



Freight Forum | June 22-23, 2022

Durham Region Freight and Goods Movement Forum



SUMMARY REPORT

Prepared for
The Regional Municipality of Durham

Prepared by
IBI Group in association with David Kriger Consultants Inc.

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FAST FACTS on freight in Durham Region

DURHAM IS GROWING

Durham Region is one of the fastest growing communities in the Greater Golden Horseshoe, expected to grow from 700,000 people currently to 1.3 million by 2051.

JOBS ARE ON THE RISE

Durham Region's total number of jobs is planned to increase from 230,000 currently to 460,000 by 2051. The Region is also planning to provide an additional 1,170 hectares of employment land near 400-series highways.



SELECTED FREIGHT ACTIVITY AND OPPORTUNITIES IN DURHAM



Durham's Strategic Goods Movement Network includes Regional Roads totalling

245 km



Durham's marine port handles 500,000 to 750,000 tonnes of cargo annually, equivalent to

16,000 truckloads



A high proportion of jobs in Durham are relevant to goods movement, including:

49%	Commercial Sector
13%	Industrial Sector
6%	Agricultural Sector



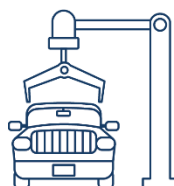
A new small modular reactor is planned in Durham by 2029, and will provide an additional

300 MW
of power for electrification



Durham's number of workers employed in freight and goods movement is just under

10,000



The reopened General Motors Assembly plant is poised to host

2,600
auto-manufacturing jobs



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Durham Region Freight and Goods Movement Forum



Executive Summary



Executive Summary

Forum objectives, design and conduct

The Durham Region Freight and Goods Movement Forum (“the forum”) was conceived as a way to initiate meaningful and constructive dialogue on freight and goods movement trends, needs, issues, best practices and opportunities. The forum content was designed to inform the Region’s policies and strategies, particularly the Region’s anticipated update to its Freight and Goods Movement Strategy.

The forum was held on the mornings of June 22 and 23, 2022:

- Day 1 “The big picture” looked at broad patterns, trends and disruptors in national and global freight and goods movement.
- Day 2 “Focus on Durham” focused on understanding trends, challenges and opportunities close to home.

The forum was held virtually using Pheedloop, a Canadian online software platform that includes integrated forum web page and event portal creation, and supports event registration, participant communications, presentations, interactive discussions and networking. Forum registration was offered free of charge to participants.

The forum attracted 71 participants from government, freight infrastructure owners, industry, industry associations, non-governmental organizations and academia, 28 of whom served as speakers or moderators for one or more sessions.

Themes and takeaways

The presentations and discussions during the two-day forum provided a wealth of information on a range of freight and goods movement topics, for example:

- the importance of freight and goods movement to Durham Region
- the unique opportunities presented by the Region’s strategic geographic location as the eastern Greater Golden Horseshoe (GGH) gateway and well positioned on the transcontinental freight transportation network, its robust multi-modal transportation infrastructure (road, rail, marine and potentially air), its ample supply of industrial lands (especially relative to the rest of the GGH), and its strong agricultural, manufacturing and logistics/ distribution sectors
- the opportunities represented by investments of the Ontario and Canadian governments into auto manufacturing, in particular for electric vehicles
- the opportunities and challenges of population and employment growth in Canada and within Durham Region

- the pressures faced by changing global supply chains and their local impacts
- the lasting impact of the covid-19 response, increasing e-commerce and automation and other transformative technologies
- best practices in supporting the “last mile” of goods deliveries while mitigating the negative impacts of heavy vehicles on communities
- the imperative to reduce carbon emissions from transportation and initiatives taken by municipalities and organizations to this effect
- leading-edge research being conducted by Durham’s universities and colleges to support industrial growth and transportation innovations
- real-world precedents and lessons learned by businesses adopting electric vehicles for short to medium-distance operations.

What we heard from participants

In addition to being able to provide comments and questions during forum sessions, participants were also asked to provide their inputs through two interactive activities: a quick poll on the top challenges and opportunities at the end of Day 1, and a post-forum survey on the top issues and actions for the Region to consider.

Through the poll and the surveys, participants identified their **top goods movement challenges/issues**: congestion on 400-series highways and other roads, labour and driver shortages, high fuel prices, equipment supply shortages, safety (including conflicts with cyclists and pedestrians) and truck/trailer parking. Other challenges included barriers to transitioning to new technologies, land use planning, complete streets, infrastructure (including access to freight generators) and the need to accommodate growth in e-commerce traffic, among others.

The **top areas of opportunity/action** were means of reducing emissions (especially vehicle electrification) and technology solutions and advancements, such as automation, improving government/industry communications and collaboration, improving delivery efficiency (e.g., through off-hour deliveries and truck-only lanes), extending / upgrading the truck route network, and adding bike lanes and reworking intersections to reduce conflicts with cyclists and pedestrians, among others.

Participants were also generally pleased with the virtual platform used for the forum, which offers potential for future Regional consultations.

Key actions and recommendations

Seven key actions and recommendations arise from the forum for the Region to consider in updating its freight and goods movement strategy:

1. **Capitalize on Durham's unique context to shape goods movement and enable economic development.** The forum noted Durham's many freight-related strategic strengths. This context provides the opportunity to build a viable economy whose market/supplier reach can build on its local, regional, national connections and beyond, while also enhancing supply chain resiliency.
2. **Continue to build a robust, integrated network of reliable multi-modal infrastructure.** Durham has identified a Strategic Goods Movement Network of provincial, regional and local municipal roads that the Strategy will refine and adapt, considering connectivity not just within Durham but reaching beyond. The Strategy should assess the road network as an integrated system, identify ways to streamline inter-modal connectivity including broadening rail use, and ensure adequate north-south capacity to support Durham's agricultural industry.
3. **Respond to both the opportunities and challenges of commercial vehicle electrification.** Carriers are starting to invest in electric vehicles for short-medium distance operations, but there are many challenges, including high initial costs, equipment supply challenges, payload capacity limits and limited driving range between charges, especially in cold weather. A key challenge is ensuring a reliable supply of (clean) energy as the electric vehicle market share increases.
4. **Continue the transition to sustainable goods movement.** The Strategy can be expected to identify sustainable goods movement policies and actions and determine their applicability to Durham Region, and also consider how to implement these policies and actions. The forum highlighted some of these potential initiatives, while also recognizing economic development potentials. This provides an opportunity to develop collaborative policies and actions in the strategy that support both sustainability *and* economic development aspirations.
5. **Build on short-term initiatives.** Many goods movement issues have an immediate impact but also will shape long-term outcomes and planning goals. Solutions to short-term issues can be important steppingstones to achieving long-term aspirations. For example, encouraging off-hours delivery can help alleviate today's congestion levels and spur new longer-term logistics practices.
6. **Enhance the profile of the transportation and logistics sector.** While the pandemic has highlighted the critical importance of the goods movement sector, labour shortages is major challenge, due in part to a low profile. Steps to mitigate this include expressing political support for the industry from the highest levels, highlighting the benefits of goods movement to the public, offsetting the nuisance perception of goods movement by providing viable options for urban goods movement and deliveries, and supporting logistics workforce development.
7. **Collaborate.** Industry-government dialogue and mutual understanding are key to the successful development and implementation of a goods movement strategy. The strategy update should look at ways to continue the dialogue established through the Forum, explore all avenues to address challenges (looking outside conventional solutions), get buy-in by expressing benefits cases in meaningful terms, and consider the need for data to inform decisions and actions.



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Durham Region Freight and Goods Movement Forum



Forum Purpose and Objectives



1. Forum purpose and objectives

The Durham Region Freight and Goods Movement Forum (“the forum”) was conceived as a way to **initiate meaningful and constructive dialogue** with different interest groups and participants across the goods movement spectrum on goods movement trends, needs, issues, best practices and opportunities. The forum would provide the valuable opportunity for different interest groups to hear each other’s needs, realities, aspirations and how they make their decisions.

In its broadest terms, the goal of the forum is to **enhance Durham Region’s attractiveness to businesses**. The forum would explore how to improve goods movement to enhance Durham Region’s attractiveness as a place for businesses to locate, while also offering a high quality of life for its residents.

The forum content and discussions would **inform the Region’s policies and strategies**, particularly the Region’s anticipated update to its Freight and Goods Movement Strategy, helping to identify needs and clarify actions to be considered.

It is also important to **document the findings of the forum**, the objective of this document. This document summarizes the following in subsequent sections:

- forum design and conduct (section 2)
- themes and takeaways (section 3)
- top issues and opportunities identified (section 4)
- key actions and recommendations for Durham Region (section 5)

Appendices provide additional forum details.





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Forum Design and Conduct



2. Forum design and conduct

This section describes the considerations that went into planning and hosting the forum, and an overview of how the forum was conducted.

2.1 Forum design

The IBI Group - DKCI consulting team was retained in February 2022 to provide consulting support to the Region. The Region and consulting teams worked closely in preparing for the forum event.

Forum timing

The forum was designed to take place in June 2022 before the summer vacation period, while also avoiding the provincial election early in the month.

The Forum timing spanned two consecutive morning sessions rather than a single full-day event to encourage participation from those who would find it challenging to leave other duties for a full day. Given the continuing impacts and uncertainties of the covid-19 pandemic and related health and safety guidance, the event was held virtually. Forum registration was offered free of charge to participants.

Forum agenda

The agenda was developed to cover a broad range of pertinent topics. To keep participants' interested, presentations were kept brief and focused with question-and-answer periods for interaction and discussion. Exhibit 2.1 shows the agenda for the two days of the forum, June 22 and June 23. The first day's goal was to explore broader freight and goods movement trends, while the second day focused specifically on Durham Region.

Forum platform

The software platform selected to host the forum was PheedLoop, a Canadian-based virtual conference software solution. PheedLoop provided an integrated package to design and host a web page for forum information and registration (a portion of the website landing page is shown as Exhibit 2.2), virtual forum portal with integrated live session streaming (a sample screen shot is shown Exhibit 2.3) and managing and tracking and email communications with participants. The virtual forum portal included the ability for participants to communicate with each other via chat functions or by entering into a private video conference, which helped replicate an in-person event. Additional information on the forum platform and communications is included as Appendix A.

Exhibit 2.1: Forum agenda

Agenda for Wednesday, June 22, 2022

A. The “big picture”

Understanding broad patterns and trends in freight and goods movement

8:00 a.m. Exhibition hall and networking

8:30 1. Welcome

8:35 2. Introductory keynote address

Where **Canadian** manufacturing is headed and implications for freight

9:00 3. The fundamentals

What matters most to freight and goods movement in Canada

3.1 Demographic and economic trends

3.2 Profile of multi-modal freight infrastructure and supply chains

Moderated question and answer

9:25 Health break

9:35 4. Trends and disruptors

What factors are having the greatest impact on economic development and the way we move things?

4.1 How freight and goods movement work: challenges and opportunities

4.1.1 Trends in freight and logistics

4.1.2 First and last kilometre

Moderated question and answer

4.2 Focus on the environment

4.2.1 Sustainability and decarbonization technologies and practices I

4.2.2 Sustainability and decarbonization technologies and practices II

Moderated question and answer

4.3 New and emerging technologies and their impact on freight

4.3.1 New technologies in transportation and logistics

4.3.2 New business models and considerations for logistics providers
integrating zero-emission vehicles

Moderated question and answer

10:55 5. Wrap-up

11:00 Exhibition hall and networking

Exhibit 2.1: Forum agenda (continued)

Agenda for Thursday, June 23, 2022

B. Focus on Durham”

Understanding trends and challenges close to home

8:00 a.m. Exhibition hall and networking

8:30 1. Welcome and recap of Day 1: The big picture

Opening remarks

Recap of Day 1; Moderated question and answer

8:45 2. Durham today and tomorrow

What specific factors will influence freight in Durham Region?

2.1 Demographic and economic trends in Durham Region

2.2 Freight infrastructure and planning in Durham Region

2.3 Freight and goods movement profile for Durham Region

Moderated question and answer

9:20 Health break

9:30 3. Durham’s goods-generating industries

Profiles of five key industrial sectors, highlighting Durham’s economic strengths and challenges.

3.1 Agri-business

3.2 Advanced mobility

3.3 Energy

3.4 Hamilton and Oshawa Port Authority

3.5 Future technologies and research

Moderated question and answer

10:10 4. Summary and take-aways

Pulling together what we’ve heard

4.1 Academic viewpoint

4.2 Industry viewpoint

Moderated question and answer

10:30 5. Closing keynote

10:50 6. Wrap-up

11:00 Exhibition hall and networking

Exhibit 2.2: Forum website – landing page excerpt



Freight Forum

Home Speakers Sessions Register Agenda

Freight Forum

June 22 - 23, 2022

Durham Region Freight and Goods Movement Forum


08
DAYS

20
HOURS

12
MINUTES

48
SECONDS

Durham Region Freight and Goods Movement Forum

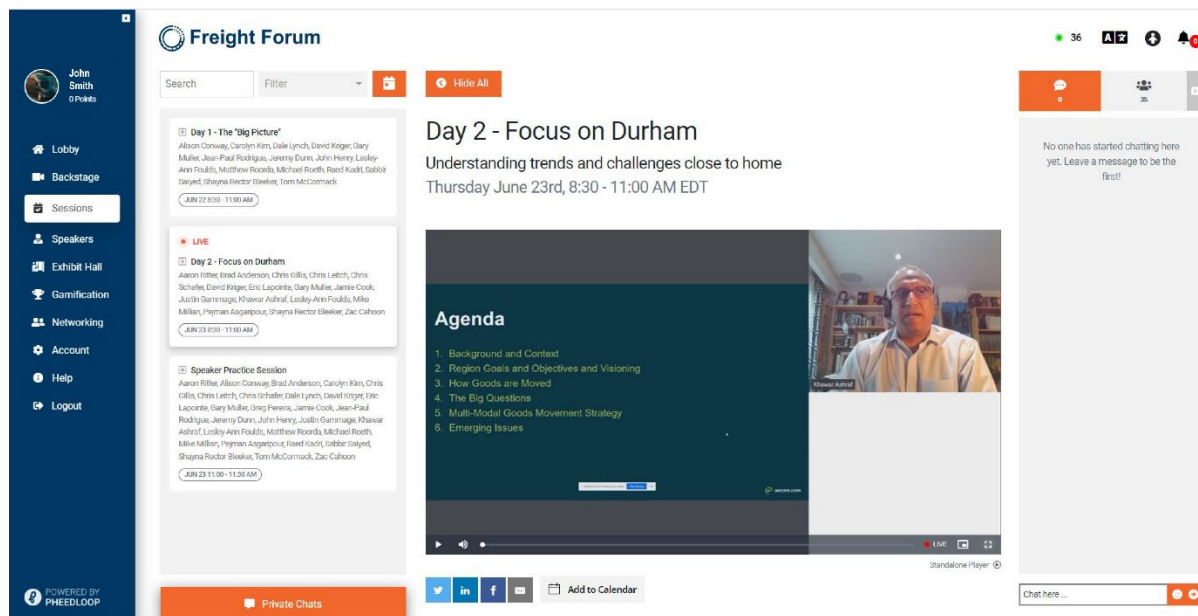
 June 22, 2022 - June 23, 2022

The Region of Durham will be hosting a virtual Freight and Goods Movement Forum on the mornings of Wednesday, June 22 and Thursday, June 23 2022, from 8:30 to 11:00 am. Participants will be drawn from across the goods movement spectrum – government, industry, service providers, academia, non-profits and more!

The Forum will provide a unique opportunity to share information on goods movement trends, needs, issues, best practices, and opportunities. The Region will use the outcomes of the Forum to kickstart its freight and goods movement strategy update, and this is your opportunity to get involved right at the start of the process!

Whether you work extensively in the industry or just want to learn more about Freight and Goods movement in Durham, there is something here for you! Feel free to log on and experience our informative presentations, moderated Q&A sessions, and robust networking opportunities.

Exhibit 2.3: Virtual event portal screenshot



Forum invitations and communications

The forum planning team contacted potential speakers and moderators directly to invite them to participate in the forum and provided information about the intended objectives of each session. Speakers and moderators were also provided training sessions on the virtual forum platform in advance of the forum to help forum operations run smoothly.

Invitations to participate in the forum were sent to 167 potential participants via the PheedLoop platform. These invitees were encouraged to forward the information to colleagues who would be interested in improving freight and goods movement in Durham Region and area. Reminders about the forum were also sent via the PheedLoop platform.

Durham Region's Economic Development staff also shared information about the forum with industry contacts.

Durham Region provided information about the forum on social media: Twitter, Facebook and LinkedIn, beginning on June 14. A total of 8,278 impressions were made through these communications. Additional detail is included in Appendix A.

