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WEBINAR
SERIES



VREF CENTER OF EXCELLENCE FOR
**SUSTAINABLE URBAN
FREIGHT SYSTEMS**

Peer-to-Peer Exchange Program

Lessons from the
Off-Hour Delivery Program
in New York City






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Division of Traffic and Planning

August 15th 2013, 11:00AM-12:00 EST

Mechanics of the seminar 2

- ❖ The webinar is being recorded, the URL will be sent out to participants and posted at www.coe-sufs.org
- ❖ Participants from the US and Canada can:
 - ❖ Use Adobe Connect to receive the audio (PRIMARY method)
 - ❖ Dial 1-888-446-7584, access code 1120583
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 - ❖ Use Skype or similar to dial 1-888-446-7584, code 1120583
 - ❖ Dial 212-372-3742 (caller paid call)
- ❖ Submit questions using the Chat feature

Introductory Remarks
Mr. Thomas Maguire, Assistant Commissioner,
New York City Department of Transportation

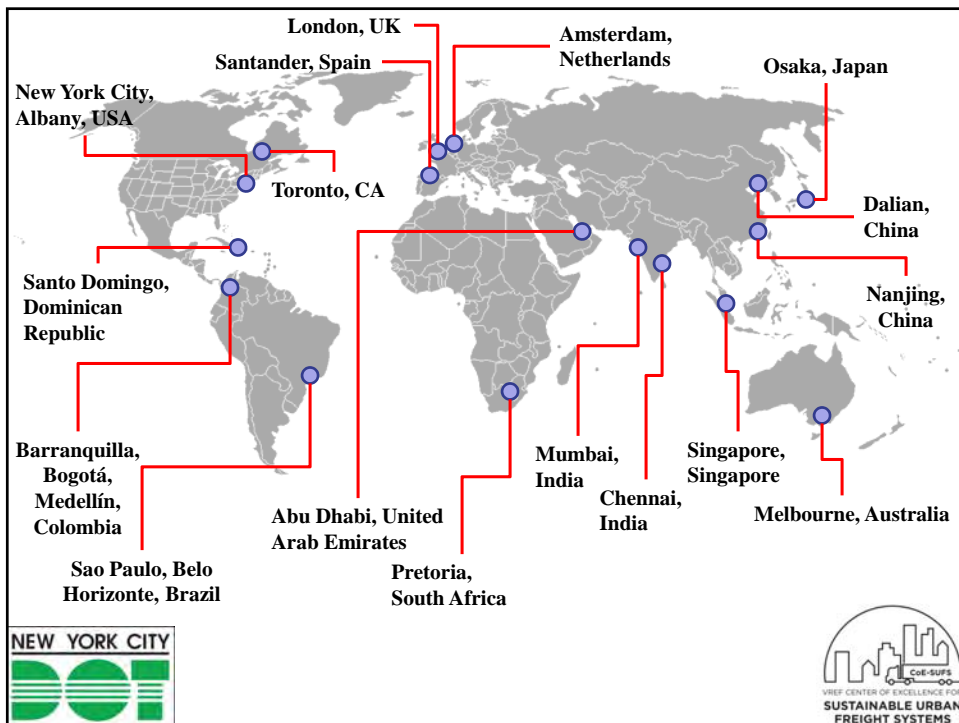


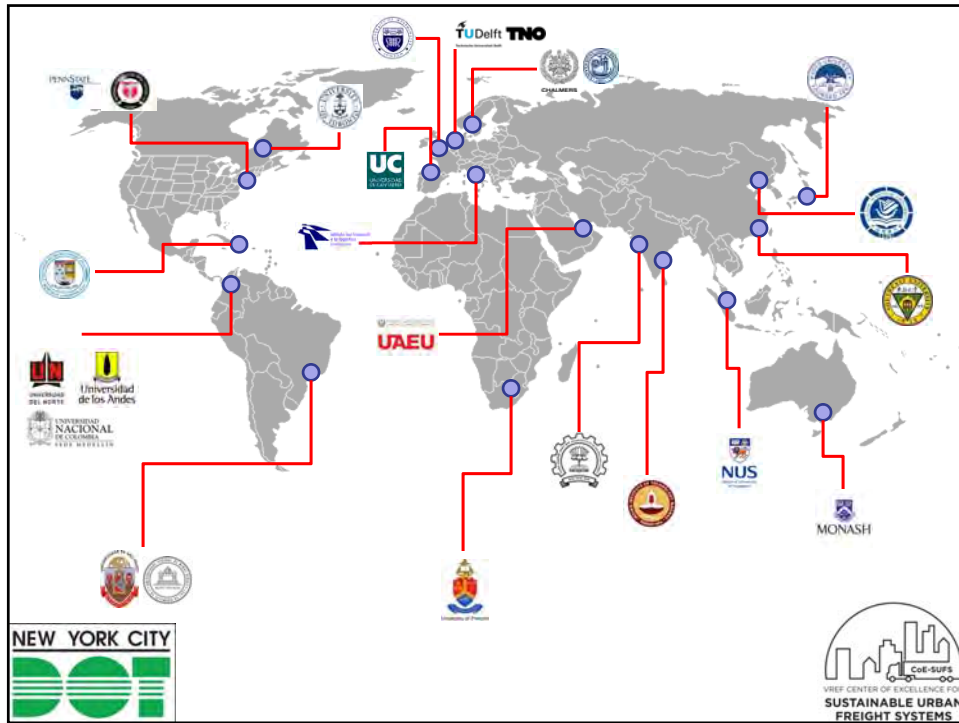
The VREF Center of Excellence
for Sustainable Urban Freight Systems
(CoE-SUFS)

José Holguín-Veras , Presenter



- ❖ Funded by the Volvo Research and Educational Foundations (VREF)
- ❖ Main Goal: To jumpstart an integrative process, involving cities, private sector, and researchers to develop new freight systems paradigms that:
 - ❖ Are sustainable
 - ❖ Increase quality of life
 - ❖ Foster economic competitiveness and efficiency
 - ❖ Enhance environmental justice





CoE-SUFS Dissemination Programs

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- ❖ **Peer-to-Peer (P2P) Exchange** to share global best practice cases and real world examples of sustainable urban freight systems
- ❖ Next P2P (date to be determined):
 - ❖ “The London approach, and building on the Olympic legacy”
