

# Improving Urban Freight Efficiency

**Global best practices in reducing  
emissions in goods movement**

Dianne Zimmerman

Lindsay Wiginton

April 2017

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# Executive summary

As Canada's urban population continues to grow, so does the number of commercial, manufacturing, office and industrial businesses coming to our neighbourhoods. We will increasingly feel the pressure on our transportation networks as we compete for the same space to move people, goods and services. The result is traffic congestion, noise on our streets and increased air pollution and greenhouse gas emissions. However, freight, or goods movement, is the backbone of our economy, particularly in Ontario: almost 40% of the provincial economy is generated by freight-intensive industries.<sup>1</sup> Considering this, it is in everyone's best interest, economically and environmentally, that decision-makers and industry work to make the freight sector more efficient.

The freight sector faces a number of challenges — traffic congestion, lack of legal loading/unloading areas and limited on- and off-street parking. This results in decreased fuel efficiency, as drivers circle city streets to find parking or park illegally. Another challenge the freight industry faces is rising urban land costs. This means that more and more warehousing and distribution centres tend to be in the suburbs, increasing travel times and kilometres travelled. All of these challenges lead to increased costs for the trucking industry and consumers, as well as increased emissions from their operations.<sup>2</sup>

So how are cities coping with increasing demands to move goods in their cities? There are many examples of private/public urban freight partnerships to introduce solutions for improved urban freight delivery. This is particularly true in European countries that have highly populated urban centres with extremely congested, and narrow, streets. Examples also exist in cities in the United States, and to a lesser extent, in Canada. The solutions can range from being highly local, at the municipal level, to policy change at the federal level. This report looks at municipal and industry-led initiatives and solutions to address urban freight challenges. These are done through a variety of stakeholder engagement and collaborative approaches. The case studies chosen are not meant to be a comprehensive review of all initiatives, but designed to provide policy makers and other interested stakeholders information about how other jurisdictions are

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<sup>1</sup> Ontario Ministry of Transportation, *Freight Supportive Guidelines* (2016), 6.

<http://www.mto.gov.on.ca/english/publications/freight-supportive-guidelines.shtml>

<sup>2</sup> Dianne Zimmerman, "The environmental weight of freight," *Pembina Institute*, October 18, 2016.

<http://www.pembina.org/blog/environmental-weight-of-freight>

taking action to address urban freight issues. The examples range from stakeholder forums to pilot projects and living labs that are testing on-the-ground solutions to improve the movement of goods.

Our research has shown that there is no uniform approach to freight stakeholder engagement, and can take the form of networks, forums, or solution-based initiatives. It is also clear that more initiatives are emerging in response to growing urban freight challenges. As we begin to think about the need to develop similar approaches in Canadian cities, the partnership approaches highlighted in this report should be considered, as they have similar requirements and considerations as urban centres in Canada. Freight solutions and initiatives should consider a suite of success factors, and may require a combination of the solutions outlined in this report, plus new, innovative solutions. Based on the learnings from these case studies and past Pembina Institute reports we found that success factors for effective public/private partnerships include:

- Strong leadership: strong management from the top, with clear strategy and objectives.
- Dedicated staff and long-term commitments: building relationships take time and resources, and this needs to be considered in planning.
- Early stakeholder engagement and ongoing representation: the key freight actors can be divided into four main groups: government and authorities, customers (e.g., retail and restaurants), shippers, and transport operators. Other indirect stakeholders (e.g., auto associations and business improvement areas (BIAs)) are also relevant, and should be at the table with industry and decision-makers.
- Stakeholder education: the appropriate time needs to be taken to meet with participants, so they understand the intended outcomes of the initiative and the role they play in its success.
  - Public outreach is necessary to help educate and raise awareness of issues the trucking industry is facing.
  - Be mindful of BIAs and understand the impact to smaller companies and local businesses. Solutions need to enable businesses, not disable them.
- A platform for stakeholders to identify problems and solutions, which then need to influence politicians and municipal governments to implement change.
  - Understand the possible impact of solutions and ensure they are appropriate to market conditions.
  - Understand the interaction of goods movement in the neighbourhood, with both built form and other modes of transportation.

# 1. Introduction

Despite its importance for our regional economy and quality of life, urban goods movement has not seen the kind of attention that the movement of people has.<sup>3</sup> For example, typical municipal transportation plans focus on moving people and provide little guidance for municipalities to incorporate good freight practices. The development of strong municipal and regional goods movement strategies and stakeholder partnerships designed to address the problems associated with freight will keep urban communities attractive places to live and work.<sup>4</sup>

Bringing private and public stakeholders together to form partnerships is one way to connect the right stakeholders in the transportation planning processes. However, this is not an easy task and it takes time and effort to convene these forums as well as patience to see results. Urban centres need to play a leading role in convening, and addressing the challenges faced by the freight sector. In particular, supporting the development and implementation of best practices, collecting and sharing data, and encouraging solutions.

There is a strong case to using pilot projects as a way to test solutions. Pilot projects are the best way to modify or test planning ideas by collecting data, monitoring and evaluating performance and effectiveness at achieving objectives. When physical infrastructure is required, pilots can be implemented at a lower cost than permanent projects and are easily removed or modified.<sup>5</sup>

Platforms, forums and pilot projects that bring together shippers, receivers, transportation logistics companies, local governments and fragmented and local businesses can create the solutions necessary to help companies save costs and reduce their environmental impact.

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<sup>3</sup> Regional Plan Association and The Volvo Research and Educational Foundations, *Why Goods Matter: Strategies for Moving Goods in Metropolitan Areas* (2016).

