minimizing evening staff needed by the receiving businesses. In unassisted deliveries, drivers are provided a key to the storage (or walk-in refrigerator) area of a business. Double doors, delivery lockers, or container/storage pods can also be deployed in unassisted systems. Some retail receivers did not use the unassisted delivery option because they were concerned about theft of their merchandise. These receivers had staff stay late to accept the deliveries.

In the end, 25 receiver businesses and eight carriers participated in the pilot study. Each participated for a minimum of one month between October 2009 and January 2010 with some making a policy change to shift to OHD. Gotham Bistro, located in the Times Square area, has continued to receive their deliveries between 4 a.m. and 5 a.m. even though the pilot has ended. The managers at Just Salad, preferred the reliability of OHD and have made it a policy for their largest carriers to deliver to their six locations in the off-hours.



Making a day-time delivery on 3rd Avenue at 39th Street in Manhattan.



Making an off-hour delivery at the same location on 3rd Avenue and 39th Street.

# Delivery companies' vehicles saw travel times improve 130% from a pilot of off-hour deliveries, based on a comparison of evening and midday travel speeds.

Participating carriers were supplied with GPS enabled smartphones and navigation software, which were configured to only require a single button push from the drivers. The smartphones were then able to log GPS position, speed, date and time every three seconds, safely and distraction-free to the driver. In select cases where companies already had GPS equipment and systems in place, they opted to share this existing data with the project team, which supplemented data from the smartphones for some companies and replaced it for others.

Travel speeds from customer to customer and service times (time spent doing a delivery) of participating carriers improved during the pilot's off-hours period when compared with previous pre-pilot measurements. The median speed for deliveries from customer to customer in Manhattan was 50% higher during off-hours than the morning period (8-10 a.m.) and 130% higher than the midday period (10 a.m. - 4 p.m.) and the evening period (4-10 p.m.). The pilot also demonstrated that service times were significantly reduced during the off-hours. Median service times in the morning and afternoon exceeded an hour for one delivery, reaching median service times of one hour and 48 minutes between 10 a.m. and noon. Median service times in the off-hours were as low as 25 minutes for one delivery. Trucks typically make six deliveries on a tour. If a delivery truck saves 30 minutes at each of the six deliveries that represents a savings of three hours.

Feedback from participants was largely positive. Several participants have considered maintaining or expanding their OHD programs, even without a financial incentive. Carriers noted that among benefits of OHD, they were able to reduce costs by decreasing the amount of parking tickets, as well as maintain a smaller fleet due to more balanced day/night operations. Truck drivers viewed the pilot favorably, reporting faster travel speeds, less congestion, more available parking and lower stress levels. Receiving businesses cited that fewer deliveries during normal hours allowed them to spend time focusing on their clients rather than waiting for and processing deliveries.

In light of the small scale pilot's success, DOT is currently working with RPI to develop an expanded pilot scope, as well as a refinement of the economic benefits model for OHD. Meanwhile, DOT is continuing to support existing participants and assist new participants. The project team has also highlighted an opportunity in reaching out to large traffic generators, such as Grand Central Terminal and Madison Square Garden, for participation in the pilot. DOT is also considering a formal recognition program to acknowledge companies which have voluntarily tested OHD and thus taken steps towards promoting sustainability.



Large deliveries such as this one for a grocery store, may require a lot of sidewalk space.

## Customer to Customer Median Speeds (in m.p.h.) in Manhattan by Time Of Day

Time of Day	Speed	% Change in Speed Compared to Off-Hours
All Day (24 hours)	3.3	109%
AM Period (8 a.m. - 10 a.m.)	4.6	50%
MidDay Period (10 a.m. - 4 p.m.)	3.0	130%
PM Period (4 p.m. - 10 p.m.)	3.0	130%
Off-Hours (10 p.m. - 8 a.m.)*	6.9	-

Data collected from November 2009 - January 2010.

\*Note: Peak traffic periods occur later and last longer in Manhattan compared to the rest of the city. Off-hours for Manhattan were found to occur from 10 p.m. - 8 a.m.