2.2 Forum participation

A total of 28 speakers and moderators participated in forum presentations and panel discussions. Information about each of the speakers is included in Appendix B.

A total of 71 participants on one or both days attended the forum: 60 on Day 1 and 46 on Day 2. A listing of forum participants is included as Appendix C.



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Themes and Takeaways



3. Themes and takeaways

This section summarizes the main themes and take-aways from each forum session.

3.1 Day 1: the “big picture”

1. Welcome

Durham Region’s Chair and Chief Executive Officer, John Henry, provided welcoming comments, noting the importance of freight and goods movement to Durham Region and underscored the value of the forum.

Key points in the welcoming address included the following:

- Durham Region is pleased to have so many people join the forum and to have a range of speakers on the topic of freight and goods movement, which is important to Durham Region and across the nation and affects all of us.
- The forum is an important first step in the Region’s initiative to update its Freight and Goods Movement Strategy.
- Canada has an incredible amount of investment in goods movement infrastructure and transports an incredible amount of goods. For example, the Greater Golden Horseshoe, which is a significant hub for goods movement, sees \$1.16 trillion in goods transported annually on highways alone.
- We need to look to the future and expand choices on how and when people and goods travel to make the most of existing and new critical infrastructure.
- Providing effective, continuous and connected goods movement is integral to economic competitiveness and growth across industries.
- The forum will provide the key insights on the current climate of freight and goods movement, a flavour of shared problems we face, and the opportunity to exchange best practices.
- Working together is an integral part of how we shape efficient, integrated and sustainable goods movement across the Region.

2. Introductory keynote address

The keynote address provided an optimistic introduction to the drivers of goods movement, specifically advanced mobility and its implications for auto manufacturing and for freight. The address was delivered by Raed Kadri, Head of the Ontario Vehicle Innovation Network, Ontario Centre of Innovation.

Key points in the address include the following:

- The Ontario Vehicle Innovation Network (OVIN) is a Government of Ontario initiative to build on Ontario's position as a leader in automotive manufacturing and supply, as well as in communication and technology. It aims to position Ontario to capture the economic opportunities of advanced automotive and smart mobility, and to lead the world in this mobility transformation. OVIN provides a competitive advantage to Ontario-based companies through a research and development fund, talent development, technology acceleration, business and technical supports, and demonstration grounds. OVIN has been successful in helping Ontario have a lead role in North American transformative transportation infrastructure systems technology.
- Vehicle manufacturing has seen historic levels of investments in Ontario and Canada over the past 18 months. Notable examples include GM Canada investing more than \$2 billion in Canada to transform their manufacturing facilities in Ingersoll (Canada's first full-scale electric vehicle manufacturing plant) and Oshawa (which has recently re-opened to be the only GM plant to produce both heavy-duty and light-duty pick-up trucks, and will create a total of 2,600 jobs after expanding to a third shift).
- Automotive sector investment to support development and manufacturing of electric vehicles (EVs) includes \$14 billion over the last few months in southwestern Ontario industry, including enhancements to Ford's Oakville assembly plant for EV production, Stellantis' investments including creating Canada's first (Tesla) Gigafactory in Windsor, GM investment to produce all-electric delivery vans, and Magna's partnership with LG electronics to produce key components for EVs.
- Ontario's Ivy charging network represents the largest public highway fast-charging network in the province and is a result of the Ontario Government working with Ontario Power Generation and Ivy. It includes 69 chargers across 23 ONroute stations.
- Ontario's automotive sector contributes 2.4% to the province's gross domestic product. Ontario currently ranks second among top-producing auto manufacturing jurisdictions in North America and produces approximately 2 million vehicles per year. It is supported by approximately 700 auto parts suppliers and 500 tool and die makers. Ontario's auto industry supports over 100,000 direct jobs as well as thousands of spin-off jobs.
- Ontario is also North America's second-leading information technology region.
- Challenges to auto manufacturing include having a sufficient talent pool to support the industry. The automotive industry is seeing a significant transformation due to ongoing technological advancements that require labour skills upgrades. The skills required by the next generation of auto manufacturing workers will be very different from those of current workers. OVIN has launched a talent strategy roadmap to provide the skills, knowledge, and training needed to support the sector's development and to reinforce Ontario's competitive advantage.

- Ontario's multimodal freight transportation networks are major economic drivers. Rail (CN, CP and several shortline railways, etc.) contribute approximately \$1.9 billion to Ontario's economy annually. International marine sector in the Great Lakes contributes \$188 million annually. Ontario has a high reliance on its road network and road trade. The Ontario government's total transportation investment is \$5 billion annually, with \$2 billion going to the Provincial highway network.
- Ontario is streamlining trade with Michigan. Two joint studies are being conducted with the government of Michigan: one on a drone corridor, and one on technology to support multimodal movement of people and goods.
- The Durham Region Technology Development Site (RTDS) helps connects entrepreneurs, innovators, post-secondary institutions, investors, and others.
- The sector is looking at all modes and looking at how to transition to the vehicle of the future, and some automakers have a micro-mobility division.

3. The fundamentals

This session described the larger Canadian and global context including demographic, economic and infrastructural trends, highlighting the factors that are having the greatest impact on freight and goods movement. The session had two presentations:

- **3.1 Demographic and economic trends**
- **3.2 Profile of multi-modal freight infrastructure and supply chains**

Key themes and take-aways are noted below.

Employment growth of 250,000 new jobs each year through 2041 is anticipated in Canada, but has labour force challenges. Canada's aging population is a challenge to filling this labour market, e.g. 200,000 Baby Boomers are retiring each year. To reach this potential, Canada needs 400,00 to 600,000 immigrants per year.

Canada is expected to grow by 10.7 million people by 2041, many of whom would come from abroad. The younger immigrants will be needed to help offset the aging of current Canadians and will help fill labour force needs. This population growth also means 5 million more dwellings, 5 million more of each type of household appliance, etc., all of which involve goods movement. Growth will be concentrated in the largest Census Metropolitan Areas, especially their suburbs.

Employment growth will vary by sector. Most employment growth will be in the services sector. Goods are expecting be produced with increasing productivity and therefore a lower rate of job growth. A growth in almost half a million transportation and warehousing jobs is expected. The work-at-home share will grow, but most people do not work in offices. Both online shopping and on-site shopping with growth, though online is expected to grow faster.

Domestic growth will drive our future economic growth Trade in goods will remain important but will no longer drive overall growth. US-Canada trade fueled growth in the 1990s after Canada-US free trade agreements were implemented. Recent growth in wholesale and retail goods distribution has been remarkable: 189,000 local distribution employment in 2001, 215,000 by 2015 and 318,000 by 2021.

We are in a challenging/reassessment phase of the current economic cycle. Pandemic impacts have fueled a supply-chain crisis involving first initial hoarding, then demand fluctuations, inventory challenges, a major bullwhip effect, and inflation/stagflation, leading us on the path to a recession. Supply chains are being re-assessed, with re-shoring of manufacturing as an option (especially in the USA).

The Global Supply Chain Pressure Index (GSCPI) has been increasing at unprecedented levels since 2020. The GSCPI measures global supply chain conditions. The increase in supply chain pressures is fueled by recent anthropogenic events, the latest being the war in Ukraine.

North American intermodal supply chains are entangled. North American imports are very different from to exports (often natural resources), which leads to a high demand for returning empty containers (and shortages in North America). Marine port container traffic is increasing sharply at a few selected ports leading to congestion (Montreal is not among these). Other challenges include labour force issues, though increasing automation at marine ports, distribution centres, etc. will reduce demand for labour.

Other freight modes are also facing pressures. Air cargo is pressured by growth in e-commerce. CN and CP are facing deferred demand due to recent lockdowns. CP has acquired Kansas City Southern, which connects to Mexico and to Gulf of Mexico ports - this will redistribute rail flows in North America (a tri-coastal strategy).

The velocity of freight remains fundamental. This requires accessibility to major commercial gateways; regional markets and infrastructure; land for logistics; and coordination (e.g. zoning, labour).

Amazon has been very active establishing a hierarchy of distribution centres. It has been expanding warehousing space very rapidly, strategically placing warehouses with consideration to an 800-km daily truck-trip threshold for distribution. The Toronto/Durham area is well positioned to be an important hub of Amazon's network.

Logistics labour faces challenges. These include lack of attractiveness of logistics to students. Academia does not prepare people well for the industry, e.g. a management role is expected from the outset. Trade schools could have more of a role. There is a lot of competition for a limited pool of talent – for example, maritime ports and shipping lines need information technology (IT) specialists, but IT specialists prefer to work for a bank or other institution they are more familiar with than for a port or shipping line. One presenter noted that the Canadian government's recent stance against the recent truckers' protest, in spite of the pandemic

highlighting the value of truckers, also does not bode well for logistics labour. Canada also needs to continue to attract talented workers from other countries.

Land for logistics is a challenge. This is a complicated issue because placement of logistics facilities is driven by local market trends as well as macro-economics. What you gain in real estate for logistics you lose in real estate for retail. Retail assets can sometimes be converted for logistics. The future needs will also be concentrated in the Census Metropolitan Areas where population growth will occur.

4. Trends and disruptors

The goal of this session was to help participants understand the national / global trends and disruptors that shape goods movement, as a prelude to identifying challenges and opportunities. The session had three sub-sessions:

- 4.1 How freight and goods movement work: challenges and opportunities
- 4.2 Focus on the environment
- 4.3 New and emerging technologies and their impact on freight

4.1 How freight and goods movement work: challenges and opportunities

This sub-session had two presentations:

- 4.1.1 Trends in freight and logistics
- 4.1.2 First and last kilometre

Key themes and take-aways are noted below.

The covid-19 response has had a lasting impact on supply chains. Global worker shortages have led to delays and cost increases. Semi-conductor shortages have led to challenges in procuring products. There has been a lot of volatility in the demand for certain consumer products. There has been a dramatic rise in e-commerce and home delivery (which will remain strong beyond pandemic recovery, even as people return to in-person shopping). Ontario passed the Main Street Recovery Act 2021, removing power of municipalities to enforce noise bylaws to facilitate certain types of deliveries at night.

Supply chain disruptions are changing how companies operate. The USA especially is seeing some re-shoring of manufacturing, and some companies are changing from “just-in-time” to “just-in-case” delivery if they are able.

The dramatic rise in e-commerce has implications on local traffic. This includes not just Amazon but smaller retailers too. A greater number of smaller delivery vehicles is less efficient than a single drop-off by a larger vehicle at a retail location. An environmental justice concern is that all people experience the emissions and safety impacts of home delivery vehicles, not just the goods recipients – though some delivery trips are replacing shopping trips by car to the retail location.

There are changes in consumer demands. Consumers have next-day or same-day delivery expectations. There are also “reverse logistics” challenges when shoppers need to return goods delivered to their homes.

Rising e-commerce has implications on land use. Massive distribution centres are built outside population centres. There is starting to be an emphasis on micro-hubs in urban centres (e.g. parcel lockers, mini-warehouses for cargo tricycles).

Transformative technologies are having an impact. These include automation, e.g. drone corridors, sidewalk robots and automated vehicles. (Automated vehicles will likely always need a driver in the truck for certain tasks.) Digitalization of supply chains, blockchain, data analytics and tracking of fleets also have potential for increasing productivity. Crowdsourcing (e.g. commuters delivering goods to their neighbourhoods) is challenging but growing.

There is an increased attention to sustainability. This is due to government mandates but also corporate sustainability objectives and consumer demand.

Freight supports basic economic activities in communities. This includes large-scale manufacturing, but also local delivery of basic goods (including food and medicine), supporting construction and waste removal. However, there are many freight-community interactions to manage: space consumption (on-street and off-street parking), safety risks, emissions and noise.

Freight has unique on-street parking needs. This includes longer commercial vehicle dimensions (including the dimensions of a dropped rear lift-gate to unload goods), and the need for curb cuts and access (e.g. bike lanes sometimes must be crossed). Curb management includes specifying the vehicle type, duration and pricing (e.g. allowing 2-hour parking for commercial vehicles 7 a.m. to 1 p.m., 1-hour parking for all autos after 1 p.m. can sometimes work), noting that timing/duration needs are different for traditional vs. e-commerce deliveries. Enforcement is important but is of limited use when no legal alternatives exist to make a required delivery.

Off-street loading areas can help but need to be well managed. Ensure sufficient geometry for vehicles. Strict timing of loading can result in vehicles idling while they wait to deliver. Conflicts can also result where trucks need to cross sidewalks.

Steps can be taken to help manage truck-pedestrian safety risks. Safety risks stem from a size differential, blind spots, mismatch of road geometry needs, and infrastructure obstructions. Vehicle safety measures include installing side guards, mirrors, on-board sensors, and increasing direct vision (onus on manufacturer). The City of London, UK, has good vehicle safety policy examples. Pilot studies in London and elsewhere in Europe are a good way to test new solutions and try out new policies. Remember that solutions are context-specific: Europe’s regulatory structures are different than in North America – local government in the latter tends to have less power, e.g. in Scandinavian countries it is possible to mandate the use of consolidation centres in the cities.

Consider other mitigations to reduce truck-community interactions. These include time shifts (i.e. delivering in off-peak hours, noting that the receiver needs to

be able to accept goods in the off-peak as well), mode shifts (to smaller, cleaner vehicles within communities) and consolidation (e.g. formal delivery lockers or informally where the truck parked at street-side distributes goods).

How do we manage noise concerns during off-peak deliveries in residential areas? The University of Toronto's recent noise surveys in the vicinity of night-time deliveries found that night-time deliveries are a smaller source of noise than other sources, though still a concern. In New York State, the impacts of low-noise technologies and delivery equipment are being explored (though not yet widely implemented), e.g. quieter ramps and lift gate and use of hand carts. Electric trucks are also quieter than conventional ones.

Partnerships between industry and government are critical. Government and industry need to dialogue as they do not typically understand each other's challenges. Industry sometimes want to try things but cannot due to regulation, which takes time to change while citizens require convincing. Careful collaboration and patience on both sides is needed, starting with willingness on the public side to try new ways to make things work better. Precedents of ongoing dialogue between government and industry include Paris Freight Charter and the City of London's Freight Quality partnerships.



4.2 Focus on the environment

This sub-session had two presentations, both on the topic of “**Sustainability and decarbonization technologies and practices**”.

Key themes and take-aways are noted below.

There is a climate imperative to flatten Canada’s carbon curve. The Canadian Federal Government has committed to reducing GHG emissions by 40 to 45% below 2005 levels by 2031 and net-zero by 2050. Reductions need to start today.

A robust decarbonization pathway is needed. Not all pathways to net-zero are equal. Canada has developed an Emission Reduction Plan (spring 2022), including accountability checkpoints, toward meeting 2030 and 2050 emissions targets.

Canada’s 2030 Emission Reduction Plan has Medium and Heavy-Duty Vehicle (MHDV) decarbonization commitments. Canada’s transportation sector accounts for 25% of emissions. Heavy-duty vehicle (HDV) emissions increased 50% since 2005. Light-duty vehicle (LDV) emissions have increased less quickly. The Plan projects HDV emissions holding steady to 2040 while LDV emissions are substantially reduced. The MHDV decarbonization commitments are ambitious: having 35% of MHDV sales be zero-emission-vehicles (ZEV) by 2030 and 100% by 2040, stringent HDV standards post-2025, increasing the adoption of fuel-efficient technologies, and increasing the use of low-carbon fuels.

Municipalities can take a proactive approach to accelerate zero-emission MHDVs. First, they can make a strategic plan and regulations. Second, they can provide incentives for deployment. Third, they can invest in charging/refuelling infrastructure and related systems. Fourth, they can provide labour market programs and provide skills training to support the changing technology. There is a significant opportunity for fully electrified fleets in the Greater Toronto and Hamilton Area (GTHA). Municipalities can work with other levels of government and stakeholder on regional transportation plans, economic strategies and investment planning; updating municipal policies and bylaws (e.g. parking and loading); participating in regional coordination and knowledge building; and exploring new public financial mechanisms.

Pembina has established an Urban Delivery Solutions Initiative. This a network of businesses and organizations working to driving down emissions in transportation.