<http://www.vref.se/download/18.1ffaa2af156b50867485a21/1471930162785/Why-Goods-Movement-Matters-ENG+-+June+2016.pdf>

<sup>4</sup> J. Allen, G. Thorne and M. Michael Browne, *BESTUFS, Good Practice Guide on Urban Freight Transport* (2007). [http://www.bestufs.net/download/BESTUFS\\_II/good\\_practice/English\\_BESTUFS\\_Guide.pdf](http://www.bestufs.net/download/BESTUFS_II/good_practice/English_BESTUFS_Guide.pdf)

<sup>5</sup> Nithya Vijayakumar, “Why we need to learn to love pilot projects,” opinion editorial, *Toronto Star*, May 16, 2016. <https://www.thestar.com/opinion/commentary/2016/05/16/why-we-need-to-learn-to-love-pilot-projects.html>



Our research has shown there is no standard approach for addressing urban freight. There are many examples that are examining solutions for improving the performance, efficiency and environmental impacts of freight in various cities around the world.<sup>6</sup> Whether they are in large cities like London, New York or Toronto or small to medium cities like Gothenburg, these initiatives tend to address similar concerns. The primary issues include traffic congestion, land scarcity, public safety and costs in transportation related activities (e.g. in parking tickets, environmental and congestion charges, wait times at loading docks and excess fuel use). Therefore, most of the design features of these initiatives are aimed at improving access to the city or the downtown core, access to loading docks and parking, reducing congestion and finding ways to improve the efficiency of the delivery (both in travel time and vehicle kilometres travelled (VKT)), and improving public safety with other modes of transportation like cycling and walking.

Many of these solutions fall into the following categories: off peak deliveries and time of day restrictions, urban consolidation centers, freight villages, improved safety and enforcement programs through training, signage and maps, physical barriers, congestion or environmental zones/tolls, and introduction of new vehicle technologies that have zero (e.g., cargo bikes) or low emissions. This report highlights some examples of these, and there is a tremendous opportunity to apply lessons learned elsewhere.

The case studies in this report are focused on urban freight activities. The research is laid out to give insight into why and how freight stakeholder approaches are established. This research has helped us understand the kinds of initiatives currently in place and to provide insight into program design and lessons learned. The case studies highlighted in this report are:

- The European Commission's City-VITALity-Sustainability (CIVITAS) Initiative, a convening forum that brings together cities across Europe to design and test solutions around urban freight management.
- The United Kingdom's Freight Quality Partnerships, which brings together private and public sectors to address concerns about traffic congestion and other inefficiencies in the trucking industry.
- The Freight Network in Gothenburg, Sweden, which brings together private transportation operators and public authorities to create a network for sharing ideas and to ensure the continuation of urban freight pilot actions.

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<sup>6</sup> See Appendix A for additional information and case studies.

- New York City's off-peak truck delivery pilot, created to help combat congestion, increase business competitiveness and improve air quality. Participating businesses switched their receiving hours to off-peak times, from 7 p.m. to 6 a.m.
- Toronto's Pan/Parapan American Games off-peak delivery pilot, introduced to reduce traffic demands on highways in the GTA and key inter-city corridors during the games.
- London, England's Construction Logistics and Community Safety program, which addresses pedestrian and cycling fatalities from increased construction activity.

## 2. Europe: City-VITAlity-Sustainability Initiative

Many urban freight initiatives and networks in Europe have been happening for close to two decades, and started under the European Commission’s City-VITAlity-Sustainability (CIVITAS) Initiative. CIVITAS is an ambitious initiative to improve the efficiency of urban transport in Europe and beyond, while reducing the emissions from the transport sector.<sup>7</sup> The initiative provides funding for research, and leads on the ground collaboration and demonstration pilots.

### 2.1 Goals

The CIVITAS initiative is designed to bring cities, practitioners, policy makers and the general public from participating cities together to test and implement innovative measures for cleaner, more efficient and more sustainable urban mobility.<sup>8</sup>

In October 2015, CIVITAS released the policy paper, *Smart Choice for Cities*. It aimed to raise awareness and increase knowledge of urban freight issues and challenges by providing a general overview of the issues and definitions, as well as indications of future trends.<sup>9</sup>

CIVITAS has a broad mandate supporting sustainable transport mobility. Of its 10 thematic categories, nine of them address freight. These include clean fuels and vehicles, collective passenger transport, demand management strategies, public involvement, safety and security, integrated planning, mobility management, transport telematics and urban freight logistics.<sup>10</sup>

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<sup>7</sup> CIVITAS, “About us” <http://www.civitas.eu/about-us-page>

<sup>8</sup> Ibid.

<sup>9</sup> CIVITAS, *Smart Choices for Cities: Making urban freight logistics more sustainable* (2015). [http://civitas.eu/sites/default/files/Results%20and%20Publications/civ\\_pol-an5\\_urban\\_web.pdf](http://civitas.eu/sites/default/files/Results%20and%20Publications/civ_pol-an5_urban_web.pdf)

<sup>10</sup> “About us”

## 2.2 Program design

CIVITAS was first launched in 2002 and has tested and implemented over 800 measures and urban transport solutions with more than 80 cities across Europe.<sup>11</sup>

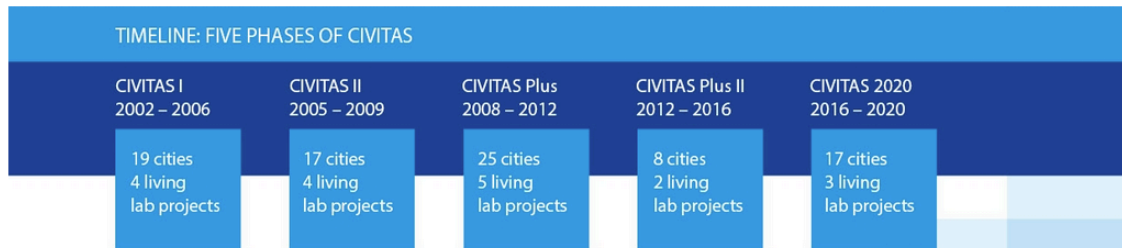


Figure 1. The five phases of the CIVITAS initiative

Source: CIVITAS<sup>12</sup>

CIVITAS is now part of the broader European funding framework programme known as Horizon 2020,<sup>13</sup> created by the European Commission. In the 2014-2015 funding period, approximately 100 million euros were allocated to Horizon 2020 CIVITAS-branded projects providing grants to research and innovation projects through open and competitive calls for proposals.<sup>14</sup>

CIVITAS connects interested practitioners and city representatives to collaborations like policy analysis, study tours, webinars and workshops.