 - ❖ Ian Wainwright, Head of Freight and Fleet Programmes, Transport for London; and Professor Michael Browne, University of Westminster, London
- ❖ **The Research Exchange** to share innovative research on urban freight, and related topics
- ❖ **Workshops** to bring together public/private sectors and academia, to jointly work to address urban freight issues; successfully held in India, Brazil, and Colombia

Our Challenge



This is what we all want...





What is source of all those trucks?

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In Manhattan:

- ❖ 56 buildings create about 4% of delivery traffic
- ❖ 6,800 restaurants and drinking places generate more truck traffic than the port
- ❖ 10 ZIP codes with freight parking demands larger than the parking capacity of the streets

The USDOT/RITA Project on Off-Hour Deliveries (OHD)



Main Project Partners

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Rensselaer

NEW YORK CITY



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Background



Milestones

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- ❖ **2002:** The Council of Logistics Management asked New York State Department of Transportation (NYSDOT) to study how to foster OHD in NYC
- ❖ **2003-2006:** NYSDOT funded an OHD project focused on Manhattan; Brooklyn private sector groups asked for a study, and the project was expanded
- ❖ **2007-current:** USDOT's Commercial Remote Sensing and Spatial Technology program funded two projects with a pilot, and a design/implementation phase

“Off-Hour Deliveries” are those taking place between 10PM and 6AM

Milestones

- ❖ **2011:** NYC added OHD to its sustainability plan (plANYC)
- ❖ **2012 Federal Highway Administration/ Environmental Protection Agency** announced a OHD program
- ❖ **2013 NYSERDA/NYCDOT** funded a project to incentivize receivers to accept OHD
- ❖ Numerous cities have inquired about OHD programs