“Run on Less Electric” offers many real-world lessons regarding electric trucks. This real-world demonstration followed thirteen real battery-electric trucks (in BC, Montreal and US) already hauling freight for a month in 2021. (Videos for each case study and “Stories from the Road” as well as other information are available at www.NACFE.org and www.RunOnLess.com.) An unexpected finding from the case studies was the high degree to which the electric vehicle drivers enjoyed and were pleased to drive the electric vehicles (this will help with driver retention). Other findings were that there was really good performance relating to maintenance (though some maintenance was still needed) and that temperature is significant: with

40 F (22° C) drop in temperature, there is a 40% reduction in range that fleets need to plan for.

Electrification is currently most viable for short/medium-distance, simple, small/medium-sized trucks. Yard tractors (which stay on warehouse property or in ports) are smaller trucks that travel at low speeds and have opportunities for quick charges while driver takes a break, currently perform very well and have much potential and benefit for electrification. A bit larger and travelling farther are smaller local delivery vans, and passenger-car chargers can be used with these. The biggest current challenge is road tractors. These can be electrified for vehicles that travel out and back to base on the same day. In short and medium range vehicles that travel no more than 200 miles (320 km) daily before returning to base are most practical as an electric tractor run. Comparing vehicles with a tare weight of 13,500 pounds (6,125 kg), a diesel-powered vehicle could take 17,000 pounds (7,700 kg) of cargo this distance, while an electric powered one would take 22,500 pounds (10,200 kg) of cargo. There is a 3,000 to 4,000-pound weight penalty for carrying a 400 to 500 kWh battery pack. Simple vehicles whose purpose is only to carry loads have the most potential for electrification, while more complex vehicles such as service vehicles (e.g. garbage trucks) currently are less viable.

Significant opportunities to decarbonize larger, long-haul trucks are farther on the horizon. Electric, hydrogen and self-driving trucks are still emerging, as well as engines that run on decarbonized fuels. Hours-of-service limitations allow for 500 to 600 miles (800 to 970 km) before a long-haul driver needs to rest, at which point an electric truck could be recharged. Fuel cell/battery-electric hybrid vehicles can be a niche part of longer-term solution.

There are several impacting factors affecting decarbonization. ACT Research (a market data, industry analysis, and forecasting firm for commercial vehicle and transportation markets) notes that improving the total cost of ownership (TCO) is helpful: electric trucks cost 2 to 2.5 times as much as diesel powered trucks, but as mileage increases the fuel savings start paying off. Other key factors are decreasing battery costs, growing customer demand, and the role of regulatory pressures.

4.3 New and emerging technologies and their impact on freight

This sub-session had two presentations:

- **4.3.1 New technologies in transportation and logistics (specifically at the Hamilton Oshawa Port Authority)**
- **4.3.2 New business models and considerations for logistics providers**

Key themes and take-aways are noted below.

Hamilton and Oshawa Port Authority (HOPA) is a growing integrated port network. HOPA operates ports and lands in Hamilton, Oshawa and Welland Canal and is developing multimodal spaces to support Ontario's industries and facilitate trade. HOPA has 1,000 acres, moves 10 million tonnes or more of cargo annually and has 700 vessel calls per year across its ports.

The Port of Oshawa is a strategic asset for Durham. The port includes 115 acres of land, 225,000 square feet of warehouse space. QSL operates stevedoring, moving 500,000 to 750,000 tonnes of critical commodities each year at the port, including steel products (coils, beams, pipe, rebar, etc.), cement, liquid bulk and petroleum, salt, grains, and fertilizer. Planned investments of \$30 million are planned over the next three years to improve site, making it easier serve multiple ships at once and creating better flow-through.

HOPA notes a number of freight trends from their perspective:

- global supply chain disruption, congestion and related cost spikes; this includes addressing driver shortages and reshoring of manufacturing
- a focus on GHG reduction and lower-carbon-impact logistics solutions
- industry focus on leveraging technology and especially data to add efficiencies, together with vertical integration/partnerships with data sharing

HOPA has several innovative initiatives underway:

- a drone program with customized software for fully autonomous flight including take-off and landing, with the goal of improving service delivery at ports (in partnership with HHLA Sky Germany)
- “Fluid Intelligence” (in partnership with McMaster Institute of Trade and Logistics) – combining different data sources to support goods movement and logistics; current projects include Foundational Study on Cross Border Short Sea Shipping to understand multi-modal trade routes, and a study of supply chains together with Hamilton’s airport area
- Maritime Employers Association Worker Deployment System – working to better deploy Ontario and Quebec’s 1700 workers by leveraging data
- SmartCone Deployment – an artificial-intelligence based system of cameras and other sensors designed to collect data to better understand port flows
- Data Extraction Initiative – working with Mely.AI to develop AI software to extract pdf manifest information seamlessly into a workable file rather than manually
- Liquefied Natural Gas (LNG) Bunkering (2021 pilot project) – HOPA was the only port in the Great Lakes to provide LNG as a fuel source
- Biodiesel from recycled cooking oil, soybean oil, etc. – this reduces lifecycle GHG emissions by up to 80% (Canadian Steamship Lines ran a trial in 2020 and 2021 to run vessels entirely on marine biofuel)
- Support for hydrogen – working with stakeholders to support infrastructure to assist in the transition to hydrogen

Transitioning to zero-emission commercial vehicles requires new business models. There are examples of this transition successfully taking place in recent years. This involves learning by doing at this stage. Powering vehicles electrically is very different from diesel power, where fueling infrastructure is readily available.

There are both motivations and concerns in electric solutions. Motivating interests include regulatory requirements, return on investment, sustainability initiatives and special use. Concerns are significant risks and include driving range anxiety, initial cost (electric vehicles are 2 to 3 times more expensive), charging infrastructure needs and cargo weight limits. Funders struggle to finance because they don't know the market yet (e.g. residual value of the vehicles) – this will change as more electric vehicles get on the road.

There are several steps to electrifying fleets. These include feasibility analysis (understanding), design and financing, procurement and installation, operation and optimization.

There are many considerations before electrifying fleets. These include selecting the right truck for the right job, getting to know your utility, tapping into incentives, finding a customer who shares your vision, finding good partners, and getting started (trucknews.com). Other resources for fleet managers transitioning include ElectricAutonomy.ca, RunOnLess.com and Pembina.org/UDSI.

Many different actors need to work together in electrifying fleets. These include fleet operators, financial institutions, truck makers, energy and infrastructure players and governments, as well as manufacturers, telematics companies and others.

Volvo LIGHTS is an inspiring success example of implementing 23 battery-electric heavy-duty trucks. This is a Los Angeles collaboration example showing how fleet owners, ports, colleges, utilities, etc. can work together.

What can governments do to help make the Blue Economy (sustainable use of marine resources) work? HOPA is working on being a leader in the Great Lakes toward the Blue Economy, e.g. providing better accesses to/from Port of Oshawa and expanding capacity on the land side, and working with other modes such as rail, making use of as federal government investments. Working with the Region of Durham to improve roadway access to the port would be important. It will also be important to work with the Region on its long-term freight plan on the role of the port working with economic development plans.

What can municipalities do to help? Rather than working toward the perfect implementation plan for 2030, we can take advantage of initial opportunities now. Governments can make it easier, for example, when Purolator wanted to start using electric vehicles in Vancouver, the City simply agreed not to ticket these vehicles, which gave Purolator confidence. Reducing business taxes is another way to help.

5. Day 1 wrap-up

The speakers and moderators were thanked for their role in helping to see freight and goods movement through a wider lens. All participants were asked to take part in a poll to provide quick feedback on two questions, which are discussed in Section 4.

3.2 Day 2: Focus on Durham

1. Welcome and recap of Day 1: The “big picture”

Durham Region’s Director of Planning provided welcoming comments that included the following notes about Durham Region’s context and the significance of freight in Durham Region:

- Durham is and will be one of the fastest growing communities in the GGH. Currently it is home to just over 700,000 residents – 90% of whom reside in the south lakeshore communities – and approximately 230,000 jobs. These figures will approximately double by 2051 to 1.3 million residents and 460,000 jobs.
- Just under 10,000 workers are employed in freight and goods movement across the Region.



- Movement of goods in the Region relies on multi-modal infrastructure: provincial highways, deep-sea shipping ports, trans-continental and commuter railway lines, and proximity to local and international airports.
- In terms of land requirements for future employment uses including warehousing and logistics, the Region is planning to provide an additional 1,170 hectares of employment land near 400-series highways. Growth is also anticipated through development of new communities and urban development in existing downtowns.
- The Region's Official Plan review and future Freight and Goods Movement Strategy are examples of initiatives that the Region will look to develop solutions to balance the needs of population and of economic growth.

A summary of what was covered in day 1 was provided as well as a discussion of the results of polling that took place at the end of Day 1 (see section 4). A summary of initial themes and implications for Durham Region was also provided (this is elaborated upon in section 5).

2. Durham today and tomorrow

The goal of this session was to help participants understand the factors that influence freight and goods movement specifically in Durham Region. The session had three presentations:

- **2.1 Demographic and economic trends in Durham Region**
- **2.2 Freight infrastructure and planning in Durham Region**
- **2.3 Freight and goods movement profile for Durham Region**

Key themes and take-aways are noted below.

Durham Region will have an increasing share of employment growth in the GTHA. The Region had a 5% share of 2011-2016 employment growth, but is anticipated to have a 14% share in 2016-2051 employment growth, with annual employment growth rates increasing to 2.1%. Of this anticipated employment growth, 49% will involve population-related (e.g. services) employment, 13% will be major office employment, 37% will take place on employment lands (81,600 employees), and the rural sector will have 1% of growth.

Durham Region has begun to take an increasing share of the GTA's new industrial construction. The GTA industrial market has averaged 819,000 square metres of new industrial construction from 2018 to 2022 (with highest levels in 2020–2022), which is more than double the 2013–2017 average of 404,000 square metres, with historically low vacancy rates in recent years as well. This put more pressure on meeting demand for future growth in places with space like Durham Region. Durham's share of the GTA's existing industrial gross floor area in 2022 was 5%, while its share of industrial gross floor area construction 2020–2022 was 14%.

E-commerce has been a key driver of the retail market in Canada. May 2020 (early pandemic) e-commerce sales were three times as high as in February 2020 (pre-pandemic), and it has growth 3 times as much as 2016 sales. There has been a degree of decline in e-commerce as business re-open after pandemic restrictions.

Durham Region is favourable to logistics development. Local and regional population growth provides access to a large labour force to serve the GTHA, Ontario and eastern Canada; it has access to major multi-modal transportation infrastructure; and there is a diminishing supply of greenfield lands in other municipalities vs. availability of land with competitive pricing in Durham Region.

Durham Region will need to plan for 655 ha of growth in its employment areas through 2051. This represents 20 h of growth annually to accommodate anticipated growth in the goods movement sector.

Freight infrastructure planning in Durham must consider background plans. These include Ontario's *Freight-Supportive Guidelines*, Metrolinx's *2041 Regional Transportation Plan*, Durham's *Regional Official Plan* (1993), *Transportation Master Plan* (TMP, 2017) and *Envision Durham* (2019). For example, the TMP vision includes "to achieve economic prosperity and employment growth".

Durham's multi-modal freight plan must address key questions. The plan must note what specific factors will influence freight, why the plan is important, who will benefit, how it be delivered and funded, and what are the environmental impacts. It will require multi-jurisdictional and public/private coordination, noting that freight stakeholders are harder to identify and more challenging to engage. The plan must also consider emerging issues such as infrastructure conditions and capacity, vehicle energy sources, etc. Peel and Hamilton offer examples of encouraging employment growth focused on multi-modal connectivity (i.e. rail, ports and airports).

A high proportion of jobs in Durham in 2019 were very relevant to goods movement. This includes commercial (49%), industrial (13%) and agricultural (6%) sectors. Oshawa had the highest number of jobs at 57,300 (28%), followed by Whitby (43,300 or 21%) and Pickering (34,800 or 17%).

The Region has seen increasing volumes of medium and heavy trucks crossing its regional boundaries. Meanwhile, these vehicles represented 8.8% of vehicles in 2006 and 8.2% in 2016 as light-duty vehicle growth has been faster. Truck traffic grew most across the Toronto-Durham boundary vs. in other directions.

MTO's Commercial Vehicle Survey (2012) provides information about goods movement flows in Durham (via selected highway locations). It notes that the top commodities originating in Durham are gravel and crushed stone; mixed freight; waste and scrap; non-metallic mineral products; and agricultural products. The top commodities destined to Durham are gravel and crushed stone; agricultural products; motorized and other vehicles; natural sands; and mixed freight.

Durham's Strategic Goods Movement Network (SGMN) is an important aspect of the Region's policy and planning. The SGMN was developed as part of the 2003 Durham TMP as a network of preferred haul routes, planned to accommodate

commercial vehicles on a year-round basis and linking major generators of truck traffic. The network is considered as part of capital works programs, subject to budgetary considerations. The SGMN was updated in Durham's 2017 TMP by including adding several new routes and addressing key arterial "feeder route" linkages serving designated employment areas. The updated SGMN was also incorporated into a Regional Official Plan through Amendment 171. Envision Durham is considering a Complete Streets approach for arterial roads, goods movement is an important consideration.

Durham Region is working to reduce the number of routes with road weight restrictions on the SGMN. Among Regional Roads on Durham's SGMN (245 km total), 70.9% are constructed to a full load standard, and 29.1% are subjected to seasonal weight restrictions; the Region builds portions of these through its road rehabilitation program to a full load standard when and as possible. SGMN roads not under the Region's jurisdiction include Ravenshoe Road along York Region's boundary (York Region responsibility and constructed to a full load standard) and portions of Harmony Road, Boundary Road and Ravenshoe Road under local municipal jurisdiction and not constructed to a full load standard.

Durham's SGMN includes routes outside of Highway 401 that are especially significant to goods movement. Highway 401 congestion spills over onto parallel arterials especially Bayly/Victoria/Bloor Street (especially Bayly) and Regional Highway 2 (not in the SGMN). The north-south Provincial Highways 7/12 and 12 is also key. Routes near aggregate pits carry gravel trucks along with other trucks. Boundary Road (Regional Road 20) on Kawartha Lakes boundary are significant. Truck traffic affects rural hamlets – Durham has a hamlet truck traffic mitigation guide and has been working to implement it. MTO's planned longer-term extension of Highway 404 will be helpful, as it will alleviate traffic pressure on Highway 48. The first-mile/last-mile areas off of Highway 401 also are challenging in peak-period congestion.

What technologies are you seeing emerge in the goods-generating industries, and what can Durham do to prepare for capitalizing on them? Micro-level technologies can use to manage inventories and product flows and provide efficiencies into how goods are stored and retrieved. Industrial building design can be optimized, e.g. higher ceiling heights for better use of vertical space in managing goods, and will likely be seen in industrial development applications.

3. Durham's goods-generating industries

This session provided profiles of five key industrial sectors, highlighting Durham's economic strengths and challenges. The session had five presentations:

- **3.1 Agri-business**
- **3.2 Advanced mobility**
- **3.3 Energy**

- **3.4 Hamilton and Oshawa Port Authority**
- **3.5 Future Technologies and Research**

Key themes and takeaways are noted below.

Agriculture is the top goods-producing industry in Durham, producing a large variety of goods and requiring inputs for which transportation is an essential and major aspect of the industry. Crops grown in the Region include grains and oil seeds, beef, lamb, apples, horticultural crops, sod, nursery trees, eggs, milk, chicken and more. Almost all are transported outside of the Region to be processed, aggregated and sold. Grains and oil seeds are transported to local elevators and to the Port of Oshawa as well as to external ports such as Hamilton, Johnstown and Prescott to go to other countries or around Ontario. Local livestock is transported to external abattoirs or slaughterhouses (there are some small ones within the Region). Apples go to Algoma Orchards, the Ontario Food Terminal (west Toronto) and/or retailers. Horticultural crops go to the Ontario Food Terminal or other local markets. The industry also requires lots of inputs to be transported to the farmers, suppliers or retailers; these inputs include fertilizer, seed, and livestock vitamins and minerals. These products are typically not produced in the Region and must be brought in from external sources. Most products grown in Durham are globally traded on the commodity market except for supply-managed products, which are sold domestically.

Agricultural products are produced in north Durham, but north-south transport of goods is challenging. Durham has many options for east-west transportation routes, but north-south routes are more limited. Driving with slow-moving agricultural equipment on Lakeridge Road, Highway 12 or Simcoe Street can be dangerous, especially with growing traffic. Drivers do not have the education or patience to travel well with large farm vehicles.

There is a need for increased public education or awareness about today's farm equipment. This would include understanding the size and speed of equipment. Twenty years ago, tractors could go no faster than about 30 km/h. Now they can travel up to about 60 to 65 km/h. Equipment can be hard to maneuver, but some newer equipment also now has air brakes and easier maneuverability.

Road geometry is often not suitable for agricultural equipment. Farm equipment needs wide shoulders and intersections that can accommodate wide equipment, and islands in the middle of roads are not suitable for agricultural equipment. (An intersection on Simcoe Street in Port Perry has an island that often gets cleaned out because of agricultural equipment going through it.) Soft curbs can be maneuvered by agricultural equipment but not hard curbs, as soft curbs allow equipment to use the side of the road to allow more space for traffic flow.

Agriculture needs improved access to and storage facilities at the Port of Oshawa. The port is a great asset for agriculture, given import and export opportunities, but it can grow to be an immense asset that is more efficient at grain shipping and receiving with some improvements and upgrades. The port needs

enough storage capacity to fill a boat. Currently some truck operators refuse to go to the port because of hours-long waits for port access during a boat-loading window.