The work is sorted around thematic groups, which reflect the above-mentioned categories for an integrated strategy for sustainable mobility. For example, the urban freight logistics (UFL) working group looks at overall strategies to create cleaner and more efficient freight transport in cities. The key areas of interest include low/zero emission vehicles for goods movement; integration of UFL into sustainable urban mobility plans; stakeholders' engagement and public-private cooperation; data collection and management, and the role of intelligent transport systems for UFL; and innovative business models for UFL (e.g. consolidation, e-commerce, joint procurement).

<sup>11</sup> CIVITAS, “All cities.” <http://civitas.eu/cities-all-map>

<sup>12</sup> “About us”

<sup>13</sup> European Commission, “Horizon 2020.” <https://ec.europa.eu/programmes/horizon2020/>

<sup>14</sup> European Commission, “Participant Portal H2020 Online Manual.” [http://ec.europa.eu/research/participants/docs/h2020-funding-guide/index\\_en.htm](http://ec.europa.eu/research/participants/docs/h2020-funding-guide/index_en.htm)

There are currently around 100 members in the UFL group and 35 core members are from European cities.



Figure 2. TNT showcasing its mobile depot of cargo bikes in Brussels

Photo: Bruxelles Mobilité

## 2.2.1 Projects

CIVITAS supports local partnerships in implementing and testing new approaches in real-life situations. Participating cities collaborate and share experiences while undertaking a project, during impact evaluation and investigating the transferability of the tested solutions. This results in a developing knowledge base, a growing technical capacity and support for the scaling up and transfer of innovative transport solutions across Europe.<sup>15</sup>

There are a number of UFL projects being funded from 2015 to 2020. These projects have participating “living labs” or cities that are focused around collaboration, demonstration projects and knowledge-generating research projects. Each project has a unique focus, which is discussed in more detail below.

The ECCENTRIC project has five living labs, in Stockholm, Madrid, Munich, Tuku and Ruse, and is focused on sustainable mobility in the suburbs and innovative urban freight

<sup>15</sup> CIVITAS, “Projects.” <http://civitas.eu/about-civitas/projects>

logistics. This project is aimed at demonstrating the potential and replicability of integrated and inclusive urban planning approaches, innovative policies and emerging technologies. Clean vehicles and fuels are also being tested and new regulations and consolidation solutions are being explored.<sup>16</sup>

The CITYLAB project has seven participating cities in four key areas: last-mile deliveries in city centres, large freight attractors<sup>17</sup> and public administrations, urban waste and recycling, and logistics facilities and warehouses. It will test and implement seven innovative solutions aimed at improving traffic, reducing emissions, improving business profitability and have a high potential for future growth.<sup>18</sup> The core of CITYLAB is a set of living laboratories, where cities work as centres for innovation, and to test implementation processes for both public and private sectors that are working to increase efficiency and sustainable urban logistics.<sup>19</sup>

The NOVELOG project support cities implementing effective and sustainable policies and measures, and facilitates stakeholder collaboration for sustainable logistics<sup>20</sup>. The project is working to strengthen the capacity of local authorities and stakeholders, by: building a consensus and common understanding on UFL among stakeholders; enabling cities to identify potential logistics strategies and measures, and their impacts; guiding cities to incorporate UFL solutions in their Sustainable Urban Mobility Plans.<sup>21, 22</sup>

The U-TURN project is creating a new model for urban food transportation to work towards more efficient, and in turn greener, urban food logistics. Some of their goals are to analyze the existing transportation flows of food products in urban areas; identify opportunities to consolidate these flows; measure and evaluate the impact of the identified and alternative practices, considering adverse economic, environmental and social effects; conduct pilots to learn about the effectiveness of the proposed initiative; and propose a set of guidelines to support organizations to plan collaborative transport operations.<sup>23</sup>

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<sup>16</sup> CIVITAS “ECCENTRIC project.” <http://civitas.eu/eccentric>

<sup>17</sup> Locations that attract a high volume of freight (e.g. universities, hospitals and government buildings)

<sup>18</sup> CIVITAS “CITY LAB project.” <http://www.citylab-project.eu/>

<sup>19</sup> Giacomo Lozzi, CIVITAS UFL Thematic Group lead, personal communication, April 18, 2017.

<sup>20</sup> NOVELOG <http://novelog.eu/>

<sup>21</sup> Eltis “The SUMP concept <http://www.eltis.org/mobility-plans/sump-concept>

<sup>22</sup> Giacomo Lozzi, CIVITAS UFL Thematic Group lead, personal communication, April 18, 2017.

<sup>23</sup> CIVITAS, “U-TURN project objectives.” <http://www.u-turn-project.eu/objectives.html>

## 2.3 Lessons learned

Results from the early experiences in the CIVITAS initiative have influenced how the programs are developed today. In a 2009 report, results showed that four areas need to be considered in all urban freight initiatives: political involvement; target groups to facilitate and design solutions; good management methodology to establish milestones and objectives; and modelling the design and solutions.<sup>24</sup> The current programs and research projects reflect this learning.

### 2.3.1 Next steps

The experiences and lessons learned from each of the projects are shared not only amongst partner cities, but also with other cities, practitioners, policy makers and the interested public. CIVITAS hosts an annual conference which brings together all of the participants of the projects from across the different categories and highlights the status and results. In addition to the conference, many of the members host working group sessions and other joint events.<sup>25</sup>

The UFL group continues to explore possibilities of cooperation among the CIVITAS urban freight and logistics projects, identifying topics of mutual interest, cooperation initiatives, common products and outcomes. From June 2017 onwards, CIVITAS will see the launch of four new research and innovation actions on neighbourhood-based mobility solutions, looking at co-creation of mobility measures (for people as well as for goods) at the neighbourhood level.<sup>26</sup>

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<sup>24</sup> D. Breuil and D. Sprunt, *Cities of La Rochelle and Norwich: Goods distribution and city logistics* (CIVITAS, 2009), 17. <http://civitas.eu/content/cities-la-rochelle-and-norwich-goods-distribution-and-city-logistics>

<sup>25</sup> Giacomo Lozzi, CIVITAS UFL Thematic Group lead, personal communication, March 28, 2017.