Why do We Need to Intervene to Foster OHD? ¹⁸

- ❖ Markets find efficient outcomes, if they do not, there is a market failure → public sector intervention
- ❖ The market failure is the result of the unwillingness of receivers to accept OHD
- ❖ Increasing off-hour deliveries is beneficial to Society
- ❖ The solution is to either:
 - ❖ Compensate the receivers for additional costs, or
 - ❖ Develop technologies/systems to allow receivers to do OHD at lower costs (so that compensation could work)



1st Phase: Research and Pilot Testing



Research Conducted

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- ❖ Behavioral/economic
 - ❖ Analyses of most promising industry segments
 - ❖ Incentives to receivers of cargo willing to do OHD
- ❖ Technology: GPS to assess performance
- ❖ Network models were used to assess local and network wide impacts
- ❖ Industry/Agency outreach and engagement
- ❖ Pilot test to assess real life impacts...delayed by:
 - ❖ Skepticism on the part of the industry
 - ❖ The huge challenge of not having any precedents**and...**

The Wall Street Collapse

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JP Morgan Pays \$2 a Share for Bear Stearns
By ANDREW ROSS SORKIN
Published: March 17, 2008

In a shocking deal reached on Sunday to
JPMorgan Chase agreed to pay a mere \$2
— less than one-tenth the firm's market
value.

As part of
JPMorgan
will guaran
obligation
was driven
by what a
bank.

Reflecting
about \$2
big losses

Feds Probe IndyMac, Expand Subprime Inquiry
By JASON RYAN (@JasonRyanABC) and THERESA COOK
July 16, 2008

Lehman Files for Bankruptcy; Merrill Is Sold
By ANDREW ROSS SORKIN
Published: September 14, 2008

This article was reported by **Jenny Anderson, Eric Dash and Andrew Ross Sorkin** and was written by Mr. Sorkin.

Largest one-day points drop ever
From NBC's Domenico Montanaro
The Dow finished down 777.68 points, or almost 7%. It is the largest one-day drop in points in the history of Wall St. In 1987, on Black Monday, the market dropped 20%.

Video: CNBC's Michelle Caruso-Cabrera discusses the DOW's freefall following the collapse of the Wall Street bailout and what effects it will have on world markets. 'There's no credit available... It stops business in its tracks,' says Cabrera.

Pilot Test

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- ❖ Three separate one-month stages:
 - ❖ Foot Locker (ten stores)/NDL
 - ❖ Whole Foods (four stores)
 - ❖ Sysco (twenty one stores)
- ❖ About 35 receivers, 20 trucks/vendors
 - ❖ Half doing staffed OHD
 - ❖ Half doing unassisted OHD



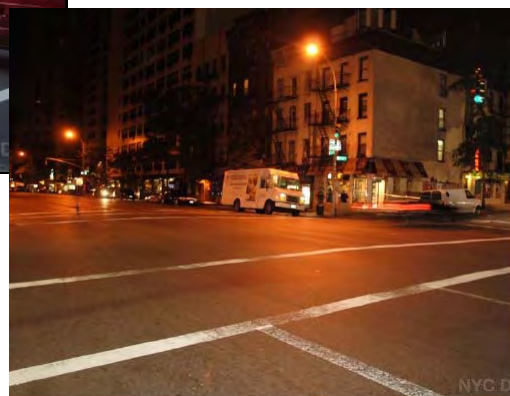
Regular vs. Off-Hour Deliveries

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Regular vs. Off-Hour Deliveries

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Results From Satisfaction Surveys

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❖ Carriers/Vendors: 1.55

Scale: 1= Very favorable,
5= Very unfavorable

❖ Drivers:

❖ Travel speeds = 1.33

Congestion = 1.11

❖ Parking = 1.11

Stress levels = 1.11

❖ Time to deliver = 1.38

Feeling of safety = 1.86

❖ Time to complete the route = 1.44

❖ Receivers:

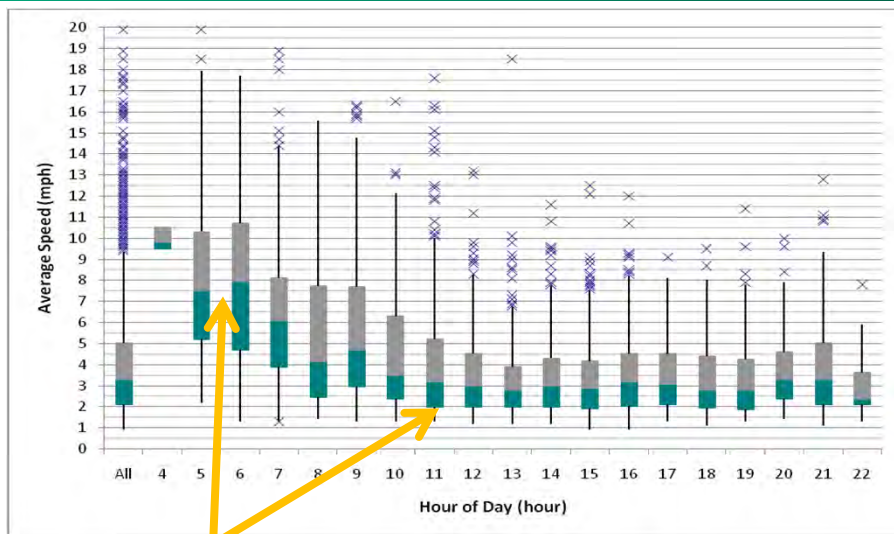
❖ Impression of off-hour deliveries = 1.50

❖ How likely are you to off-hour deliveries = 1.42

❖ If all liability issues were addressed, would you be interested in receiving unassisted OHD? = 2.17

Average Space Mean Speeds

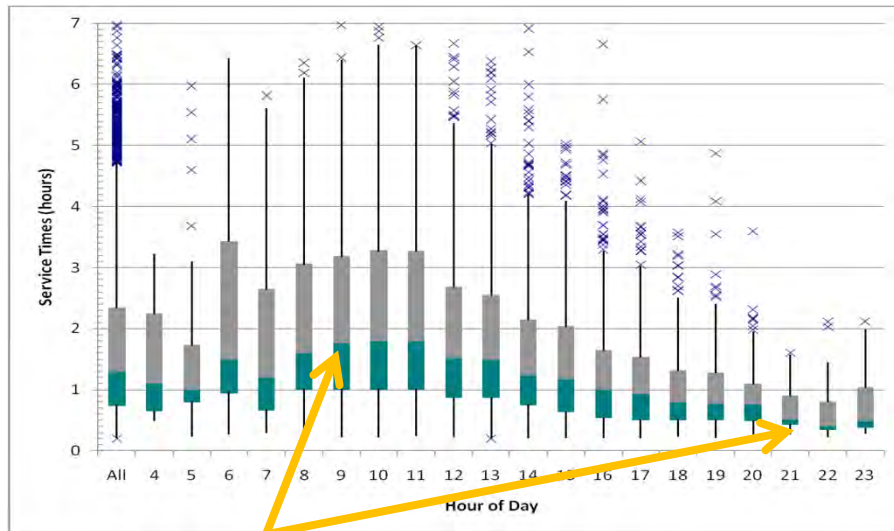
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More than twice as fast

Average Service Times

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More than three times as fast

After the End of the Pilot

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- ❖ All of the receivers doing staffed OHD reverted back to the regular hours
- ❖ Almost all the receivers doing unassisted OHD remained in the off-hours
 - ❖ The reason: reliability of OHD
 - ❖ "Our locations will continue to receive 'night drops' even though this program has ended as our managers now favor the dependability of night drops vs. late day time deliveries. Thanks again for the program."
Nick Kenner, Managing Partner, Just Salad LLC
- ❖ **Key lesson:** Unassisted OHD work for large numbers of receivers, and do not require on-going incentives