Exemptions are needed for agricultural vehicles with seasonal road restrictions travelling to and from farms on those roads. Farm vehicles are overweight and get ticketed, though getting timely inputs to farms is essential, even/especially in the spring planting season, milk still needs to be moved from the farms, fuel still needs to be delivered, and feed is still needed.

There is a much-needed incentive to have more processing or end-use manufacturing of agricultural goods within the Region. This would reduce the transport of farm goods to outside of the Region only to be brought back to the Region in processed form.

Micro-mobility could be part of the first/last kilometre solution for small goods and parcels. Infrastructure for bike lanes has increased greatly in the last 20 to 25 years to help support more eco-friendly personal and small-goods travel. Micro-mobility has played a small role in fostering this new “ecosystem”. Provincial pilots are currently underway for e-scooter, and also for e-cargo bike in Ontario, potentially leading to a more permanent regulatory state for the deployment of these modes. Additional separated infrastructure is also desired for non-vehicle modes for safer travel not only for vulnerable road users but for also for vehicle drivers in auto lanes.

The Small Modular Reactor (SMR) is an incredible energy and economic development opportunity being developed by Ontario Power Generation (OPG) at Darlington. SMR is smaller than a traditional nuclear reactor in output and footprint. It could be used at a community scale (less than 1 MW) or up to a utility scale (about 300 MW) and can be shipped in modularized components for use in remote areas, mining, etc. It uses a fission process like a traditional reactor with slight enriched uranium. It is an emission-free technology with enhanced safety features and its clean, reliable and inexpensive energy will contribute to Durham’s climate change action plans – and it can power lithium batteries, large manufacturing centres, etc. OPG is sponsoring a training program at Durham College to equip workers. Employment opportunities include 700 jobs during project development, 1,600 during construction, 200 during operation and 160 during decommission. Preparation work is underway, and construction is anticipated to begin in 2025 and the SMR operational as early as 2029.

The Port of Oshawa handles high volumes of goods and is working to mitigate land access challenges. QSL is the stevedoring company that helps the port handle 227,000 metric tonnes of bulk products (e.g. grain), 198,000 tonnes of imported steel products, and 1,149 feet of breakbulk (e.g. extra-large transformers, machinery, etc.) annually. This translates to 16,000 truck loads per year. Because the trucks have to be timed with port activities, queuing of trucks results on roadways (e.g. along Bayly Street as far as Highway 401); trucks may need to wait 4 to 5 hours to access the port. Steel importers typically use the port for storage, where the end users pick up materials from the port. Service plans to increase efficiency include using a self-serve system, barcoding, using and respecting a truck appointment system, and automating the processing of documentation.

Improving access and storage at the Port of Oshawa would allow the local agriculture industry to take better advantage of the port's strategic location.

Last year 40,000 tonnes of grain were moved via the port, and this could increase to 150,000 annually with better infrastructure. Grain storage at the port is 10,000 tonnes, but a vessel can take 25,000 tonnes, to be loaded in a two-day window. Currently farmers may opt to take goods instead to go a more distant but more accessible port. Many government entities are involved at the Port (HOPA, the Federal Government, Transport Canada, the City of Oshawa for road access) and all need to work together to improve port access and reduce bottlenecks.

Technologies for electric vehicle goods transportation and mobility are advancing in Durham Region.

In the last 5 to 10 years there have been advancements in how much power can be stored in an electric vehicle battery, i.e. increasing energy density. It is also essential to have charging technologies at a state of development that is suitable for consumers, and fast charging needs high charging capacity. Large electric trucks vehicles need one megawatt-hour of storage (in comparison a Tesla model 3 stores 83 kilowatt-hours of battery power) to be practical. Their batteries would need to charge quickly – with implications on the energy grid and distribution! Ontario Tech University is working to help develop ultrafast charging.

Autonomous aspects of goods movement are in use in controlled environments.

Rotterdam, one of the largest ports in the world, is largely autonomous. Major distribution centres (e.g. FedEx, Amazon) have levels of autonomy in warehouses. The Oshawa GM plant has adopted automated ground vehicles for operations within the plant, one of the first in the world to do. Challenges for autonomous goods movement include moving from controlled environment to the road, especially dealing with weather – there is much work to do to advance this, and Ontario Tech University is also working on this aspect.

Steps are being taken to improve energy reliability and resiliency, e.g. to power electric vehicles.

OPG is heavily involved in the installation of EV chargers. The SMR installation is working to expedite meeting regulatory requirements. OPG owns a fleet of hydro-electric stations that it is working to upgrade, and is also Darlington refurbishment is underway. Ontario Tech University is working with local utilities and distribution networks toward improving “climatic resiliency” of equipment, (e.g. against freezing rain and strong winds), and also using technology to assess where risks may be (e.g. where trees may fall on equipment in a storm).

4. Summary and take-aways

This session works to summarize the forum findings from two viewpoints:

- **4.1 Academic viewpoint**
- **4.2 Industry viewpoint**

Key themes and takeaways are noted below.

The forum has identified needs for academic institutions to follow up on.

Students at Ontario Tech University (OTU) are engaged in experiential learning opportunities that are relevant to the needs of the community, e.g. addressing needs of the agricultural sector, OPG, the Port. These discussions have prompted additional areas to explore.

Technology could help provide a range of solutions. EV charging and AV capabilities for goods movement are just the tip of the iceberg. Technology could help the agricultural industry, for example traffic signals could be adjusted to detect an agricultural vehicle or transport truck coming approaching the intersection and the signal adjusted to help the vehicle cross the intersection faster and more safely. OTU is currently working on developing technologies to make tasks easier for operators, e.g. lane departure warnings and different assistive technologies, adaptive braking, etc. toward making the driving experience better. The driver needs to be at the centre of the design of these technologies.

The societal/individual acceptance of new technologies is also important.

Cyber security is an important aspect of making software-based technologies acceptable. People need to be comfortable with new technologies and be convinced of the benefits of new technologies before they adopt them. An example is that some newer cars have lane-departure warnings of shaking the seat – that may not be as effective after the driver uses the vehicle for several months. An example involving micro-mobility solutions to reduce vehicle congestion: E-bikes can have a “no-sweat mode” so you don’t have to shower once you arrive at work.

The biggest current challenge to trucking is labour shortages. There is only a 4.2% unemployment rate in the trucking industry; long-term positions are hard to fill. The average age of drivers is 51, with the average age going up. There is a current shortage of 22,000 truck drivers in Canada, estimated to increase to 55,000 by the end of 2023 as drivers retire (source: Trucking HR Canada study).

There is also difficulty obtaining enough goods movement equipment. More vehicles are needed to meet e-commerce demand and changing consumer needs due to supply chain issues. There is an 11-month backlog for new equipment, sometimes 18 months according to some fleets.

Rising costs are a major challenge: fuel, insurance, equipment, etc. Fuel costs have increased 50% since December 2021. There have been some price reductions recently, though the recent drop in diesel costs has been less than that for gasoline. Used truck prices have gone up 66% since last year, as the demand has spiked because it is hard to get new trucks.

There is an infrastructure deficit to address. Roads or road lanes need to be added, port infrastructure is not ready for increases in demand, etc.

Cross border delays and issues continue. Free and Secure Trade (FAST) system, which facilitates cross-border freight flows, was paused for two years. There is an ongoing Federal requirement for covid-19 vaccinations for cross-border drivers.

Durham Region has major benefits to leverages. It is a prime location for manufacturers accessing the GGH as well as the eastern parts of the country. The Region also has the land to build facilities (that can be built with charging infrastructure or other technologies in mind). It also has a strong population base for access to talent.

It is important to improve travel times. Highway 401 can be very congested and slow. Tolls on 407ETR and other toll highways in Durham are too high for trucking industry. More-affordable tolls would benefit the industry, and there is capacity on the under-utilized toll facilities. The Region could also work to enable more off-hours deliveries.

Government and industry must work together to attract talent. The goods movement industry is generally not perceived as offering a desirable career, but that is changing. Funding for training can be hard to get. Grants/subsidies such as grants in EI programs are being used to get people trained in industry and retain them.

There needs to be a recognition that driving a truck is not unskilled work, even with emerging vehicle automation. People will wonder why get into goods movement as a career when they are told that autonomous vehicles will just take over and replace drivers soon. We will not see trucks going down the road without drivers on a large scale anytime soon. The best and safest truck needs to be coupled with the best and safest driver. We need to get away from calling the technologies “autonomous” vehicles and call them “driver-assist” vehicles, because that more precisely describes how the technology will be used.

5. Closing keynote address

The closing keynote summarized steps that a major company is taking toward more-sustainable goods movement, particularly in fleet electrification. The address was given by Aaron Ritter, Director of Transportation of Walmart Canada Corp.

Key points from the address included the following:

- Walmart Canada and Walmart International have launched a number of recent initiatives to improve and lead the way in sustainability. Their goals include building a best-in-class supply chain, finding new and innovative ways to reduce carbon footprint, continuing to put sustainability at the forefront of operations, and focusing on safety and delivering value to customers. The three driving metrics are innovation, sustainability and safety.
- Key components of Walmart’s journey to transportation sustainability include Class 8 tractor electrification; yard shunt electrification (coming to British Columbia in the next few months then expanding more broadly across the country); reducing idling times; improving reefer (refrigerated trailer) efficiency; expanding long combination vehicle use (still underutilized in Canada, and key corridors are Calgary to Edmonton and Mississauga to Cornwall); introducing 60-foot trailers, which can carry 20 to 22% more cargo than a standard 53-foot

trailer (working with the province of Alberta to pilot a truck train with a 60-foot trailer together with a 53-foot length trailer); routing optimization (and also sharing off-peak delivery project data with Region of Peel and University of Toronto); and aerodynamic improvements (exploring and testing applicable innovations).

- Walmart's fleet electrification program comes after 5 to 6 years of researching the direction of alternative vehicle fueling. Benefits include safety, sustainability, mitigation of carbon tax impact and avoiding high diesel prices.
- Walmart's Canadian distribution network works for fleet electrification. Calgary, Mississauga and Cornwall are Walmart Canada's main distribution campuses. Walmart recently opened a perishable automated distribution centre in Surrey BC, and another will open in Moncton. A large ambient automated facility near Highway 400 and Teston Road is also being constructed. Over 85% of Walmart Canada's fleet make same-day trips of no more than 450 km per day, almost all with day-cab vehicles. This range falls within electric vehicle charge range even with range degradation during the colder winter months, making electrification a very good fit. Walmart partners with 58 different third-party companies to cover distribution to stores outside of Walmart's typical tighter geography.
- Canada has one of the cleanest energy grids in the world, supported by hydro and nuclear and using less coal than other countries to power electric vehicles.



- Currently Walmart Canada has 130 Tesla semi class 8 tractors on order and is working with other manufacturers of electric trucks. The initial roll-out will take place within 12 months in Canada. The goal is complete electrification by 2028, dependent on supply chain issues, which have been very significant recently.
- Walmart is planning for charging. Surrey, Mississauga and Vaughan are completely outfitted with charging infrastructure. Distribution takes place 24/7 and the infrastructure allows for faster charging rather than overnight charging, which works with Walmart's operations. The electric grid is one of the biggest obstacles that Walmart sees. Walmart is fine for the initial insertion of electric vehicles and for several years. The broader adoption of electric vehicles could face major challenges as far as electricity supply. As Class 6 vehicles (e.g. to support e-commerce) and smaller non-commercial vehicles are more broadly adopted, we will need to work closely with power suppliers to make sure the infrastructure is in place to continue on the vehicle electrification path.
- Walmart is grateful for its fleet drivers who have continued to work throughout the pandemic, which really brought to light who the priority essential workers are.

6. Wrap-up

Key points from the wrap up included the following.

- The Region expressed thanks to the consulting team (IBI Group and DKCI), speakers, panellists and moderators for their contribution to the Durham Freight Forum, and to all who attended the forum virtually, helping make the forum a success and ultimately helping establishing Durham Region a place to live, grow, work and invest.
- The forum has highlighted the importance of diversity of voice, including people with different backgrounds, experiences and skills. The forum reinforces the need to hear from industry, academics, experts and government representatives.
- The forum has advanced the core objectives of improving freight and goods movement. Forum has touched on the fundamentals of what matters most to freight, where manufacturing is headed, the challenges and opportunities of freight logistics, emerging technologies and implications of climate change. No single approach or theme encapsulates the spectrum of goods movement. The forum has helped Durham to have a better understanding of rapid changes in this important sector.
- The forum take-aways will further deepen thinking and stimulate the Region's work as it embarks on updating its freight strategy. This process will look to having the Region be better positioned to address the challenges of today and tomorrow. The Region's success is dependent on developing effective policy and initiatives to keep pace with the constant disruption and transformation of freight and goods movement. It will be important to continue dialogue and build stronger relationships with partners such as the forum's participants.



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What We Heard From Participants



4. What we heard from participants

As well as being able to provide questions and comments during forum session; forum participants were provided opportunities to provide their inputs through two additional interactive activities: a quick poll on the top challenges and opportunities at the end of Day 1, and a post-forum survey on the top issues and actions for the Region to consider.

4.1 Most significant challenges and opportunities

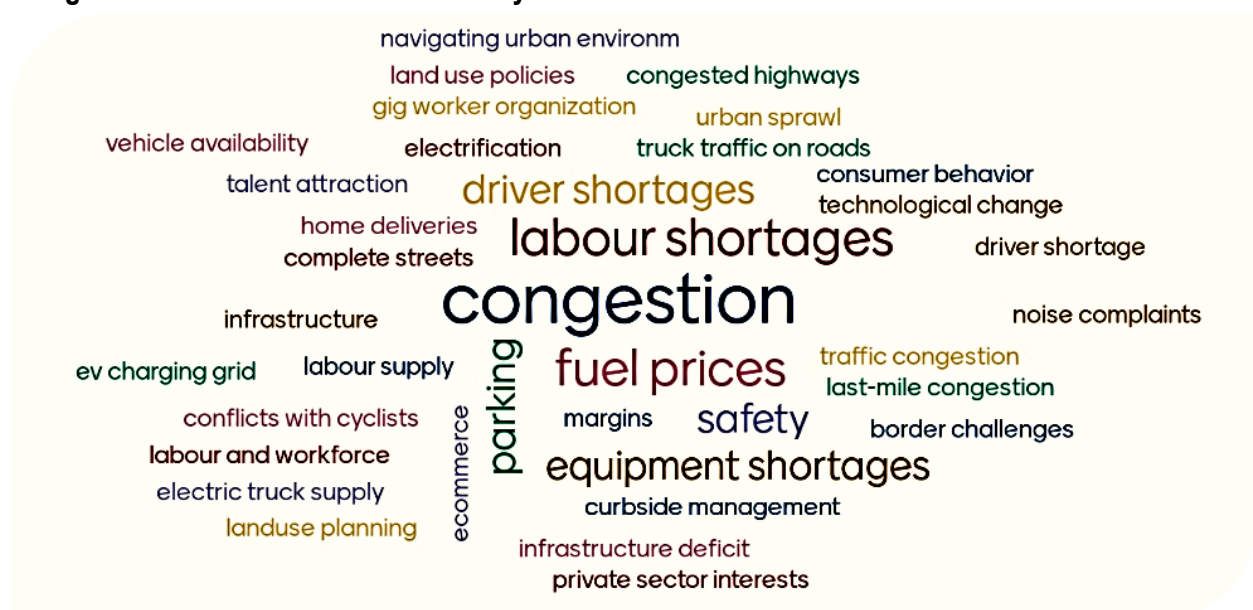
A total of 17 participants answered the following questions at the end of Day 1.

- “What are the most significant CHALLENGES to freight and goods movement over the next five years?”
- “What are the most significant OPPORTUNITIES for freight and goods movement over the next five years?”

The visual polling results for the two questions are shown in summarized in Exhibit 4.1 and Exhibit 4.2, respectively, totalling 61 responses across the two questions.