<sup>26</sup> Ibid.

## 3. United Kingdom: Freight Quality Partnerships

In 1996, the United Kingdom's Freight Transport Association formed a Freight Quality Partnership (FQP), bringing private and public sectors together to address concerns about traffic congestion and other inefficiencies in the trucking industry.<sup>27</sup> These FQPs were established in many boroughs. In 2010, there were 58 FQPs in operation in both rural and urban communities.<sup>28</sup> New FQPs were established in Newcastle and Manchester, demonstrating continued interest and need to address urban freight.<sup>29</sup>

### 3.1 Goals

The aim of the FQPs was to connect and share ideas between public and private sectors and to identify and implement improvements for freight efficiency. The FQPs are designed to focus on urban and rural areas. Over time, FQPs have enabled long-term partnerships between key urban freight stakeholders including the freight operators, local governments, businesses, residents and environmental groups and has been introduced in multiple boroughs across the U.K. While these partnerships were initially established to try to solve specific freight-related inefficiencies, the interaction between stakeholders and relationships that developed became an important component of relationship development and policy interaction with local authorities.<sup>30</sup>

### 3.2 Program design

A notable FQP is in Central London. Established in 2006 by the Central London Partnership<sup>31</sup> and Transport for London (TfL),<sup>32</sup> the Central London FQP was a bottom

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<sup>27</sup> Maria Lindholm and Michael Browne, "Local authority cooperation with urban freight stakeholders: A comparison of partnership approaches," *European Journal of Transport and Infrastructure Research* 13(1) (2013). [http://www.ejtir.tudelft.nl/issues/2013\\_01/pdf/2013\\_01\\_01.pdf](http://www.ejtir.tudelft.nl/issues/2013_01/pdf/2013_01_01.pdf)

<sup>28</sup> Ibid, 24.

<sup>29</sup> Giacomo Lozzi, CIVITAS UFL Thematic Group lead, personal communication, March 29, 2017.

<sup>30</sup> "Local authority cooperation with urban freight stakeholders."

<sup>31</sup> Central London Partnership was formed by eight central London boroughs (Kensington & Chelsea, City of Westminster, Camden, City Corporation and Tower Hamlets, Southwark, Lambeth and Wandsworth) and



up effort that was initially created to address problems associated with limited loading/off-loading space and the increasing costs associated with parking infractions and congestion pricing.<sup>33</sup> Housed at the University of Westminster’s Transport Planning Department, the partnership covers a broad region.

The Central London FQP’s mandate is to develop:

- An understanding of freight issues in central London
- Sustainable solutions for freight access and services issues in central London, taking full account of local economic, environmental and social factors
- Responses to proposed initiatives affecting freight and servicing.<sup>34</sup>

It has a wide member base including service providers (freight transport, distribution and service companies and their industry associations), local businesses and other public sector organizations (Greater London Authority and the Metropolitan Police). It has also launched London’s first web-portal for the FQP network and provides direct links to other local FQPs.<sup>35</sup>

### 3.3 Lessons learned

Given the length of time it has been active, many lessons can be drawn from the experience of the Central London FQP. Below are some highlights:

- Creating important networks and linking key stakeholders: The FQP creates a forum to connect stakeholders from different sectors to discuss freight transport, and how to improve efficiency, resulting in economic and environmental benefits.

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local businesses and is aimed at improved public realm, a better environment, business development and better employment opportunities for central London residents.

<sup>32</sup> London’s local government is responsible for the transportation network including roads, underground and overground rail, trams, taxis, cycling, etc. They also maintain and manage around 5% of the capital roads in London and have approximately 16 full-time employees working on freight.

<sup>33</sup> Michael Browne, chair of the Central London Freight Quality Partnership, personal communication, February 22, 2017.

<sup>34</sup> Central London Freight Quality Partnership, “About us.” <https://www.centrallondonfqp.org/central-london-fqp-1/>

<sup>35</sup> Ibid.

- Improved dialogue around freight narratives: Forums can be a platform to discuss specific issues affecting the freight industry, local communities' concerns and environmental impacts. This information sharing can and should be used to educate the public about goods movement and the benefits of efficient practices. For example, the Central London FQP's mandate includes "an understanding of freight issues in central London."<sup>36</sup>
- Influencing policy: The mandate of the Central London FQP and the diversity of organizations makes it difficult to provide formal submissions in response to transport policy consultations. When a submission is made the wording has to reflect the diversity of views that are expressed at meetings. As a result, the FQP acts more as a forum to exchange ideas and dialogue and less about policy reform.<sup>37</sup>
- Need for stable funding: FQPs are, by design, a long-term partnership and therefore require long term funding commitments. The Central London FQP is mainly funded through the mayor's office and some membership fees, however, for the past few years funding has been more limited. Currently the funding only supports one part time employee, and this needs to cover the hosting of four stakeholder meetings a year and providing regular updates on freight-related developments in central London.<sup>38</sup> Guaranteed, long-term funding is needed to ensure the effectiveness and continuity of the program.

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<sup>36</sup> Ibid.

<sup>37</sup> Ibid.

<sup>38</sup> Michael Browne, chair of the Central London Freight Quality Partnership, personal communication, February 22, 2017.