2nd Phase: Design and Launch



Unassisted Off-Hour Deliveries

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- ❖ Main focus of the 2nd phase of the OHD project
 - ❖ Unassisted OHD:
 - ❖ Only a one-time-incentive is needed
 - ❖ Once they try it and like it, receivers stay in the off-hours
 - ❖ Large Traffic Generators (large buildings/establishments)
- ❖ Research was conducted to find out how to:
 - ❖ Foster:
 - ❖ Unassisted OHD at businesses establishments (retail and the food sector are the top priority)
 - ❖ OHD at Large Traffic Generators
 - ❖ Use technology to:
 - ❖ Reduce noise during OHD
 - ❖ Facilitate Unassisted OHD

Unassisted OHD: Behavioral Research

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❖ Key determinants in OHD participation:

- ❖ One-Time-Incentive (financial)
- ❖ Discounts from vendors (financial)
- ❖ Business support is worth → US\$1,000 - \$3,000
- ❖ Public recognition is worth → US\$600 - \$1,100
- ❖ Trusted vendor is worth → US\$24,000 - \$36,000

❖ Suggestion:

- ❖ Public sector → Incentives and public recognition
- ❖ Carriers/vendors → Shipping discounts
- ❖ Trucking groups → Create a "Trusted vendor" program

❖ Re-align federal/state incentive programs:

- ❖ Environmental, economic, etc. to support OHD
- ❖ Require recipients to accept OHD

Unassisted OHD: Virtual Cages

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Left: The security gate outside the store is brought up and down electronically by the turn of a key. This is the first level of access control.

Center: On the opposite side of the gate key wall is an electronic keypad that logs the start and end times of the delivery, in addition to the driver number.

Right: Once inside, the driver is restricted by a virtual cage that is marked off by four sensors. The area is almost the full width and roughly half the depth of the store.

Unassisted OHD: Virtual Cages

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Virtual delivery cage





Top: The goods are brought inside the store past the security tag detectors, which will sound if the boxes are brought back outside. The driver dismantles the pallets and sorts the boxes according to department.

Right: The carrier company provides the driver with a handheld scanner, and there is a program to connect to the specific retailer. Goods are automatically entered into the inventory system.

Noise Policy

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- ❖ 1st layer: Commitment
 - ❖ Code of conduct / Training
 - ❖ Low noise strategies / tech.
- ❖ 2nd layer: Training
 - ❖ Driver behavior
 - ❖ Low cost measures – noise absorbing materials
 - ❖ Low noise trucks/equipment
- ❖ 3rd layer: Enforcement
 - ❖ NYCDOT, NYC Dept. of Environmental Protection investigate violations and enforce compliance

Code of Conduct and Standards for Participants in the NYC deliverEASE Program

The success of this program depends on an honest business relationship between carriers and receivers. Drivers, fleet managers and receiving companies participating in the NYC deliverEASE program must adhere to the following code of conduct.

COMMITMENT TO MAINTAIN A GOOD RELATIONSHIP WITH FELLOW CARRIERS AND RECEIVERS

Receivers: A receiving business shall ensure that anyone delivering to the location will have a safe and healthy work environment. The driver shall have no obstacles when delivering in the off-hours. Receivers will help identify strategies to accommodate unassisted deliveries if staff is not available.

Carriers: If needed a carrier will identify technologies and suggest changes to driver behavior for drivers to reduce any noise resulting from deliveries. If unassisted deliveries are taking place, the driver will ensure that the receiver's property is not damaged in any way and that the products being delivered are handled appropriately.

COMMITMENT TO THE COMMUNITY

Health and Safety: Participants shall ensure that food is handled safely and that food deliveries and storage adhere to the NYC Health Code.

Quiet Neighbor: In order to remain a quiet neighbor and respect the local community, receivers and carriers must ensure that the building and commercial vehicle infrastructure is designed to be as quiet as possible. All participants in NYC deliverEASE are encouraged to attend a free noise webinar to learn how to improve both infrastructure and behavior in order to make quiet deliveries in the off-hours and abide by the NYC Noise Code.