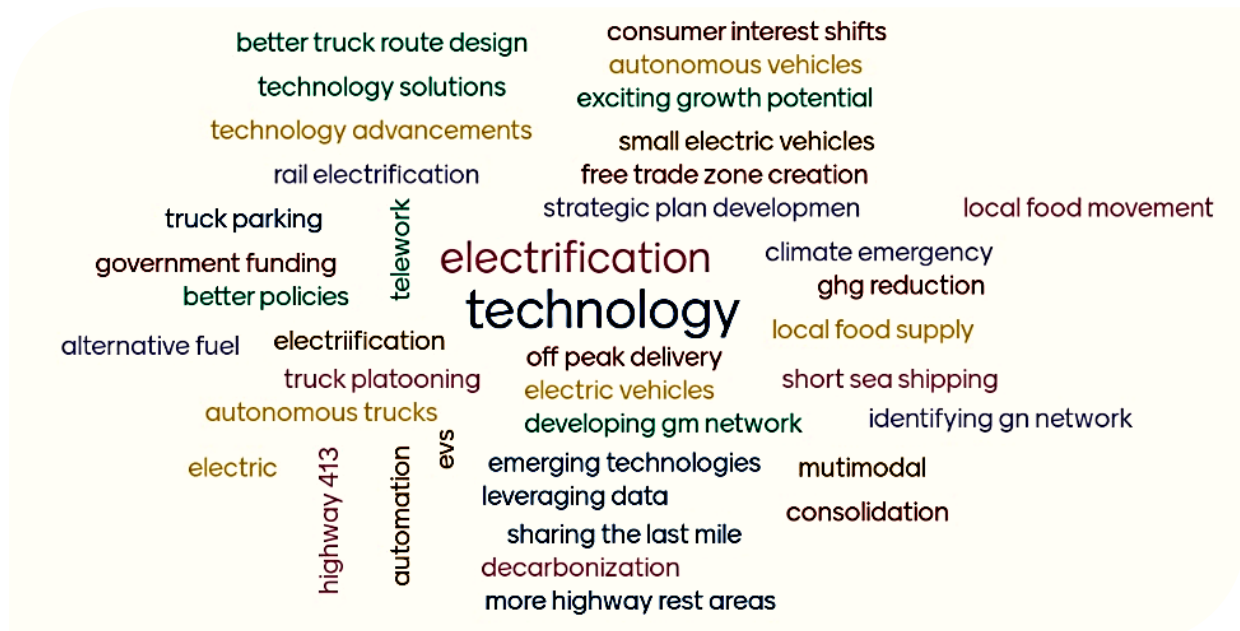
The top challenges noted were congestion, labour and driver shortages, high fuel prices, equipment supply shortages, safety (including conflicts with cyclists) and parking. Other challenges noted included transitioning to new technologies, land use planning, complete streets and infrastructure, among others.

Exhibit 4.1: Forum participant polling results on the most significant CHALLENGES to freight and goods movement over the next five years



Source: “word cloud” created using mentimeter.com (recoloured)

Exhibit 4.2: Forum Participant polling results on the most significant OPPORTUNITIES to freight and goods movement over the next five years



Source: “word cloud” created using mentimeter.com (recoloured)

The top two areas of opportunities noted were means of reducing emissions (especially vehicle electrification) and technology solutions and advancements (such as automation), and Other opportunities noted included strategic planning and route design, leveraging the local food supply, leveraging data, and capitalizing on the Region’s growth potential.

4.2 Top issues and opportunities

All participants (with the exception of the forum organizing team) were requested to complete a post-forum survey. The survey received fourteen survey responses, nine of which were by representatives of Durham Region government or other government representatives, and the remaining five by representatives of varied industries and organizations.

Respondents were asked to select from a list the top three issues facing freight and goods movement in the Region, with the option of adding other responses. The responses were as follows:

- Conflicts with other road users including pedestrians and cyclists (6)
- Congestion on 400-series highways (4)
- Transportation labour shortages (4)
- High fuel costs (4)

- Congestion on other roads (3)
- Barriers to transitioning to carbon neutral goods movement practices (3)
- Lack of suitable supply of truck / trailer parking (2)
- Need to accommodate growth in e-commerce delivery traffic (2)
- Insufficient road access to key freight generators (shippers, consignees, terminals, ports, airports, etc.) (1)
- Insufficient truck route network, regulations and load restrictions (1)
- Scarce availability of appropriately sized, zoned and serviced industrial lands in Durham (1)
- Other: agricultural considerations (1)

The following options were not selected:

- Insufficient traffic signal timing / coordination on key truck routes
- Lack of supply of on-/off-street truck/courier loading space

Respondents were also asked to select from a list the top three actions for the Region of Durham to focus on toward improving freight and goods movement in the Region, with the option of adding other responses. The responses were as follows:

- Improve government / industry communication and collaboration (3)
- Improve efficiency of deliveries by encouraging off-hour deliveries, examining truck-only lanes, etc. (3)
- Extend / upgrade truck route network (3)
- Add bike lanes and rework intersections to reduce conflicts with pedestrians and cyclists (3)
- Reduce auto traffic (e.g., encourage drivers to use transit and other modes) (2)
- Promote carbon neutral deliveries (e.g., more cargo bikes and electric delivery vans, optimize truck loading efficiency, etc.) (2)
- Improve / add road accesses to key freight generators (2)
- Ensure supply of serviced/zoned industrial lands near current/planned freight network and terminals (2)
- Review traffic signal timings at key intersections and along key corridors (1)
- Reduce truck traffic by shifting freight to other modes (rail, air and marine) (1)
- Provide public electric vehicle charging network / natural gas fueling network (1)
- Improve access to truck route information and conditions for drivers (1)
- Address high costs of fuel for goods movement (1)
- Add truck parking and rest areas along highways and at gateways to Durham (1)

4.3 Forum assessment

A post-forum survey included questions to provide a general rating of different aspects of the forum event. Participants were asked, “**Please rate the following on a scale of on a scale from 1 -5, with 1 being strongly disagree and 5 being strongly agree.**” Exhibit 4.3 summarizes the frequency of these responses.

Exhibit 4.3: Post-forum survey: forum assessment response frequencies

Statement	1 strongly disagree	2 disagree	3 neither agree nor disagree	4 agree	5 strongly agree
1. The forum topics were of practical interest to me and applicable to my business/ organization or area of operation.			7%	64%	29%
2. The forum experience enhanced my understanding of contemporary freight and goods movement issues.			14%	71%	14%
3. The forum speakers and moderators were informative, relevant and presented information clearly.				71%	29%
4. The networking and exhibit hall features were a valuable addition to the forum.	7%	7%	57%	29%	
5. The forum timing and duration (two consecutive morning sessions) made it easier for me to participate.			36%	36%	29%
6. The forum software platform was attractive and easy to use.	7%		14%	64%	14%

Notes: Results are based on a total of 14 responses. The most frequent responses to each statement are shown in bold font.

In general, the forum topics were seen to be of practical interest, the forum experience helped to enhance participants' understanding of contemporary freight and goods movement issues, and the forum speakers were seen as informative, relevant and presented information clearly.

Almost two thirds of survey participants noted that the two-morning forum timing was helpful for participation.

The forum software platform was generally easy to use (though a small portion of participants had significant difficulty with the site), though the networking and exhibit hall features were generally not seen as particularly valuable addition to the forum.

Responses to the question, "What was the most important take-away for you from the Durham Region Freight and Goods Movement Forum?" are listed below:

- The economic future of Canada and where the country is headed
- Goods movement is a complex subject and is interdependent on how other policies are progressed
- The current state of goods movement in Durham Region and challenges ahead
- The interest of audience in new reactors
- Major growth and change in the logistics industry is in progress
- Technology.
- There is a lot of opportunity in Durham - and a lot of future growth in the goods movement sector. All stakeholders need to work together to balance and support all user needs.
- There seems to be a lot of interest to move to electric vehicles, and this could be a challenge for some industries to adopt due to capital costs.

We can't depend on government to solve the problems.

Finally, participants were asked for any other comments about the forum.

Responses are listed below:

- Timing made it hard to get attendance from the agricultural community. More information on the purpose of the forum and target audience may have helped drive better attendance at the event. It looks like a lot of work went into this, good work!
- I think we could have talked about road pricing. For example, working with the Province to make the 407 discounted for non-single-occupant-vehicle trips and for trucks. This infrastructure is highly underused.
- Great forum and discussion.
- This should be an annual event.



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Key Actions and Recommendations



5. Key actions and recommendations

This section summarizes key actions and recommendations for both the freight strategy and for potential future forum-style events.

5.1 Advancing Durham's freight strategy

This section highlights seven key actions and recommendations arising from the forum inputs for the Region to consider in updating its freight and goods movement strategy:

- Capitalize on Durham's unique context in shaping goods movement and enabling economic development
- Continue to build a robust, integrated network of reliable multi-modal infrastructure
- Respond to both the opportunities and challenges of commercial vehicle electrification
- Continue the transition to sustainable goods movement
- Build on short-term initiatives
- Enhance the profile of the transportation and logistics sector
- Collaborate

These seven takeaways are detailed below, and reflect specific needs, identified gaps and opportunities.

Capitalize on Durham's unique context in shaping goods movement and enabling economic development

Durham is strategically positioned in several ways:

- it has diverse industrial capabilities and a strong supply of industrial land availability relative to the rest of the Greater Golden Horseshoe (GGH)
- it has a strong agricultural sector
- it is well equipped with multi-modal freight infrastructure (road, rail, marine and potentially air)
- it serves as the GGH's gateway to Eastern Ontario and points beyond
- it is well positioned on the transcontinental freight transportation network.

This context provides the opportunity to build a viable economy whose market / supplier reach can build on its local, regional, national connections and beyond.

The Day 2 session on five goods-generating industries showcased economic growth opportunities in Durham while also underscoring the importance of efficient goods movement to enabling these opportunities. Bringing in the economic development perspective provides a basis for the collaborative implementation of the future goods movement strategy's recommendations.

While employment land development is underway in the Region, particular interest should be given to the opportunity provided by the Region's local agricultural goods production toward establishing related processing and manufacturing facilities within the Region, given the and the current need for these resources to be processed beyond Durham's boundaries at significant transportation expense.

Ways in which the Region and other governments can maintain or enhance supply chain resiliency will also be important, especially anticipating disruptions caused by a changing climate.

Continue to build a robust, integrated network of reliable multi-modal infrastructure

Durham has identified a Strategic Goods Movement Network of provincial, regional and local municipal roads. The forum identified some considerations for this network as the Region continually reviews, improves and adapts this network.

Durham's freight strategy must consider not just what happens within Durham but also connectivity and flows beyond Durham.

Assess the road network as an integrated system. As far as goods movement is concerned, the road/highway system functions as an integrated system and challenges and opportunities should be examined as such, regardless of jurisdiction. For example, congestion on Highway 401, a key trade corridor, spills over to parallel Regional roads. Truckers and industry noted that tolls are a disincentive to increased use of Highway 407.

Opportunities to smooth inter-modal connectivity are important. For example, addressing storage limitations and reducing traffic bottlenecks at the Port of Oshawa could provide agri-business an alternative to moving commodities by truck or to transporting agricultural goods to more distant ports.

North-south rural road capacity is a key need for the Region's agricultural industry. The lack of rural north-south road capacity, relative to east-west road capacity, was cited as an impediment to agri-business. The strategy should investigate this claim in terms of traffic flow, operations and safety but also in terms of connectivity. Inherent to this discussion is the need to manage the movement of aggregates and landfill along rural roads, which also influences the Region's SGMN. Also inherent, as reliable broadband/Wi-Fi becomes more widespread across Durham, opportunities exist for people to live and work in rural communities: in turn, to access markets and suppliers elsewhere in the Region and beyond, these diffuse

low-volume generators of goods will require different ways to ship and receive products cost-efficiently and sustainably.

Consider opportunities to broaden rail use. Rail and air were not a focus of forum discussions. Nonetheless, the Region is well served by the continental Class I rail network (CN and CP). The strategy could consider opportunities to broaden rail use by local industries, especially as key industries like General Motors transition to new uses. The potential Pickering Airport provides an opportunity to serve as a major GGH (or even national) cargo hub: the strategy could lay the groundwork to start planning for groundside transportation and logistics industries and accesses as the timing for the airport becomes clearer (e.g., by identifying first what a cargo hub would look like).

Respond to both the opportunities and challenges of commercial vehicle electrification

Vehicle electrification is an exciting opportunity toward transitioning toward cleaner energy use and reduced emissions, and increased driver enjoyment in operating the vehicles as noted in real-world experience. However, there remain considerable challenges. A customized approach is needed to expanding vehicle electrification, tailored to different industries and goods movement markets, rather than a one-size-fits-all approach.

The real-world commercial vehicle electrification examples noted during the forum showed that vehicle electrification is currently viable for vehicle runs no longer than approximately 450 km between battery recharging opportunities. The long-haul goods movement market is well beyond the current viable distance range, given the current energy density of batteries, as well as additional range degradation during very cold weather (which is a current area of research for Ontario Tech University). Electrification is also more viable for vehicles that simply carry goods as opposed to heavy-duty service vehicles.

Electric commercial vehicles are currently 2 to 2.5 times the cost of diesel-powered trucks, which is a major barrier, though the costs can be recovered in reduced fuel costs over time. Manufacturers of electric vehicles are challenged by supply chain issues in meeting demand for those businesses who can afford to buy them.

Other electrification challenges remain, including providing the increase in reliable energy that powering vehicles via the power grid will require, which the Small Modular Reactor being developed at Darlington will help support.

Continue the transition to sustainable goods movement

The goods movement strategy can be expected to identify and assess sustainable goods movement policies and actions and their applicability to Durham Region. There is a need also to consider how to implement these policies and actions. The Forum highlighted some of these potential initiatives, while also recognizing

economic development potentials. This provides an opportunity to develop collaborative policies and actions in the goods movement strategy that support both sustainability *and* economic development aspirations. The strategy could seek to answer a number of questions.

How will any sustainability initiatives identified in the strategy impact the transportation and logistics industry and other goods-generating industries?

What would it take to enable or encourage these industries to implement or adopt these initiatives?

How can sustainability and the climate emergency be factored into investment decisions for new freight infrastructure and services? In other words, being able to quantify and monetize the costs and benefits will make it easier for potential private-sector (and even public-sector) partners to justify and act on potential sustainability initiatives.

How can sustainability initiatives in goods movement be used to grow Durham's industries? For example, can Ontario Tech University's technology research be commercialized? How can Durham's existing vehicle manufacturing prowess be leveraged to promote sustainable goods movement?

What needs to happen today to achieve long-term sustainability aspirations?

For example, the closing speaker noted they had researched new technologies for over several years before deciding on an all-electric fleet. Another speaker noted the need to ensure that the charging infrastructure and power supply are in place before businesses start to purchase electric vehicles. What roles do the Region, other governments, academia and non-governmental organizations have in enabling these decisions and processes?

What is needed to incorporate emerging logistics practices and technologies, especially for last-kilometre deliveries? For example, what complementary measures are needed by governments at all levels to enable and grow e-cargo bike deliveries? The answers could impact network plans for active transportation infrastructure, the design of bike paths, cyclist safety, regulations to allow e-cargo bikes to use roads, business hours of service, labour regulations, zoning, building design and much more.

Build on short-term initiatives

The discussion made clear that many important goods movement issues have an immediate impact but also will shape long-term outcomes and planning goals. The implication is that solutions to short-term issues, while not intuitively part of a 20-plus year strategy, should not be ignored and, in fact, can be seen as steppingstones to achieving long-term aspirations. For example:

- Today's electric vehicle shortages might delay the desired transition to sustainability. On the other hand, the delay could give governments and utilities

the time needed to plan and implement the necessary charging network infrastructure before the demand becomes acute.

- Anticipating the broader impacts of emerging logistics practices and technologies can help their deployment. For example, self-pick-up venues could help rejuvenate an underused shopping mall because it generates new reasons to visit the site, while minimizing delivery trucks circulating in residential areas.
- Ensuring adequate and congestion-free accesses to industries and businesses sets the stage for economic expansion at desired locations.
- The deployment of measures like off-hours delivery could help alleviate congestion levels today while also spurring the introduction of secure un-crewed drop-off spaces at stores and businesses through, for instance, updated site development requirements. In this way, the attractiveness of off-hours deliveries to small businesses can be broadened.
- The long-term impact of today's labour shortage on automation in goods movement could be considered.

Enhance the profile of the transportation and logistics sector

The pandemic has highlighted the critical importance of the goods movement industry in continuing supply the goods that we all need. However, the industry faces many challenges, a major one being labour shortages, which stems in part from a perceived societal disregard for the industry. The Region can take some steps to mitigate this.

Give the right signals. Ensure political support for business and goods movement is stated clearly from the highest levels, as Regional Chair Henry did to begin the Forum.

Highlight the benefits of goods movement. Often goods movement policies focus almost solely on the disbenefits of goods movement. While it is essential to manage and minimize the negative externalities of goods movement on communities and vulnerable road users, it is also important for Durham's strategy to explain the critical importance of goods movement – how good movement tangibly impacts daily lives and activities of Durham residents and businesses.

Provide viable, legal options for urban goods movement and deliveries. This can help with the negative perception of trucks being primarily a nuisance due to their impacts on urban traffic flow or illegally parking for deliveries. As Complete Streets policies are developed and detailed, including measures to help trucks and other road users more safely coexist will also help this perception.

Support logistics labour development. The Region's trade schools and post-secondary institutions can provide essential training to help fill labour shortages in this sector. Partnerships between these institutions and industry can help students attain gainful employment.