## 4. Gothenburg: Freight Network

Gothenburg is a port city, and Sweden's second largest, with a population of 533,000.<sup>39</sup> Due to its location, the city has a long history in goods movement. One contributor to its continued success is its extensive local transport and logistics network, Gothenburg's Freight Network.<sup>40</sup> The network is chaired by the city's local transportation authority and was formalized in 2006 after years of urban freight pilot action.<sup>41</sup>

### 4.1 Goals

The goal of the network is to bring together private transportation operators and public authorities to ensure the continuation of urban freight pilot actions, create a network for sharing ideas, knowledge and experiences, and to increase the level of understanding of different stakeholder perspectives.<sup>42</sup>

### 4.2 Program design

The network was kick-started by the city's participation in the European Commission's Short-Term Actions to Reorganize Transport of Goods (START) program. START was designed to reduce energy use by making freight traffic in cities more efficient, reduce greenhouse gas emissions and air pollutants, increase awareness and support from the local transport sector and to increase private-public cooperation – while ensuring that economic development within the area is not negatively impacted.<sup>43</sup> Gothenburg was a leader in the START program, and was responsible for developing detailed freight efficiency planning, and coordinating with other participating cities. The success of the

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<sup>39</sup> City of Gothenburg, "Facts and figures." <http://international.goteborg.se/facts-figures>

<sup>40</sup> Maria Lindholm "Successes and failings of an Urban Freight Quality Partnership – The Story of the Gothenburg Local Freight Network" *Procedia - Social and Behavioral Sciences* 125 (2014), 126. [http://ac.els-cdn.com/S1877042814014992/1-s2.0-S1877042814014992-main.pdf?\\_tid=e647db2e-cea7-11e6-a5a9-00000aacb362&acdnat=1483113300\\_d3ccb3bc9443f151ec64eeee82af84aa](http://ac.els-cdn.com/S1877042814014992/1-s2.0-S1877042814014992-main.pdf?_tid=e647db2e-cea7-11e6-a5a9-00000aacb362&acdnat=1483113300_d3ccb3bc9443f151ec64eeee82af84aa)

<sup>41</sup> Ibid.

<sup>42</sup> Ibid. 129-130.

<sup>43</sup> Transport Resource and Innovation Portal, "Project details." <http://www.transport-research.info/project/short-term-actions-re-organise-transport-goods>

involvement in START led to the formalization of the Gothenburg Freight Network, which took on many of the same principles.

The network is a members group (by invitation only), made up of approximately 40 stakeholders, and is focused on improving livability (attractive urban spaces), improving the environment and regeneration.<sup>44</sup> As part of this network initiative the city introduced a new transport strategy.<sup>45</sup> The strategy's main objective is "to contribute to...Gothenburg's position as the logistics centre of Scandinavia, where both new and existing industries can develop and create job opportunities without encroaching on quality of life, sustainability and accessibility."<sup>46</sup> Key elements of this strategy include reducing the environmental impact of freight, creating regionally connected logistics centres and stimulating innovation solutions with academic institutions and businesses.<sup>47</sup>

## 4.3 Lessons learned

The Gothenburg Freight Network has a long history, and the results and lessons learned have been thoroughly reported. Below are some highlights:

- **Municipal leadership:** The City of Gothenburg formalized its Freight Network more than 10 years ago, after years of pilot projects and municipal and industry-led efforts aimed at reducing congestion and environmental improvements.
- **Ongoing commitment:** Survey work conducted with the participants identified that physical outcomes and attracting the right mix of stakeholders to attend the meetings are essential<sup>48</sup> to ensure that stakeholders continue participating.
- **Clearly identify solutions:** The Gothenburg Freight Network has now expanded its mandate to include other programs and innovative ideas to provide solutions to issues around traffic congestion and environmental pollution. For example, the City of Gothenburg has expanded its initial focus to now look at traffic management plans and identify solutions.

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<sup>44</sup> Michael Browne, chair of the Central London Freight Quality Partnership, personal communication, February 22, 2017.

<sup>45</sup> City of Gothenburg, *Gothenburg 2035: Transport Strategy for a Close-knit City* (2014). [https://goteborg.se/wps/wcm/connect/6c603463-f0b8-4fc9-9cd4-c1e934b41969/Trafikstrategi\\_eng\\_140821\\_web.pdf?MOD=AJPERES](https://goteborg.se/wps/wcm/connect/6c603463-f0b8-4fc9-9cd4-c1e934b41969/Trafikstrategi_eng_140821_web.pdf?MOD=AJPERES)

<sup>46</sup> Ibid, 5.

<sup>47</sup> Ibid, 7.

<sup>48</sup> "Successes and failings of an Urban Freight Quality Partnership," 131.

- Implementation success: Freight solutions are developed in dialogue between the freight network and the individual companies that will be affected, before being implemented. This fosters wider acceptance and leads to a more cost-efficient implementation process.<sup>49</sup>

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<sup>49</sup> *Smart Choices for Cities.*

## 5. New York City: Off-Hour Truck Delivery pilot program

In 2009 and 2010, an off-hour delivery (OHD) pilot program was implemented in the borough of Manhattan. Participating businesses were asked to switch their distribution and receiving activities to off-hours — defined as 7 p.m. to 6 a.m. — for at least a month.<sup>50</sup> In total, 25 receivers (from the retail and food sectors) and eight carriers participated in the one-month test.<sup>51</sup> Widely hailed as a major success, this pilot project has since been scaled up to participants across the city, using the lessons learned from the pilot project to inform program design.

### 5.1 Goals

The OHD pilot program was borne out of a recognition that trucks and commercial vehicles both cause and suffer from congestion on New York City streets. The primary goal of the project from the perspective of the New York City Department of Transportation (NYCDOT) was to combat congestion,<sup>52</sup> while recognizing that the program would also help businesses control costs, improve air quality, and contribute to the economic competitiveness of New York City. It fits into a broader set of policies and programs overseen by NYCDOT to improve pedestrian and bicycle safety and goods movement in the city.<sup>53</sup>

### 5.2 Program design

The pilot program design recognized that while carriers can achieve significant time and cost savings from off-hour deliveries, there might be a net cost to receiving businesses if

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<sup>50</sup> NYCDOT “Off-Hour Delivery Program.”

<http://www.nyc.gov/html/dot/html/motorist/offhoursdelivery.shtml>

<sup>51</sup> NYCDOT, “NYC DOT Pilot Program Finds Economic Savings, Efficiencies For Truck Deliveries Made During Off-hours,” press release, July 1, 2010. [http://www.nyc.gov/html/dot/html/pr2010/pr10\\_028.shtml](http://www.nyc.gov/html/dot/html/pr2010/pr10_028.shtml)

<sup>52</sup> José Holguín-Veras et al., *Integrative Freight Demand Management in the New York City Metropolitan Area*, (2010), Executive Summary. [http://transp.rpi.edu/~usdotp/OHD\\_EXECUTIVE\\_SUMMARY.pdf](http://transp.rpi.edu/~usdotp/OHD_EXECUTIVE_SUMMARY.pdf)

<sup>53</sup> USDOT Federal Highway Administration, *Urban Freight Case Studies: New York* (2009).