PARTICIPANTS SHALL MAKE EFFORTS TO MINIMIZE NOISE THEY PRODUCE WHILE MAKING DELIVERIES:

Changes to driver behavior:

- Do not slam truck doors or lift gates (into truck or sidewalk)
- Do not shout
- Turn off the radio
- Reduce engine idling (3 minutes or less unless vehicle is used to operate equipment)
- Use equipment quietly and gently as to reduce noise

Physical changes for both carrier and receiver:

- As needed, provide training for parking, store and equipment to reduce noise

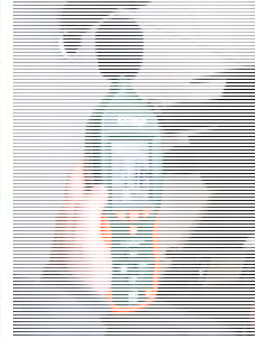
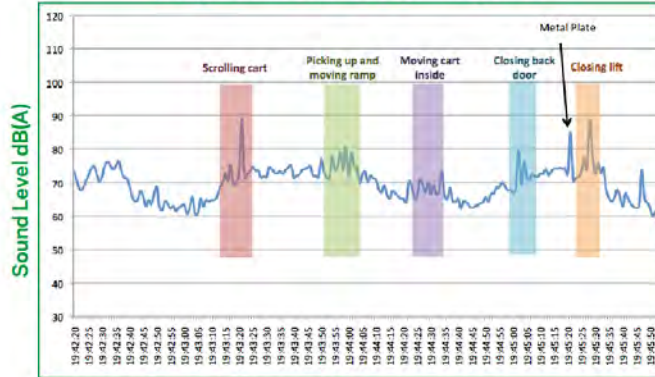
The DOT team will provide information on how to make changes to driver behavior and what technologies can be used for retrofitting to both reduce noise and support unassisted deliveries.

NYC DOT and Rensselaer Polytechnic Institute are committed to the highest standards of business conduct and require all participants to treat employees fairly and all employees to perform their job with the utmost level of professionalism.

Noise Monitoring

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Sample Noise Profile of a Delivery Truck



Measured at a distance of 20'



Low Noise Technologies...Among Many More

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Electric/alternative fuel trucks



Low noise lift platforms



Noise absorbing coatings



Low noise carts

The Economic Bottom Line



Economic Impacts

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- ❖ Implementing various forms of off-hour delivery policies in Manhattan leads to:
 - ❖ Travel time savings to all highway users of about 3-5 minutes per trip
 - ❖ Travel time savings to carriers that switch to the off-hours of about 48 minutes per delivery tour
 - ❖ Savings in service times (per tour) could be up to 1-3 hours
- ❖ Depending on the extent of the implementation, economic savings are between \$100 and \$200 million/year in travel time savings and pollution reductions



Environmental Pollution Reductions

TOTAL/YEAR				
Scenario % OHD	CO (tonnes)	HC (tonnes)	NOx (tonnes)	PM ₁₀ (kg)
6.49%	101.20	24.05	3.00	20.29
14.10%	169.58	28.53	8.22	48.81
20.90%	202.75	39.97	11.82	69.99
25.34%	253.14	56.56	15.04	90.09
29.07%	383.81	55.76	26.33	149.86

PER RECEIVER/YEAR

% OHD	VMT (veh-mi)	VHT (veh-hrs)	CO (kg)	HC (kg)	NOx (kg)	PM10 (kg)
6.49%	348.93	438.20	19.56	3.19	0.58	0.0039
14.10%	549.40	207.09	14.90	1.81	0.72	0.0043
20.90%	551.69	195.51	12.05	1.88	0.70	0.0042
25.34%	542.89	233.92	12.41	2.12	0.74	0.0044
29.07%	1,052.06	244.31	16.40	1.41	1.13	0.0064

There is Public Support...as Reflected by Media

DELIVER A FIX FOR TRAFFIC JAMS

YOU MAY THINK YOU'VE STRUCK a traffic jam as if it were a fly. You may be wrong. A growing number of cities here and abroad are turning to a new solution to help the congestion that plagues their streets. It's called the OHD project, and it's being tested in New York City, San Francisco, and other cities. The project is a new way to manage traffic during peak hours. It involves using a fleet of delivery trucks to deliver packages to homes and businesses. The trucks are equipped with sensors that can communicate with each other and with a central server. This allows the trucks to find the most efficient routes and avoid traffic. The project is being tested in New York City, San Francisco, and other cities. The project is a new way to manage traffic during peak hours. It involves using a fleet of delivery trucks to deliver packages to homes and businesses. The trucks are equipped with sensors that can communicate with each other and with a central server. This allows the trucks to find the most efficient routes and avoid traffic.