Collaborate

Meaningful industry-government dialogue and understanding are key to the successful development and implementation of a goods movement strategy. The goods movement strategy could progress in this regard through several means, as noted below.

Continue the dialogue established through the Forum. Understand how each other works, what their motivations are (public sector aspirations; private sector for-profit and operational costs).

Explore all avenues to address challenges. Opportunities may be available outside of conventional transportation planning processes to address challenges. For example, grants in Employment Insurance programs could be used to get people trained / retrained and retained in industry to address the labour shortage. Recognize that this not just about long-term planning but also about addressing short term operational, regulatory issues to make freight and goods movement more efficient and competitive – for example, enabling off-hours delivery.

Express benefits cases in meaningful terms. For example, in considering a switch to electric vehicles, the private sector would be interested in knowing the payback period for electric vehicles; what the implications with respect to existing operational and maintenance practice, charging infrastructure, etc.; and how to enable the critical mass needed to get original equipment manufacturers to build electric vehicles and other alternative-fuel vehicles.

Consider the role of data: Explore what data are needed and whether data can be shared between public and business organizations.

5.2 Building on the format and success of the forum

The Durham Region Freight and Goods Movement Forum was unique in many related ways. Going forward, the Region might consider the following for potential future forums for goods movement or on other topics.

- 1. Broad scoping.** Goods movement strategies are often developed with consultation internal to an agency and limited outreach with external agencies. The Durham Freight Forum provided a much broader reach for identifying needs and opportunities from which Regional staff can use to define and scope the strategy while also managing stakeholder expectations.
- 2. Awareness and education.** The movement of goods in an urban environment is much less well understood than the movement of people. In part, this reflects the focus of transportation master plans on the latter, necessarily drawing the attention of public agency staff resources. It also reflects the short-term operational focus of for-profit businesses, for whom long-term public policy aspirations may be too distant to demand much attention. The Forum succeeded in informing public and private sector interests about each other's perspectives.

3. **Lots of information.** By design, the Forum was set up as a mini conference with a broad range of topics, akin to what a professional organization might offer its attendees. To keep people's interest, short presentations were used. Some speakers were comfortable with the suggested Pecha Kucha approach (20 slides covered in 20 seconds each), though most speakers kept to the strict time limit by using fewer slides. The participation numbers showed some drop-off over the course of each day, although the drop-off numbers were relatively low – meaning that the short presentation style succeeded in retaining the audience. This format worked well for the awareness / informative purposes of this Forum. However, with this base now established, for future engagement in the strategy or for a potential goods movement task force it might be appropriate to offer informative sessions but on a smaller selection of topics allowing longer discussions.
4. **Importance of speaker and moderator preparations.** The Forum attracted a wide range of speakers, each of whom clearly made a significant effort to be informative while keeping to the subject matter. The moderators were well prepared and were able to keep the follow-on discussions moving well.
5. **Timing.** To facilitate participation by industry, the Forum's events were held in the morning and over two days. This appeared to be a successful approach. The numbers of participants were similar over both days: there was a strong core retention, although it was evident that other attendees were interested in one day's topics over the other. The agricultural industry was a key sector that was under-represented due to the forum taking place during the busy spring season.
6. **Virtual platform.** After more than two years of virtual meetings due to pandemic-related restrictions, attendees were used to virtual meetings and the lack of an in-person venue did not appear to detract participation. The Pheedloop platform provided tools for gathering and presenting information about the forum and speakers, for email communications, for streaming the sessions, for networking between participants within the sessions, and more. (There was additional platform functionality available that was not used.) Significant training was needed with the organizing team for speakers and moderators to be prepared to use the new platform for their presentations. The platform generally worked well from the participants' perspective – only one survey respondent commented negatively about it.

Taking these attributes together, the Durham Freight Forum can be considered a success. It achieved its primary objective of informing Durham's goods movement planning needs. It also increased stakeholders' awareness of Durham's economic potential, and it serves as a prototype for other municipalities that are planning to conduct their own goods movement strategies.

Appendix A: Forum Web Page, Portal and Communications

Durham Freight Forum Event Web Page

Landing Page

The screenshot shows the landing page for the Durham Freight Forum. At the top, there is a navigation bar with links for Home, Speakers, Sessions, Register, and Agenda. Below this is a large hero image featuring a semi-truck on a highway at night. Overlaid on the right side of the hero image is the Freight Forum logo and the text "Freight Forum June 22 - 23, 2022". Below the hero image is a yellow banner with the text "Durham Region Freight and Goods Movement Forum". Underneath the banner is a countdown timer with five boxes: "00 DAYS", "00 HOURS", "00 MINUTES", "00 SECONDS", and a final empty box. Below the timer is a section titled "Durham Region Freight and Goods Movement Forum" with a calendar icon and the dates "June 22, 2022 - June 23, 2022". This section contains three paragraphs of text describing the forum. The first paragraph states that the Region of Durham will be hosting a virtual Freight and Goods Movement Forum on the mornings of Wednesday, June 22 and Thursday, June 23, 2022, from 8:30 to 11:00 am. The second paragraph describes the forum as a unique opportunity to share information on goods movement trends, needs, issues, best practices, and opportunities. The third paragraph encourages participation, stating that whether you work extensively in the industry or just want to learn more about Freight and Goods movement in Durham, there is something here for you. At the bottom of the section is a heading "Meet Our Speakers, Moderators and Panelists!".

Freight Forum

Home Speakers Sessions Register Agenda

Freight Forum
June 22 - 23, 2022

Durham Region Freight and Goods Movement Forum

00
DAYS

00
HOURS

00
MINUTES

00
SECONDS

Durham Region Freight and Goods Movement Forum

June 22, 2022 - June 23, 2022



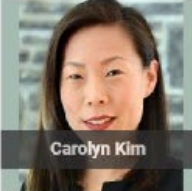























The Region of Durham will be hosting a virtual Freight and Goods Movement Forum on the mornings of Wednesday, June 22 and Thursday, June 23, 2022, from 8:30 to 11:00 am. Participants will be drawn from across the goods movement spectrum – government, industry, service providers, academia, non profits and more!

The Forum will provide a unique opportunity to share information on goods movement trends, needs, issues, best practices, and opportunities. The Region will use the outcomes of the Forum to kickstart its freight and goods movement strategy update, and this is your opportunity to get involved right at the start of the process!

Whether you work extensively in the industry or just want to learn more about Freight and Goods movement in Durham, there is something here for you! Feel free to log on and experience our informative presentations, moderated Q&A sessions, and robust networking opportunities.

Meet Our Speakers, Moderators and Panelists!

Landing Page (continued)

 Aaron Ritter	 Allison Conway	 Brad Anderson	 Carolyn Kim	 Chris Gillis
 Chris Leitch	 Chris Schafer	 Dale Lynch	 Eric Lapointe	 Gary Muller
 Greg Pereira	 Jamie Cook	 Jean-Paul Rodrigue	 Jeremy Dunn	 John Henry
 Justin Gammage	 Khawar Ashraf	 Lesley-Ann Foulds	 Matthew Roorda	 Michael Roeth
 Mike Millian	 Pejman Asgaripour	 Raed Kadri	 Sabbir Saiyed	 Shayna Rector Bleeker
 Tom McCormack		 Zac Cahoon		

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905-668-7711

victor.copetti@durham.ca

Information


Durham Region Freight and Goods Movement Forum

By The Regional Municipality of Durham


June 22, 2022 - June 23, 2022

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Speaker Page Example



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Aaron Ritter
Director, Transportation Strategy, Walmart Canada Corp.


Day 2 - Focus on Durham

Speaker Practice Session


Aaron Ritter is currently the Director of Transportation Strategy at Walmart Canada. Aaron has held progressive positions in Sales Management and Transportation/Logistics for both CPG Suppliers and Retail over the last 18 years. With an eye on continuous improvement through adopting technology where it makes business sense he provides a proven track record of successfully bridging cross functional areas into innovative enterprise solutions. Following the launch of the world first industrial blockchain freight payment system the focus is now on sustainability and the introduction of alternative fuels into Walmart Canada's Fleet.

Aaron holds a Marketing Diploma from Mohawk College complimented with Queens/Smith School of Business - Design Thinking Program, Schulich School of Business – Lean Supply Chain Management and a Lean Six Sigma Green Belt Certification.


Search for speaker names and organizations




Aaron Ritter
Walmart Canada Corp.




Alison Conway
City College of New York




Brad Anderson
Regional Municipality of Durham




Carolyn Kim
Pembina Institute




Chris Gillis
Durham College



Chris Leitch
The Regional Municipality of Durham




Chris Schafer
Bird Canada






Dale Lynch
Transport Canada


Sessions Page Example



Freight Forum


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Day 1 - The "Big Picture"
 Understanding broad patterns and trends in freight and goods movement


 08:30 AM - 11:00 AM
  June 22, 2022



Alison Conway
 Herbert G. Kayser Associate Professor of Civil Engineering, City College of New York



Carolyn Kim
 Senior Director, Communities & Decarbonization Group, Pembina Institute



Dale Lynch
 Economic Officer, Transport Canada


David Kriger
 David Kriger Consultants Inc.



Gary Muller
 Director of Planning, The Regional Municipality of Durham



Jean-Paul Rodrigue
 Professor, Department of Global Studies and Geography, Hofstra University, New York


Jeremy Dunn
 Commercial Vice President, HOPA Ports | Hamilton Oshawa Port Authority



John Henry
 Regional Chair & CEO, Regional Municipality of Durham

Dates and Times in America/Toronto Time Zone


 Day 1 - The "Big Picture"


 Day 2 - Focus on Durham

Registration Page

 **Freight Forum**

Home Speakers Sessions Register Agenda

Please fill in the following information about yourself. Fields marked with an asterisk are mandatory.

Email address *

First name *

Last name *

Organization *

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victor.copetti@durham.ca

Information
Durham Region Freight and Goods Movement Forum
By The Regional Municipality of Durham
June 22, 2022 - June 23, 2022

Agenda Page Example

 **Freight Forum**

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 **Freight Forum** | June 22 - 23, 2022



DRAFT Agenda for Wednesday, June 22, 2022

A. The “Big Picture”

Understanding broad patterns and trends in freight and goods movement

8:00 a.m. Exhibit hall and networking

8:30 **1. Welcome**
John Henry – Regional Chair and CEO, Regional Municipality of Durham

8:35 **2. Introductory keynote address**
Where Canadian manufacturing is headed and implications for freight
Raed Kadri – Head of the Ontario Vehicle Innovation Network, Ontario Centre of Innovation

9:00 **3. The fundamentals**
What matters most to freight and goods movement in Canada
Moderator: Dale Lynch – Economic Officer, Transport Canada

3.1 Demographic and economic trends
Tom McCormack – Principal, metro economics

3.2 Profile of multi-modal freight infrastructure and supply chains
Jean-Paul Rodrigue – Professor, Department of Global Studies and Geography, Hofstra University
(New York)

Moderated question and answer

9:25 **Health break**

Durham Freight Forum Event Portal

Freight Forum | June 22 - 23, 2022

Durham Region Freight and Goods Movement Forum

Starting the discussion toward improving freight and goods movement in Durham Region and beyond

Freight Forum | June 22-23, 2022

Private Chats

No Announcements

Freight Forum

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Day 1 - The "Big Picture"

Understanding broad patterns and trends in freight and goods movement

Wednesday June 22nd, 8:30 - 11:00 AM EDT

Speakers

- Alison Conway**
Herbert G. Kayser Associate Professor of Civil Engineering, City College of New York
- Carolyn Kim**
Senior Director, Communities & Decarbonization Group, Pembina Institute
- Dale Lynch**
Economic Officer, Transport Canada
- David Kriger**
David Kriger Consultants Inc.
- Gary Muller**
Director of Planning, The Regional Municipality of Durham
- Jean-Paul Rodrigue**
Professor, Department of Global Studies and Geography, Hofstra University, New York

Private Chats

John Smith
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Freight Forum

Day 1 - The "Big Picture"

Alison Conway, Carolyn Kim, Dale Lynch, David Kriger, Gary Muller, Jean Paul Rodrigue, Jeremy Dunn, John Henry, Lesley Ann Foulds, Matthew Roorda, Michael Roeth, Raed Kadri, Sabir Sayed, Shayna Rector Bleeker, Tom McCormack

JUN 22 8:30 - 11:00 AM

Day 2 - Focus on Durham

Aaron Ritter, Brad Anderson, Chris Gillis, Chris Leitch, Chris Schaefer, David Kriger, Eric Lapointe, Gary Muller, Jamie Cook, Justin Gammage, Khawar Adraaf, Lesley Ann Foulds, Lesley Ann Foulds, Mike Millan, Pejman Asgarpour, Shayna Rector Bleeker, Zac Cahoon

JUN 23 8:30 - 11:00 AM

Speaker Practice Session

Aaron Ritter, Alison Conway, Brad Anderson, Carolyn Kim, Chris Gillis, Chris Leitch, Chris Schaefer, Dale Lynch, David Kriger, Eric Lapointe, Gary Muller, Greg Peters, Jamie Cook, Jean Paul Rodrigue, Jeremy Dunn, John Henry, Justin Gammage, Khawar Adraaf, Lesley Ann Foulds, Matthew Roorda, Michael Roeth, Mike Millan, Pejman Asgarpour, Raed Kadri, Sabir Sayed, Shayna Rector Bleeker, Tom McCormack, Zac Cahoon

JUN 23 11:00 - 11:30 AM

Day 1 - The "Big Picture"

Understanding broad patterns and trends in freight and goods movement
Wednesday June 22nd, 8:30 - 11:00 AM EDT

Thank you for participating in Day 1: The "Big Picture".

Please join us below for Day 2: Focus on Durham.

Durham Region Freight and Goods Movement Forum

2

1

3

Shayna Rector Bleeker

As I did not get to speak to business innovators as section 3 here mckinsey.com/insights/out... conclusion of calstart.org/wp-content/upi...

Shayna Rector Bleeker

Also CALSTART Taking Comm Fleet Electrification to Scale calstart.org/wp-content/upi...

Shayna Rector Bleeker

And for the LA Volvo deployment lightproject.com

Deborah Lightman

Thank you for the excellent session to there any way to access the slides that the presenters used this morning?

Chat Here ...

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Freight Forum

Aaron Ritter
Director, Transportation Strategy, Walmart Canada Corp.

Alison Conway
Professor of Civil Engineering, City College of New York

Brad Anderson
Principal Planner, Policy and Special Studies, Planning and Economic Department, Regional Municipality of Durham

Carolyn Kim
Senior Director, Communities & Decarbonization Group, Pembina Institute

Chris Gillis
Manager of Applied Research Business Development, Durham College

Chris Leitch
Principal Planner - Transportation, The Regional Municipality of Durham

Aaron Ritter
Director, Transportation Strategy, Walmart Canada Corp.

Start Chat

Aaron Ritter is currently the Director of Transportation Strategy at Walmart Canada. Aaron has held progressive positions in Sales Management and Transportation/Logistics for both CPG Suppliers and Retail over the last 18 years. With an eye on continuous improvement through adopting technology where it makes business sense he provides a proven track record of successfully bridging cross functional areas into innovative enterprise solutions. Following the launch of the world first industrial blockchain freight payment system the focus is now on sustainability and the introduction of alternative fuels into Walmart Canada's Fleet.

Aaron holds a Marketing Diploma from Mohawk College complimented with Queens/Smith School of Business - Design Thinking Program, Schulich School of Business - Lean Supply Chain Management and a Lean Six Sigma Green Belt Certification.

Sessions

Day 2 - Focus on Durham
Aaron Ritter, Brad Anderson, Chris Gillis, Chris Leitch, Chris Schaefer, David Kriger, Eric Lapointe, Gary Muller, Jamie Cook, Justin Gammage, Khawar Adraaf, Lesley Ann Foulds, Lesley Ann Foulds, Mike Millan, Pejman Asgarpour, Shayna Rector Bleeker, Zac Cahoon
Thursday 8:30 - 11:00 AM

IBI GROUP
DAVID KRIGER

49

Social Media

Several social media platforms from official Durham Region user accounts were used to provide information about the Freight and Goods Movement Forum. The following table summarizes the platform, content and metrics of each post. An example social media post from Twitter is included below.