<https://ops.fhwa.dot.gov/publications/fhwahop10019/fhwahop10019.pdf>

they have to pay additional staff to be present at night to receive the goods. To address this, participating receivers were provided a federally funded financial incentive of \$2,000, while shippers were given an incentive of \$300 per participating truck to cover setup costs.<sup>54</sup>

The program also provided support to receivers in allowing “unassisted” or “unstaffed” deliveries — deliveries done without receiving staff present. Unstaffed deliveries are usually facilitated by providing the delivery team with a key to the receiving business and/or by installing a secure goods holding area.

The OHD pilot program was one of many efforts to improve goods movement in New York City, which experiences the most goods movement of any metropolitan area in the US. Freight deliveries into Manhattan exceed 100,000 daily, and there is a great deal of competition among trucks and with all other road users, for the finite road space.<sup>55</sup> The city and state recognized the enormous economic, environmental and health benefits of making goods movement more efficient.



Figure 3. Implementation of OHD pilot

Photo: New York City Department of Transportation

<sup>54</sup> *Integrative Freight Demand Management in the New York City Metropolitan Area.*

<sup>55</sup> NYCDOT. “NYC DOT Pilot Program Finds Economic Savings, Efficiencies For Truck Deliveries Made During Off-hours,” press release, July 1, 2010. [http://www.nyc.gov/html/dot/html/pr2010/pr10\\_028.shtml](http://www.nyc.gov/html/dot/html/pr2010/pr10_028.shtml)

## 5.2.1 Partnership and participation

The OHD pilot was initiated and led by a coalition of academic institutions and funded by the United States Department of Transportation (USDOT), making it a good example of collaboration between government, academia and industry.

The Rensselaer Polytechnic Institute (RPI) and other academic participants worked with NYCDOT on the pilot implementation, and played a key role in proposing solutions and measuring outcomes. Four industry partners also worked closely with the project team to develop and implement the pilot. These industry partners dedicated staff time well beyond the \$3,000 that they received for their participation.<sup>56</sup>

## 5.2.2 Results

Some key results from the pilot program included:

- Cost savings for participants, particularly those that used unassisted deliveries.
- Travel speeds improved by up to 75% for the first delivery, while subsequent travel speeds improved by up to 50%.<sup>57</sup>
- Trucks spent an average of only 30 minutes at the curbside making deliveries, instead of 100 minutes before the pilot, due to less competition for parking spaces.<sup>58</sup>
- Restaurants saw cost savings because fresh food products arrived early each morning, so staff were able to prepare food upon arriving rather than waiting for deliveries that are often delayed due to traffic congestion.<sup>59</sup>
- The participating drivers for the various carriers in the pilot test overwhelmingly preferred delivering during the off-hours.<sup>60</sup>
- No noise complaints were received during the pilot.<sup>61</sup>

In response to the success of the pilot, the federal and state governments decided to co-fund an expansion of the OHD program.<sup>62</sup> Using the lessons learned from the pilot, future iterations targeted small businesses in the food sector and focused on unstaffed

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<sup>56</sup> Ibid.

<sup>57</sup> Ibid.

<sup>58</sup> Ibid.

<sup>59</sup> Ibid.

<sup>60</sup> *Integrative Freight Demand Management in the New York City Metropolitan Area*.

<sup>61</sup> Ibid.

<sup>62</sup> Stacey Hodge, NYC Department of Transportation, personal communication, March 9, 2017.



deliveries. The second iteration of the project involved more than 400 shippers and receivers — more than 16 times the levels of participation in the pilot.<sup>63</sup>

A permanent private-public-academic partnership has been established to oversee the expansion of the OHD. An Industry Advisory Group is also in place, with members from industry, businesses, and Business Improvement Districts (BIDs).<sup>64</sup>

## 5.3 Lessons learned

At the end of the pilot project, almost all of the participating receivers doing unassisted deliveries chose to continue or even expand the program to other locations, generally citing reliability as the main benefit. Those who were paying staff to be present at night reverted to daytime deliveries due to the cost.<sup>65</sup> This points to the potential for unassisted delivery support to result in more off-hour deliveries. It also speaks to the fact that certain businesses and sectors will be better-suited to off-hour deliveries, with particular potential among large trip generators.

The project researchers identified the following elements as requiring continued work and consideration: community impacts (eg. noise), enforcement and compliance, liability issues, and inter-agency collaboration.<sup>66</sup>

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<sup>63</sup> José Holguín-Veras et al., *The New York City Off-Hour Deliveries Program: A Business and Community-Friendly Sustainability Program* (forthcoming)

<sup>64</sup> Ibid.

<sup>65</sup> Urban Transportation Center, *Off-peak delivery: A pilot project for the Chicago Region* (2015), 5-6. <https://utc.uic.edu/wp-content/uploads/Off-Peak-Delivery-Report.pdf>

<sup>66</sup> *Integrative Freight Demand Management in the New York City Metropolitan Area*.

## 6. Toronto: 2015 Pan/Parapan American Games off-peak delivery pilot

The off-peak delivery (OPD) pilot was one of many strategies in the Transportation Delivery Plan developed for the Toronto 2015 Pan/Parapan American Games. Similar pilots have been held in other cities hosting multi-sport events (like the Vancouver 2010 Olympics), with successful results.

### 6.1 Goals

There were two key objectives for the OPD pilot. The first was to reduce traffic demands on highways in the GTA and key inter-city corridors, particularly along corridors that hosted temporary high occupancy vehicle lanes, to help reduce the impacts of converting the lanes. The second was to identify the potential for longer-term implementation of OPD.

### 6.2 Program design

The Ontario Ministry of Transportation (MTO) led the OPD pilot, in partnership with 40 Greater Golden Horseshoe (GGH) municipalities. In preparation of the pilot, the MTO contacted all municipalities that held, or would be impacted by, venues or the games route network, with an offer to participate in the pilot. The pilot was implemented prior to the games, during, and in some cases, continued after the games.