Fleets Say They Disco Through New York's Streets

By Michael Paschke

When Joe Kilian, head of New York City's shared delivery program, first saw the OHD project, he was skeptical. But after seeing the results of the project in New York City, he was convinced. The project is a new way to manage traffic during peak hours. It involves using a fleet of delivery trucks to deliver packages to homes and businesses. The trucks are equipped with sensors that can communicate with each other and with a central server. This allows the trucks to find the most efficient routes and avoid traffic. The project is being tested in New York City, San Francisco, and other cities. The project is a new way to manage traffic during peak hours. It involves using a fleet of delivery trucks to deliver packages to homes and businesses. The trucks are equipped with sensors that can communicate with each other and with a central server. This allows the trucks to find the most efficient routes and avoid traffic.

C Unveils Program for Delivery Truck Decongestion

NEW YORK — City officials are looking to reduce congestion on busy streets by using delivery trucks to transport their goods at night when the streets are relatively quiet.

An initial pilot program was conducted by the city's Department of Transportation, but that program had some limitations. It was limited to a few streets and only a few trucks. The new program is being tested on a larger scale. It involves using a fleet of delivery trucks to deliver packages to homes and businesses. The trucks are equipped with sensors that can communicate with each other and with a central server. This allows the trucks to find the most efficient routes and avoid traffic. The project is being tested in New York City, San Francisco, and other cities. The project is a new way to manage traffic during peak hours. It involves using a fleet of delivery trucks to deliver packages to homes and businesses. The trucks are equipped with sensors that can communicate with each other and with a central server. This allows the trucks to find the most efficient routes and avoid traffic.

TIME magazine listed the OHD project as a "Top 10 Ideas" March 25th, 2013

Current Efforts

Stacey Hodge, Presenter



NYCDOT Market Research: Key Findings

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- ❖ Insight #1: Find signature chains to be the leaders
- ❖ Insight #2: Focus on developing incentives
 - ❖ This validates previous research
 - ❖ Our energy is better spent in getting the incentives developed and making a clearer business case
- ❖ Insight #3: Engage community stakeholders once there is a clear plan
 - ❖ Marketing strategy
 - ❖ With several key champion chain companies on board
 - ❖ A business case well defined for those champion companies
 - ❖ Only then it is possible to win over residents and small businesses

NYCDOT/RPI are in Conversations with...

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- ❖ Economic development agencies: to define OHD incentive programs and tie other incentives to OHD
- ❖ Federal agencies: to see if existing federal programs can be expanded to include OHD
- ❖ Leadership in Energy and Environmental Design (LEED): to see it could include OHD-friendly features
- ❖ Leaders in the real estate sector: to gain their support on OHD and sustainable delivery practices
- ❖ Trade groups and leading companies: to foster participation in OHD



On Going Discussions With...

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CVS pharmacy

The BEVERAGE Works

GRISTEDES
SUPERMARKETS OF NEW YORK



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Super Storm Sandy impacted the project...