Date	Twitter	Facebook	LinkedIn
June 14, 2022	<p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum on June 22 and 23. Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>	<p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum on June 22 and 23. Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>	<p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum on June 22 and 23. Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>
	<p>Impressions: 933 Engagements: 12 Detail expands: 1 Profile visits: 2 Link clicks: 5</p>	<p>Impressions: 864 Reach: 863 Engagement: 4</p>	<p>Impressions: 195 Unique Impressions: 155 Engagements: 2 Clicks: 2 Click-through rate: 1%</p>

Date	Twitter	Facebook	LinkedIn
June 15, 2022	<p>Do you have questions about freight and goods movement in #DurhamRegion? Register for the free virtual Freight and Goods Movement Forum on June 22 and 23 and have your questions and concerns answered! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>	<p>Do you have questions about freight and goods movement in #DurhamRegion? Register for the free virtual Freight and Goods Movement forum on June 22 and 23 and have your questions and concerns answered! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>	<p>Do you have questions about freight and goods movement in #DurhamRegion? Register for the free virtual Freight and Goods Movement forum on June 22 and 23 and have your questions and concerns answered! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>
	<p>Impressions: 1,403 Engagements: 7</p>	<p>Impressions: 785 Reach: 665 Engagements: 5</p>	<p>Impressions: 266 Unique Impressions: 208 Engagements: 1 Clicks: 1 Click-through rate: 0.4%</p>
June 17, 2022	<p>Retweet (June 13)</p> <p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum on June 22 and 23. Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>	<p>Share (June 13)</p> <p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum on June 22 and 23. Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! 🚚</p> <p>Visit: bit.ly/39d6M3i to register.</p> <p><i>Freight Forum image included</i></p>	<p>—</p>
	<p>Insights on original post</p>	<p>Insights on original post</p>	<p>—</p>
June 19, 2022	<p>Join us at the Freight and Goods Movement Forum this Tuesday (June 22) and Wednesday (June 23) from 8:30 to 11:00 a.m.</p>	<p>Join us at the Freight and Goods Movement Forum this Tuesday (June 22) and Wednesday (June 23) from 8:30 to 11:00 a.m.</p>	<p>Join us at the Freight and Goods Movement Forum this Tuesday (June 22) and Wednesday (June 23) from 8:30 to 11:00 a.m.</p>

Date	Twitter	Facebook	LinkedIn
	<p>Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion. 🚚</p> <p>Register now: bit.ly/39d6M3i</p> <p>Freight Forum image included</p>	<p>Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion. 🚚</p> <p>Register now: bit.ly/39d6M3i</p> <p>Freight Forum image included</p>	<p>Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion. 🚚</p> <p>Register now: bit.ly/39d6M3i</p> <p>Freight Forum image included</p>
	<p>Impressions: 1,168 Engagements: 11 Detail expands: 2 Link clicks: 3</p>	<p>Impressions: 836 Reach: 822 Engagement: 22</p>	<p>Impressions: 323 Unique Impressions: 252 Engagements: 2 Clicks: 1 Reaction: 1</p>
June 21, 2022	<p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum tomorrow June 22 and Wednesday (June 23). Learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! Visit: bit.ly/39d6M3i to register. 🚚</p> <p>Freight Forum image included</p>	<p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum tomorrow (June 22) and Wednesday (June 23). Don't miss your chance to learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! Visit: bit.ly/39d6M3i to register. 🚚</p> <p>Freight Forum image included</p>	<p>#DurhamRegion is hosting a free virtual Freight and Goods Movement Forum tomorrow (June 22) and Wednesday (June 23). Don't miss your chance to learn about key trends, issues and opportunities for freight and goods movement in #DurhamRegion! Visit: bit.ly/39d6M3i to register. 🚚</p> <p>Freight Forum image included</p>
	<p>Impressions: 829 Engagements: 5 Detail expands: 3</p>	<p>Impressions: 470 Reach: 466</p>	<p>Impressions: 206 Unique impressions: 167 Engagements: 11 Click-through rate: 1.9% Reactions: 5 Shares: 2</p>

Appendix B: Speakers and Moderators



Brad Anderson

Principal Planner, Policy and Special Studies, Planning and Economic Department,
Regional Municipality of Durham



Moderator: Day 2 – 2. Durham today and tomorrow

Brad is a Principal Planner, Policy and Special Studies, with the Planning and Economic Department at the Region of Durham. Brad has over 15 years' experience in the planning and development field, spanning site and urban design, develop review and approvals, policy, and special projects. In more recent years, he has been focused on the Region's Municipal Comprehensive Review as the Team Lead for the Growth Management component of the project.

Brad is a Registered Professional Planner with the Ontario Profession Planners Institute, a member of the Canadian Institute of Planners, and a Professional Land Economist with the Association of Ontario Land Economists. Brad holds a bachelor's degree in Urban and Regional Planning from Ryerson University.



Pejman Asgaripour

Project Director-Darlington New Nuclear-Small Modular Reactor Site, Ontario Power
Generation - Darlington



Speaker: Day 2 – 3.3 Energy

No bio available.



Khawar Ashraf

Associate VP, Transportation Planning and Engineering, AECOM



Speaker: Day 2 – 2.2 Freight infrastructure and planning in Durham Region

Khawar Ashraf's career as a professional engineer began over twenty years ago with the City of Edinburgh Council, providing end-to-end transportation planning on their new Containerization program—the first of its kind in 'bonnie' Scotland. He went on to work with TfL (Transport for London) to develop and deliver the next generation of integrated transit bus networks, called "The London Bus Initiative," which provided a holistic transit service, cashless operation, travel time reliability and tackled the onerous task of making bendy buses work on London streets. This experience positioned him as a key player in the transportation planning and development of the London 2012 Olympic route network and delivering a framework for local venue temporary traffic management plans. Moving further afield, he contributed to Libya's first Transportation and Traffic Geometric Design Guide before the Arab Spring.

Ever alert to greater challenges and the chance to expand his skills, Khawar has spent the last ten years in the GTHA working with transit agencies and many of the regions and municipalities - Metrolinx, the Ministry of Transportation and Transport for Canada - on a wide variety of assignments involving TMP's EA's (TPAP's) BRT's, LRT's, and highway/freeway infrastructure rehabilitation. More recently and notably, the Gordie Howe International Bridge, Hamilton and Hurontario LRTs, and the study of Hyperloop for the Canadian context. For the past five years, Khawar has been Manager of Transit Planning & Engineering at AECOM Canada. He has a Civil & Transportation Engineering degree from Napier University, Edinburgh, Scotland.



Zac Cohoon

Twin Erin Farms and Chair of **Durham's Agricultural Advisory Committee (DAAC)**

Speaker: Day 2 – 3.1 Agri-business

Zac is a second-generation Canadian farmer in the Durham region area. He began his career in agriculture in 1992 working with his parents on the family farm. Over the course of Zac's career, the farm business has transformed from a livestock-intensive operation with hogs, feedlots and broiler chickens into a grain and oilseed production operation.

Presently Zac works together with his brother to cultivate 1700 acres in the Port Perry area growing corn, soybeans, wheat, oats and hay.

Currently Zac is the chairman of the Durham Agricultural Advisory Committee, on the executive of Durham Region Federation of Agriculture. He is also the Chair of the Durham Farm Connections Executive committee and a director on the Port Perry Agricultural Society.



Jamie Cook

Managing Partner, Watson & Associates Economists Ltd.



Speaker: Day 2 – 2.1 Demographic and economic trends in Durham Region

Jamie is a managing partner at Watson & Associates Economists Ltd., specializing in land economics as well as long-range urban and regional land-use planning. Over the past two decades with Watson, Jamie has been a key player in developing the firm's expertise in several core areas, related to demographic analysis, growth management, employment lands needs, municipal competitiveness, real estate market analysis and economic impact analysis.

Throughout his career, he has developed wide-spread experience working with numerous public sector clients in both urban and rural locations across Canada in the above-mentioned core areas. Of relevance to the Durham Region Freight forum is Jamie's experience in long-range planning and business case development related to the goods movement sector. Throughout the past decade, Jamie has prepared numerous studies across Canada related to this topic. Jamie has also provided expertise to the Region of Durham for the past two decades related to long-range growth forecasting, land economics, growth management and development charges.



Alison Conway

Herbert G. Kayser Associate Professor of Civil Engineering, **City College of New York**



Speaker: Day 1 – 4.1.2 First and Last Kilometre

Alison Conway is the Herbert G. Kayser Associate Professor of Civil Engineering at the City College of New York. Dr. Conway conducts research primarily in the areas of urban freight and city logistics, freight data, and multi-modal interactions in the urban environment. Her work has been supported by the USDOT, the New York State Department of Transportation and Energy Research and Development Authority, and the Volvo Research and Education Foundations. Dr. Conway currently Chairs the Transportation Research Board's (TRB's) Freight Data Committee and the ASCE Transportation and Development Institute's (T&DI) Freight and Logistics Committee.



Jeremy Dunn

Commercial Vice President, HOPA Ports | Hamilton Oshawa Port Authority



Speaker: Day 1 – 4.3.1 New technologies in transportation and logistics

Jeremy is the commercial vice president at HOPA Ports. Prior to joining HOPA, Jeremy served in successive leadership roles at The Miller Group, one of Canada's leading transportation construction and infrastructure maintenance companies. Jeremy has managed multiple business groups in the heavy construction, asphalt paving and aggregates sectors driving results through business restructuring, service improvement and strategic growth. In his most recent role, Jeremy served as General Manager of Miller Maintenance, responsible for managing and growing Miller's highway maintenance business in Ontario.

Previous to The Miller Group, Jeremy held the position of Director of Operations for the Dunn Group of Companies.

Jeremy earned his Bachelor of Commerce (Honours) at Queen's University, and holds a Master's Certificate in Project Management.



Lesley-Ann Foulds

Manager Corporate Initiatives, CAO's Office, Regional Municipality of Durham,
Regional Municipality of Durham



Moderator: Day 2 – 4. Summary and take-aways

Lesley-Ann is a Manager, Corporate Initiatives, Strategy & Performance within the CAO's Office at the Region of Durham. Lesley-Ann has over 10 years of experience in Ontario's nuclear industry where she worked in plant engineering, operations, and corporate engineering strategy. In her current role at the Region of Durham, Lesley-Ann leads the design, implementation, and evaluation of the Regional Strategic Plan as well as key organizational performance initiatives focused on data insights & analytics.

Lesley-Ann holds a Bachelors of Applied Science in Civil Engineering from the University of Toronto and a Masters of Design in Strategic Foresight and Innovation from OCAD University.



Justin Gammage

Senior Executive Advisor for Strategic Research Priorities and Industry Collaborations,
Ontario Tech University



Speaker: Day 2 – 3.5 Future technologies and research

Speaker: Day 2 – 4.1 Academic viewpoint

Justin Gammage is the Senior Executive Advisor Strategic Research Priorities and Industry Collaborations for the Vice President of Research and Innovation at Ontario Tech University. He also serves as the Manager for Durham's Ontario Vehicle Innovation Network Technology Development Site activities at Ontario Tech University. In these roles he leads the institution's industry outreach and creates industry driven research programs with leading faculty and research labs. Among these labs is the Automotive Centre of Excellence (ACE), Canada's most sophisticated full-scale automotive research facility.

Prior to joining Ontario Tech in 2015, Justin spent 14 years working in the automotive industry in assignments that included both production, product and validation engineering. Most recently, as Chief Scientist for General Motors of Canada, Justin was responsible for developing and managing a broad portfolio of innovation projects with leading experts and faculty from Universities across Canada. He holds a Ph.D. from McMaster University and is a registered Professional Engineer in the Province of Ontario.



Chris Gillis

Manager of Applied Research Business Development, **Durham College**



Moderator: Day 2 – 3. Durham's goods-generating industries

In his current role, Chris is the college lead for applied research project development in the areas of electric, connected and autonomous vehicles, advance technologies and craft beer/beverage development.

Chris' career of 35 years plus started after graduating from Dalhousie University and The Technical University of Nova Scotia with a Bachelor of Mechanical Engineering. Chris worked in several manufacturing organizations with every increasing responsibility until leaving to start his own consulting company focusing on operational performance improvement, innovation and customer satisfaction.

For over 20 years he has worked with both private and public sector organizations, covering a wide variety of industries and sectors in Canada, the United States, Mexico and the United Kingdom, developing and implementing custom solutions.



John Henry

Regional Chair and CEO, **The Regional Municipality of Durham**



Speaker: Day 1 – 1. Welcome

Elected as Durham's Regional Chair and CEO in 2018, John Henry served as the Mayor of Oshawa from 2010-2018, and Regional Councillor for Oshawa's Ward 5 from 2006-2010. He has previously served as a member of the Regional Planning & Economic Development Committee, as Chair of the Durham Region Local Housing Corporation, member of the Durham Region Transit Executive Committee and the Durham Environmental Advisory Committee.

Born and raised in Oshawa and a dedicated volunteer, John has a vested interest in the future development, prosperity and quality of life for Durham residents, while keeping a close eye on fiscal responsibility.

John is a graduate of R.S. McLaughlin C.V.I., Durham College, George Brown College and Panasonic's Corporate School. He is also a trained Industrial Fire Fighter, Ice Rescue Specialist and Dive Rescue Specialist.



Raed Kadri

Head of the Ontario Vehicle Innovation Network (OVIN), **OCI**



Speaker: Day 1 — 2. Introductory Keynote Address

Raed Kadri is Head of Ontario's Autonomous Vehicle Innovation Network (OVIN), an initiative by the Government of Ontario to ensure Ontario's leadership in the future of the automotive and mobility sector.

At the helm of OVIN, Raed drives Ontario's presence on the global stage; leading programming that supports research and development (R and D) funding, talent development, technology acceleration, business and technical supports through testing and demonstration sites. In addition to that, Raed leads province-wide coordination of activities and resources, public education, research, analysis, and thought leadership.

Bringing together stakeholder groups and raising awareness around the opportunities for Ontario and for its partners, Raed is cementing Ontario's leadership in the future of the automotive and mobility sector globally.



Carolyn Kim

Senior Director, Communities & Decarbonization Group, **Pembina Institute**



Speaker: Day 1 – 4.2.1 Sustainability and decarbonization technologies and practices I

Carolyn Kim is the senior director of the Pembina Institute's communities and decarbonization group. She brings 15 years of policy and planning experience from the public, private and non-government sectors to the role. Carolyn is a skilled collaborator, bringing organizations together to accelerate low-carbon solutions in Canadian cities and communities. In 2019, Carolyn initiated Pembina's Urban Delivery Solutions Initiative to tackle freight emissions.

Carolyn is a registered planner with the Ontario Professional Planners Institute and a member of the Canadian Institute of Planners. She holds a master's degree in public policy from the University of Toronto and a bachelor's degree in urban and regional planning from Ryerson University. She currently serves on Blue Green Canada's board of directors.



David Kriger

Principal, **David Kriger Consultants Inc.**

Speaker: Day 2 – 1. Welcome and recap of Day 1 – Recap

David Kriger, Principal of DKCI, served as co-Project Manager for the forum. David is nationally recognized as a leader in urban goods movement strategies and analysis, with 39 years of experience in the GGH, across Canada, the USA and Australia. Since establishing DKCI in 2011, David's goods movement portfolio has included strategies and stakeholder consultations, best practice research, sustainable goods movement studies, new technology assessments, network modelling/analysis, truck surveys, multi-modal strategic goods movement networks, truck route studies, and truck parking, safety and operational studies. David has written guides for Canadian, US and Australian authorities on truck network/analysis, modelling and surveys, and has been an invited speaker at various Canadian universities and professional associations like TAC and ITE. David holds master's degrees in transportation engineering and city

planning from the University of Pennsylvania and a bachelor's degree in applied science and engineering from the University of Toronto.



Chris Leitch

Principal Planner - Transportation, **The Regional Municipality of Durham**



Speaker: Day 2 – 2.3 Freight and goods movement profile for Durham Region

Chris is a Principal Planner, Transportation Planning within the Planning and Economic Development Department at the Region of Durham. Chris has over 20 years of experience in the transportation planning field, starting in the private sector and having progressed in various roles at the Region. He has been closely involved in a variety of projects including the Durham Transportation Master Plan update, the ongoing “Envision Durham” comprehensive review of the Regional Official Plan, environmental assessment studies, development review including secondary plans for new neighbourhoods, and multi-agency data collection and monitoring initiatives.

Chris is a Registered Professional Planner with the Ontario Professional Planners Institute, is a member of the Canadian Institute of Planners and is part of the Ontario Traffic Council's Transportation Planning Committee. He has a Master of Urban Planning degree from McGill University, a Bachelor of Arts (honours) degree in geography from Queen's University and a Geographic Information Systems Specialist certificate from McMaster University and Mohawk College.



Eric Lapointe

Vice President, Ontario East and Northern Quebec, **QSL**



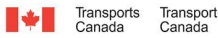
Speaker: Day 2 – 3.4 Hamilton and Oshawa Port Authority

Mr. Lapointe heads stevedoring operations, mill services, and business development initiatives for Eastern Ontario and Northern Quebec. He joined QSL in 2005 with more than 10 years of experience in the mining industry. With his knowledge of terminal operations and expertise in marine engineering project management, Mr. Lapointe has an impressive track record in process optimization and innovative solutions implementation aimed at meeting our clients' expectations with precision.