In addition to the OPD pilot, the MTO also established a dedicated transportation website for the games,<sup>67</sup> which provided businesses with information on the games route network and road impacts around venues. Efforts to support overall transportation demand management efforts for the games also included a broad-based advertising campaign using print, billboards and social media to build awareness with businesses

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<sup>67</sup> Ontario Ministry of Transportation, “Pan Am & Parapan Am Games Toronto 2015” <https://www.ontario.ca/page/pan-am-parapan-am-games-toronto-2015>

about the need for, and benefits of, alternative transportation strategies during the games.<sup>68</sup>

In summer 2014, one year before the Pan/Parapan American Games, MTO launched a four-week OPD trial within the City of Toronto to test how OPD would proceed on a larger scale during the games. More than 30 businesses including five major carriers participated in the project in the geographical area of Bloor Street south to Lakeshore Boulevard and Dufferin Street east to the Don Valley Parkway. Information was collected on noise impact, travel time and participants experience.

As a result of industry interest, the majority of delivery locations that shifted to off-peak deliveries were in the GTA. Participants included approximately 100 businesses, 16 shippers/carriers delivering to over 500 receiving locations. Data requests were made of all participating carriers.<sup>69</sup>

After the Pan/Parapan American Games finished, all participating businesses were only able to continue OPD in Toronto and Mississauga, as they extended their allowances to permit OPD until September 25, 2015, or didn't have noise by-laws which restricted OPD. Fortunately, these municipalities represented the majority of the participating test delivery locations.<sup>70</sup>

## 6.2.1 Outreach

The MTO took a proactive approach to engage municipalities and generate industry interest. For example, the MTO developed a municipal toolkit to share with the municipalities impacted by the games route network.<sup>71</sup> These toolkits outlined the benefits of the OPD pilot, including background information and resources on the pilot. 40 municipalities participated in the pilot.

At the same time, the MTO took a targeted approach to select industries — typically large shippers — and gave presentations in the months leading up to the games. Other outreach activities included monthly e-blasts and outreach letters to businesses. Industry outreach was well received, generating positive feedback and resulting in a higher than anticipated number of participants. MTO also developed a package for

<sup>68</sup> Marion Gale, Ministry of Transportation, personal communication, March 29, 2017.

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> Planned routes for moving games guests between the Athletes' Village, games venues and Pearson airport, which included temporary traffic measures to facilitate movements such as temporary HOV lanes.

participating carriers and shippers outlining their roles and responsibilities, including adherence to a Code of Practice, which included guidelines to mitigate noise concerns.<sup>72</sup>

## 6.2.2 Results

MTO found the pilot to be successful, and were encouraged by the results. The results from the OPD pilot are:

- 40 municipalities and approximately 100 businesses (retail, food, and grocery businesses) participated in the pilot.
- During the games, businesses shifted over 18,000 deliveries to off-peak periods across the region. This is equivalent to removing approximately 4,500 truck trips or 240,000 VKT during peak periods.
- Shippers, receivers and municipalities received very few noise complaints during the games.
- With sufficient uptake, OPD may be useful to support local congestion management efforts.<sup>73</sup>

## 6.3 Lessons learned

According to the MTO, the key takeaway of the 2015 OPD pilot is that many factors need to be considered before a program is established. This includes business needs and the operational adjustments required, noise impacts, and the regulatory environment, such as noise bylaws. It is also highly depended on each business and their needs and business models. With this in mind, OPD pilots can be highly effective and beneficial.<sup>74</sup>

### 6.3.1 Next steps

MTO continues to work with interested stakeholders to support initiatives related to improving efficiency in goods movement, including potential OPD pilots or implementation. In addition, the MTO released Freight-Supportive Guidelines in 2016. These guidelines were designed to assist municipalities, planners, engineers, developers

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<sup>72</sup> Marion Gale, Ministry of Transportation, personal communication, March 29, 2017.

<sup>73</sup> Ibid.

<sup>74</sup> Ibid.

and other practitioners in creating safe and efficient freight-supportive communities through best practices, examples, and implementation tools.<sup>75</sup>

MTO is also developing a multimodal transportation plan for the GGH, which is designed to help the province optimize the investments being made to improve mobility and address congestion, and will set a direction for long-term planning for the region.<sup>76</sup> A key component of the transportation plan is the development of a region-wide multimodal goods movement network with supporting policies to facilitate safe and efficient goods movement.<sup>77</sup>

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<sup>75</sup> Ontario Ministry of Transportation, *Freight Supportive Guidelines* (2016).

<http://www.mto.gov.on.ca/english/publications/pdfs/freight-supportive-guidelines-english.pdf>

<sup>76</sup> Ontario Ministry of Transportation, “Greater Golden Horseshoe Multimodal Transportation Plan”

<https://www.gghtransport2051.ca/>

<sup>77</sup> Marion Gale, Ministry of Transportation, personal communication, March 29, 2017.

# 7. London, U.K.: Construction Logistics and Community Safety

As populations grow, so do the number of people commuting by cycling and walking. In parallel, construction activity for new residential and commercial buildings increases to keep pace with a growing population. In London, England, like many other cities, this puts increasing pressure on streets and has led to more cycling and pedestrian fatalities. Construction Logistics and Community Safety (CLOCS) is a construction industry-led response to road safety.

## 7.1 Goals

In London in 2015, 78% of cycling fatalities and 20% of pedestrian fatalities were caused by heavy-duty vehicles, even though they make up only 4% of the vehicles on the road. A disproportionate number of these fatalities were from construction vehicles.<sup>78</sup>

As these statistics were part of a continuing trend, Transport for London (a transportation agency out of the mayor's office) commissioned an independent review of the construction sector's transport activities in 2012 to determine the causes of collisions and identify potential measures that could be implemented. The research undertaken included analysis of collision data, vehicle routing and delivery restrictions, 3D scans of vehicles to investigate the visibility of cyclists to drivers, and interviews with individuals working on construction sites. The report found that construction vehicles had larger blind spots than other heavy duty vehicles, road safety was not prioritized as much as on-site safety and there was no common standard for the industry to manage work related road safety.<sup>79</sup>

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<sup>78</sup> Construction Logistics and Community Safety, "Home page." <http://www.clocs.org.uk/>

<sup>79</sup> Ibid.