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- ❖ NYC economy went into recession, restaurants heavily impacted, some partners lost +20% of their fleets
- ❖ NYCDOT heavily impacted, focused on recovery efforts

The New York Times

N.Y. / Region

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION

Gasoline Runs Short, Adding Woes to Storm Recovery



A gas station in Williamsburg, Brooklyn, had long lines on Thursday, and police officers to keep the peace. Officials said the fuel shortage would thin the taxi fleet. [More Photos](#)



Lessons Learned



Lesson #1: Behavior Changes are Needed

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- ❖ The path to sustainability entails behavior change
 - ❖ We need to understand behavior, to identify the best ways to induce changes for the better
- ❖ Changing behavior is not easy:
 - ❖ It requires the right combination of incentives/penalties
 - ❖ Must know what incentives/penalties, and the amounts
- ❖ We need to account for self-interest:
 - ❖ Define policies, based on incentives and penalties, that benefit all, or at least the vast majority of key players
 - ❖ This leads to policies that all involved will fight for
 - ❖ More importantly, these policies will last...Policies that impose costs on some stakeholders will be challenged

Lesson #2: Stakeholder Collaboration is Needed⁴⁸

- ❖ No single player could solve all freight issues by itself
 - ❖ Public sector → Regulates, manages infrastructure
 - ❖ Private sector → Operates the system
 - ❖ Academia → Conducts research to find solutions
 - ❖ Communities → Enjoy freight benefits, suffer the impacts
- ❖ All players control a different piece, no one benefits from the status quo:



Industry Advisory Group

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❖ Associations



❖ Companies



❖ Business Improvement Districts



Lesson #2 –continued–

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- ❖ If things were easy to solve, they would have been solved already...there is no way to escape complexity
- ❖ Unilateral solutions do not work in complex systems
- ❖ Proper stakeholder engagement requires:
 - ❖ Constancy over time
 - ❖ Development of trust
 - ❖ Transparency of actions and purpose
 - ❖ Patience
 - ❖ Two way communications
 - ❖ Ability to change course based on the input received

Industry Advisory Group

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Lesson #3: Receivers are the Key

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- ❖ Receivers are the ones that create freight demand
 - ❖ By specifying delivery times, they define when the vendors/carriers travel
 - ❖ If they are not ready to accept deliveries, trucks spend more time than needed at the curb
- ❖ As the customers, they have great influence on how the supply chains take place
- ❖ However, receivers:
 - ❖ May be OK with the status quo: Why should they change?
 - ❖ May not be aware of their influence in supply chains
 - ❖ Need incentives, financial and non-financial, to be motivated to act in favor of sustainable practices

Lesson #4: Incentives are Needed

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- ❖ Engaging receivers as agents-of-change requires the use of incentives:
 - ❖ Financial, e.g., tax deductions for sustainable practices
 - ❖ Public recognition for performing outstanding service
 - ❖ Discount from vendors, e.g., for accepting OHD

Lesson #5: Ensure High Level Support

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- ❖ Enacting change at a large scale and quickly requires a powerful message coming from civic leaders
 - ❖ A clear message stating the need to change practices, and a path to do it, helps keep the private sector on track
 - ❖ The London Olympics provides a good example
- ❖ High level decision makers should be involved, working in concert with private/public sector
 - ❖ High level campaigns together with multi-stakeholder support involving: trade groups and associations, leading private companies, etc. will do the trick
 - ❖ Multiple public agencies may need to play a role
- ❖ Convincing one receiver at the time is a slow process

In Conclusion

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- ❖ Engaging receivers is the winning strategy
- ❖ OHD is a win-win-win-win-win policy:
 - ❖ Benefits regular hours travelers
 - ❖ Benefits the environment, improves quality of life
 - ❖ Benefits the business community, enhances economy
 - ❖ Noise impacts could be easily mitigated → electric trucks, low-noise truck technologies/practices
- ❖ A win-win-win-win-win policy is politically appealing, implementable as a voluntary program
- ❖ In our opinion, this is the way to go...



Acknowledgments

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- ❖ Funding Agencies:
 - ❖ USDOT/RITA's Commercial Remote Sensing and Spatial Information Technology Application Program, and Mr. Caesar Singh
 - ❖ New York City Department of Transportation, and particularly, Commissioner Janette Sadik-Kahn
 - ❖ NY State Department of Transportation (NYSDOT)
 - ❖ NY State Energy Research and Development Agency
- ❖ Private sector partners
- ❖ Project partners and team members



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Thanks! Questions?

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