Dale Lynch

Economic Officer, **Transport Canada**



Moderator: Day 1 — 3. The fundamentals

Dale Lynch, P.Eng, currently works with Transport Canada supporting initiatives around supply chain visibility and digitalization. He has 20 years of experience in the transportation sector, having worked across Canada in both the public and private sectors, and at all levels of government. His areas of practice and expertise include land development, making streets more liveable, goods movements and supply chains. Dale also gives back to the community by volunteering with grass-roots organizations that help at-risk youth and speaking at schools to encourage students to pursue higher learning. Dale lives in Montreal with his wife, two children and their golden retriever.



Mike Millian

President, **Private Motor Truck Council of Canada**



Speaker: Day 2 — 4.2 Industry viewpoint

Mike spent three years working for a local carrier Hauling Livestock and bulk agriculture products. At the age of 21 Mike went to work for a long Haul Refrigerated and general freight carrier and spent 5 years hauling freight in all 48 US Mainland States and 6 Canadian Provinces. The carrier then opened a Certified Driver Training School in 1998 and Mike came off the road to become one of the School's first Certified Driver Trainers.

In 2000 Mike Transitioned into Safety and Compliance for the Fleet, while still working part-time as a Trainer for the School.

In 2002 Mike moved over to a Private Fleet and became the Safety, Compliance, Maintenance and Training manager for the Hensall District Co-operative's Commercial Trucking Fleet. Mike spent the next 12.5 years with Hensall and oversaw the Fleets as it grew from 40 Trucks in 2002 to over 160 in 2015.

In January of 2015 Mike moved into the Trucking Association business and was named the President of the Private Motor Truck Council of Canada, where he remains in his current role.

In July of 2021 Mike became a CITT Certified Logistics Professional (CCLP).



Tom McCormack

Principal, **metro economics**



Speaker: Day 1 — 3.1 Demographic and Economic Trends

Tom McCormack is a recognized authority on Canada's economic and demographic prospects. He has an MA (Economics) from Western University and four decades of experience as an economic forecaster and advisor in both the private and the public sectors. Prior to establishing metroeconomics in 1989 he served as a senior economic advisor to the federal government in Ottawa; Chief Canadian Economist Data Resources Inc. (now IHS Global Insight); and Vice President of Research with Compusearch (now Environics). Tom is a past Chairman of Waterloo School of Planning's Pragma Council; a past president of the Canadian Association for Business Economics; a former member of the board of the Greater Toronto Airports Authority. And he was a member of the Premier of Ontario's Task Force on the Future of the Greater Toronto Area (the Golden Task Force).



Gary Muller

Director of Planning, The Regional Municipality of Durham



Speaker: Day 2 – 1. Welcome and recap of Day 1 – Opening Remarks

Gary Muller is the Director of Planning for Durham Region. With 30 years of planning experience, Gary is responsible for leading the activities of the Region's Planning Division, through Policy Planning and Special Studies, Transportation Planning and Plan Implementation. Gary is currently overseeing a wide range of including the Region's Official Plan review, the Regional Cycling Plan update, improvements to business processes and the Region's review of planning and development applications. Over his career, Gary has led in the preparation and review of official plans, land use planning studies, facilitated downtown redevelopment projects, community improvement plans, urban design guidelines and a variety of development applications. Gary has a Master's Degree in Urban and Rural Planning from Dalhousie University and is a Registered Professional Planner.



Greg Pereira

Manager, Transportation Planning, **Regional Municipality of Durham**



Forum Chair: Day 1 and Day 2

Speaker: Day 2 – 6. Wrap-up

Greg is the Manager of Transportation Planning in the Planning and Economic Development Department at the Regional Municipality of Durham. Greg has over 23 years of experience with a focus on land use, infrastructure and transportation planning and has worked internationally in Canada (Ontario), United Arab Emirates (Abu Dhabi) and Africa (Seychelles). Over the course of his career, Greg has led and contributed to many exciting city building and strategic initiatives such as Toronto Union Station Revitalization, Downsview Area Secondary Plan, Spadina Subway Extension, Durham Region's Cycling Plan, Abu Dhabi 2040 Maritime Plan, and the expansion of Ontario's GO heavy rail network and renovation of over 24 GO passenger rail stations.

Greg is a Registered Professional Planner with the Ontario Professional Planners Institute and is a member of the Canadian Institute of Planners. Greg holds a Bachelor of Arts degree in Geography from University of Toronto and is currently pursuing a Smart Mobility certificate at the Massachusetts Institute of Technology.



Shayna Rector Bleeker

VP Strategic Partnerships, **7Gen**



Speaker: Day 1 – 4.3.2 New business models and considerations for logistics providers integrating zero-emission vehicles

Shayna Rector Bleeker is a cofounder of 7 Gen - a Vancouver based company mobilizing the capital and know-how to support medium and heavy duty fleets deploy electric vehicles and chargers. They offer integrated technology selection, planning, financing, software, installation and maintenance allowing companies to focus on their core business while moving more easily, confidently and profitably towards integrating Zero Emission vehicles in their fleets. She has a background in communications and partnership development and has spent many years in the climate and energy space. This includes working from global energy multinational Shell for a decade. She is a mother to two young boys, and is committed to advancing solutions that address climate change, while at the same time promoting clean growth.



Aaron Ritter

Director, Transportation Strategy, **Walmart Canada Corp.**



Speaker: Day 2 – 5. Closing keynote address

Aaron Ritter is currently the Director of Transportation Strategy at Walmart Canada. Aaron has held progressive positions in Sales Management and Transportation/Logistics for both CPG Suppliers and Retail over the last 18 years. With an eye on continuous improvement through adopting technology where it makes business sense, he provides a proven track record of successfully bridging cross functional areas into innovative enterprise solutions. Following the launch of the world first industrial blockchain freight payment system the focus is now on sustainability and the introduction of alternative fuels into Walmart Canada's Fleet.

Aaron holds a Marketing Diploma from Mohawk College complimented with Queens/Smith School of Business - Design Thinking Program, Schulich School of Business – Lean Supply Chain Management and a Lean Six Sigma Green Belt Certification.



Jean-Paul Rodrigue

Professor, Department of Global Studies and Geography, **Hofstra University (New York)**



Speaker: Day 1 — 3.2 Profile of multi-modal freight infrastructure and supply chains

Dr. Jean-Paul Rodrigue's research interests mainly cover the fields of transportation and economics as they relate to logistics and global freight distribution. Specific topics over which he has published extensively cover maritime transport systems and logistics, global supply chains, gateways, and transport corridors. His research about port regionalization and the development of port/hinterland supply chains is among the world's most cited in the domain. Dr. Rodrigue developed a widely used online reference source and textbook about transportation, the Geography of Transport Systems, now in its fifth edition. He is a senior member of the PortEconomics.eu initiative regrouping the world's leading maritime transport academics and performs advisory and consulting assignments for international organizations and corporations. His co-authored textbook, Port Economics, Management and Policy, was published in January 2022. In 2019, he was the recipient of the Edward L. Ullman Award for outstanding contribution to the field of transport geography by the Association of

American Geographers. In 2022, Dr. Rodrigue was appointed as a Distinguished Fellow at the Hagler Institute for Advanced Study / Department of Maritime Administration, Texas A&M University.



Michael Roeth

Executive Director, **North American Council for Freight Efficiency**



Speaker: Day 1 – 4.2.1 Sustainability and decarbonization technologies and practices II

Mike has worked in the commercial vehicle industry for over 35 years, is the Executive Director of the North American Council for Freight Efficiency and is the trucking lead for RMI. Mike's specialty is brokering green truck collaborative technologies into the real world at scale. Mike was awarded the prestigious SAE 2020 L. Ray Buckendale Lecturer and manuscript author. He has a Bachelor of Science in Engineering from the Ohio State University and a Master's in Organizational Leadership from the Indiana Institute of Technology. Roeth served on the second National Academy of Sciences, Engineering, Medicine Committee on Reducing Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, is a Department of Energy Merit Reviewer and past Chairman of the Board for the Truck Manufacturers Association. He understands the customers, operations and intricacies of the commercial vehicle industry having held various positions in product development, engineering, reliability and quality, sales, materials and plant management with Navistar and Behr/Cummins.



Matthew Roorda

Professor of Civil Engineering, **University of Toronto**



Speaker: Day 1 – 4.1.1 Trends in Freight and Logistics

Matthew Roorda is a Professor of Civil Engineering, has been faculty at the University of Toronto since 2005, and has worked in the transportation engineering profession since 1998. He is the Government of Canada's Canada Research Chair in Freight Transportation and Logistics and leads the scientific advisory committee of the Smart Freight Centre. Dr. Roorda's research interests include urban freight transportation, freight planning and operations, freight and passenger travel survey methods, city logistics, agent-based simulation, parking and curbside management, emissions analysis, activity-based travel demand modelling, and firm behaviour.



Sabbir Saiyed

Manager, Transportation System Planning, **Region of Peel**



Moderator: Day 1 – 4. Trends and Disruptors

Dr. Sabbir Saiyed is currently a Manager of Transportation System Planning at the Regional Municipality of Peel and one of founding members of Smart Freight Centre.

Dr. Sabbir Saiyed has over 25 years of experience in progressively responsible positions in civil engineering, transportation and management. Apart from the Regional Municipality of Peel, Dr. Sabbir Saiyed has enjoyed productive careers at the City of Markham, Regional Municipality of York, Royal Military College of Canada, Kingston and the City of Ottawa.

Dr. Sabbir Saiyed has a Ph.D. from Royal Military College of Canada, Kingston, Ontario and Master's degree in Civil Engineering from Carleton University. He is also a Registered Professional Engineer in the Province of Ontario.

Dr. Sabbir Saiyed is currently the National Chair of Integrated Climate Change Committee and Vice Chair of TAC's Connected and Automated Vehicle Task Force at Transportation Association of Canada. He is also the Past Chair of Mobility Council and Transportation Planning Committee.



Chris Schafer

Vice President, Government Affairs, **Bird Canada**



Speaker: Day 2 – 3.2 Advanced mobility

Chris Schafer is Vice President, Government Affairs at Bird Canada. Prior to joining Bird Canada, Chris was a Senior Director at another micromobility start-up after almost five years at Uber Canada as their Senior Public Policy Manager in Canada. Previously, Chris did stints in media and as a regulatory lawyer with Gowlings in Ottawa.

Appendix C: Forum Participants

Day 1 Forum Participants

Organization

7Gen
AECOM
Bird Canada
Canada Post
City College of New York
City of Brampton
City of Hamilton, Transportation Planning and Parking
City of Oshawa
City of Ottawa
City of Ottawa
City of Peterborough
City of Pickering
David Kriger Consultants Inc.
Durham College
Hofstra University, New York
HOPA Ports | Hamilton Oshawa Port Authority
IBI Group
IBI Group
IBI Group
IBI Group
Lenbrook Group
McIntosh Perry Consulting Engineers
Metro Economics
MTO, Systems Analysis and Forecasting Office
MTO, Systems Analysis and Forecasting Office
North American Council for Freight Efficiency
Ontario Vehicle Innovation Network, OCI
Ontario Vehicle Innovation Network, OCI
Ontario Vehicle Innovation Network, OCI
Ontario Power Generation - Darlington
Ontario Tech University
Pembina Institute
Private Motor Truck Council of Canada
QSL

Participant Name

Shayna Rector Bleeker
Khawar Ashraf
Chris Schafer
Scott Watson
Alison Conway
Martin Bohl
Omar Shams
Ranjit Gill
Deborah Lightman
Max Walker
Kevin Jones
Nadeem Zahoor
David Kriger
Chris Gillis
Jean-Paul Rodrigue
Jeremy Dunn
Anna Mori
Anthony Galloro
Bruce Mori
Tanvir Chowdhury
Joan Wideman
Mehemed Delibasic
Tom McCormack
Shan Sureshan
Shuming Du
Michael Roeth
Alicia Pereira
Dan Ruby
Raed Kadri
Pejman Asgaripour
Justin Gammage
Carolyn Kim
Mike Millian
Eric Lapointe

Organization

Region of Durham
Region of Durham
Region of Durham
Region of Durham
Region of Durham
Region of Durham
Region of Durham, Works – Transportation Infrastructure
Region of Durham
Region of Durham, Infrastructure Design and Engineering
Region of Durham
Region of Durham
Region of Durham, CAO's Office - Sustainability
Region of Durham
Region of Durham
Region of Durham
Region of Durham, Planning and Economic Development
Region of Durham
Region of Durham
Region of Peel
Region of Peel
Smart Freight Centre
Stantec
TELUS
Town of Ajax
Township of Uxbridge
Township of Uxbridge
Township of Uxbridge
Transport Canada
University of Toronto
University of Waterloo
Walmart Canada Corp.
Watson & Associates Economists Ltd.
York Region, Senior Transportation Specialist

Participant Name

Alia Tulloch
Allison Brown
Anthony Caruso
Brad Anderson
Chris Leitch
Danielle Culp
Doug Robertson
Gary Muller
Glyn Reedman
Graham Wilson
Greg Pereira
Ian McVey
John Henry
Lesley-Ann Foulds
Sandra McEleney
Stacey Gibb
Tao Ye
Victor Copetti
Sabbir Saiyed
Sabrina Khan
Matthew Roorda
Arash Mirhoseini
Sherin Abdelhamid
Dhaval Pandya
Craig Miller
Judy Risebrough
Lukas Gillam
Dale Lynch
Marc Saleh
Clarence Woudsma
Aaron Ritter
Jamie Cook
Kevin Ye

Day 2 Forum Participants

Organization

7Gen
AECOM
Bird Canada
Canada Post
City College of New York
City of Brampton
City of Hamilton, Transportation Planning and Parking
City of Oshawa
City of Ottawa
City of Ottawa
City of Peterborough
City of Pickering
David Kriger Consultants Inc.
Durham College
Hofstra University, New York
HOPA Ports | Hamilton Oshawa Port Authority
IBI Group
IBI Group
IBI Group
IBI Group
Lenbrook Group
McIntosh Perry Consulting Engineers
Metro Economics
North American Council for Freight Efficiency
Ontario Power Generation - Darlington
Ontario Tech University
Ontario Vehicle Innovation Network, OCI
Ontario Vehicle Innovation Network, OCI
Ontario Vehicle Innovation Network, OCI
Pembina Institute
Private Motor Truck Council of Canada
QSL
Region of Durham
Region of Durham
Region of Durham
Region of Durham
Region of Durham

Participant Name

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Khawar Ashraf
Chris Schafer
Scott Watson
Alison Conway
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Omar Shams
Ranjit Gill
Deborah Lightman
Max Walker
Kevin Jones
Nadeem Zahoor
David Kriger
Chris Gillis
Jean-Paul Rodrigue
Jeremy Dunn
Anna Mori
Anthony Galloro
Bruce Mori
Tanvir Chowdhury
Joan Wideman
Mehemed Delibasic
Tom McCormack
Michael Roeth
Pejman Asgaripour
Justin Gammage
Alicia Pereira
Dan Ruby
Raed Kadri
Carolyn Kim
Mike Millian
Eric Lapointe
Alia Tulloch
Allison Brown
Anthony Caruso
Brad Anderson
Chris Leitch

Organization

Region of Durham
Region of Durham
Region of Durham, Infrastructure Design and Engineering
Region of Durham
Region of Durham
Region of Durham, CAO's office - Sustainability
Region of Durham
Region of Durham
Region of Durham
Region of Durham
Region of Durham
Region of Durham, Planning and Economic Development
Region of Durham
Region of Durham
Region of Peel
Region of Peel
Smart Freight Centre
Stantec
Systems Analysis and Forecasting Office
Systems Analysis and Forecasting Office
TELUS
Town of Ajax
Town of Whitby
Township of Uxbridge
Township of Uxbridge
Township of Uxbridge
Transport Canada
Twin Erin Farms and Chair of Durham's Agricultural
Advisory Committee (DAAC)
University of Toronto
University of Waterloo
Walmart Canada Corp.
Watson & Associates Economists Ltd.
Works - Transportation Infrastructure, Durham Region
York Region
York Region, Senior Transportation Specialist

Participant Name

Danielle Culp
Gary Muller
Glyn Reedman
Graham Wilson
Greg Pereira
Ian McVey
John Henry
Lesley-Ann Foulds
Paul Gee
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Sabbir Saiyed
Sabrina Khan
Matthew Roorda
Arash Mirhoseini
Shuming Du
Shan Sureshan
Sherin Abdelhamid
Dhaval Pandya
Tara Painchaud
Craig Miller
Judy Risebrough
Lukas Gillam
Dale Lynch

Zac Cohoon
Marc Saleh
Clarence Woudsma
Aaron Ritter
Jamie Cook
Doug Robertson
Ahmad Subhani
Kevin Ye