## 7.2 Program design

To address these concerns, the construction industry launched CLOCS. Its vision is “to fundamentally change the way the construction industry manages work related road safety. The three key elements of the program, as determined by the activity review, are:

- **Improving vehicle safety** through design of safer vehicles and fitting appropriate safety equipment to existing vehicles. So far 10 million pounds have been invested in new truck technology which are equipped with sensors, mirrors, side bars, cameras, better windows and low rise entry allowing the drivers to be closer to cyclists.
- **Addressing the safety imbalance** in the construction industry by ensuring road safety is considered as important as health and safety on site.
- **National Standard** continues to encourage wider adoption of best practice across the construction logistics industry through taking best in class examples, developing a common national standard and embedding a new cultural norm.”<sup>80</sup>

There are approximately 400 different organizations working to deliver the CLOCS objectives through a series of working groups. These working groups are made up of representatives from across the industry including construction clients and logistics operators, vehicle manufacturers, trade associations and institutions, and regulatory and enforcement bodies.

## 7.3 Next steps

The CLOCS national standards have been created and aim to improve how the construction industry manages road risk. Supplementary guidance materials have been developed in the areas of managing driver training and licensing, vehicle safety equipment, managing supplier compliance, managing work related road risk in contracts, managing collision reporting and analysis and compliance toolkits.<sup>81</sup>

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<sup>80</sup> Construction Logistics and Community Safety, “Home page.” <http://www.clocs.org.uk/>

<sup>81</sup> CLOCS, *CLOCS Standard for construction logistics: Managing work related road risk* (2015). [http://www.clocs.org.uk/wp-content/uploads/2016/01/CLOCS-Standard-v2-DEC\\_2015-.pdf](http://www.clocs.org.uk/wp-content/uploads/2016/01/CLOCS-Standard-v2-DEC_2015-.pdf)

## 8. Conclusion

The case studies highlighted in this report show that there is no uniform approach to freight stakeholder engagement, and can take the form of networks, forums, or solution-based initiatives. It is also clear that more initiatives are emerging in response to growing urban freight challenges. As we begin to think about the need to develop similar approaches in Canadian cities, the partnership approaches highlighted in this report should be considered, as they have similar requirements and considerations as urban centres in Canada. Freight solutions and initiatives should consider a suite of success factors, and may require a combination of the solutions outlined in this report, plus new, innovative solutions. Based on the learnings from these case studies and past Pembina Institute reports<sup>82</sup> we found that success factors for effective public/private partnerships include:

- Strong leadership: strong management from the top, with clear strategy and objectives.
- Dedicated staff and long-term commitments: building relationships take time and resources, and this needs to be considered in planning.
- Early stakeholder engagement and ongoing representation: the key freight actors can be divided into four main groups: government and authorities, customers (e.g., retail and restaurants), shippers, and transport operators. Other indirect stakeholders (e.g., auto associations and BIAs) are also relevant, and should be at the table with industry and decision-makers.
- Stakeholder education: the appropriate time needs to be taken to meet with participants, so they understand the intended outcomes of the initiative and the role they play in its success.
  - Public outreach is necessary to help educate and raise awareness of issues the trucking industry is facing.
  - Be mindful of BIAs and understand the impact to smaller companies and local businesses. Solutions need to enable businesses, not disable them.
- A platform for stakeholders to identify problems and solutions, which then need to influence politicians and municipal governments to implement change.

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<sup>82</sup> *Greening the Goods: Opportunities for low-carbon goods movement in Toronto* (2014). <http://www.pembina.org/pub/2536>; and *Regional Transportation Plan Review: Pembina Institute's submission to Metrolinx's 2016 review* (2016). <http://www.pembina.org/pub/regional-transportation-plan-review>



- Understand the possible impact of solutions and ensure they are appropriate to market conditions.
- Understand the interaction of goods movement in the neighbourhood, with both built form and other modes of transportation.

# Appendix A. Other resources

Regional Plan Association and The Volvo Research and Educational Foundations. 2016. *Why Goods Matter: Strategies for Moving Goods in Metropolitan Areas*.  
<http://www.vref.se/download/18.1ffaa2af156b50867485a21/14713930162785/Why-Goods-Movement-Matters-ENG+-+June+2016.pdf>

Ontario Ministry of Transportation. 2016. *Freight Supportive Guidelines*.  
<http://www.mto.gov.on.ca/english/publications/pdfs/freight-supportive-guidelines-english.pdf>

BESTUFS. 2007. *Good Practice Guide on Urban Freight Transport*.  
[http://www.bestufs.net/download/BESTUFS\\_II/good\\_practice/English\\_BESTUFS\\_Guide.pdf](http://www.bestufs.net/download/BESTUFS_II/good_practice/English_BESTUFS_Guide.pdf)

Better Market Street. 2011. *Existing Conditions & Best Practices*. PART 2.4 Loading and Delivery Management. [http://www.bettermarketstreetsf.org/docs/BMS\\_P2-4\\_BestPractices\\_12072011.pdf](http://www.bettermarketstreetsf.org/docs/BMS_P2-4_BestPractices_12072011.pdf)

City of Seattle. 2009. *Best Practices in Freight Movement*. Seattle Urban Mobility Plan Briefing Book.  
<http://www.seattle.gov/transportation/docs/ump/10%20SEATTLE%20Best%20Practices%20in%20Freight%20Movement.pdf>

U.S. Department of Transportation, Federal Highway Administration, Freight Management and Operations. “Urban Goods Movement Resources”  
[http://ops.fhwa.dot.gov/freight/technology/urban\\_goods/index.htm](http://ops.fhwa.dot.gov/freight/technology/urban_goods/index.htm)

Freight in the City. <http://freightinthecity.com/news/>

MetroFreight. <https://www.metrans.org/metrofreight>