

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JANUARY 10, 2017
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR - ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER
SUBJECT	UPDATES: GARBAGE AND RECYCLING COLLECTION AND NEXT STEPS

RECOMMENDATION

That, on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer, with the support of the Director, Environment, Fleet and Solid Waste, the following actions **BE TAKEN**:

- a) This report **BE RECEIVED** for information;
- b) That Civic Administration **BE DIRECTED** to report back to Civic Works Committee when additional details are known with respect to the *Waste Free Ontario Act* including the potential impacts on London residents, businesses and the City's waste management system; and
- c) That Civic Administration **BE DIRECTED** to report back to Civic Works Committee by December 2017 with:
 - i. a Business Case including a detailed feasibility study of options and potential next steps to change the City's fleet of garbage packers from diesel to compressed natural gas (CNG)
 - ii. an Options Report for the introduction of a semi or fully automated garbage collection system including considerations for customers and operational impacts.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

Relevant reports that can be found at www.london.ca under City Hall (Meetings) include:

- Update: Interim Waste Diversion Plan (2014-2015) and Additions for 2016 (February 2, 2016 meeting of the Civic Works Committee (CWC), Item #15)
- Comments on the Environmental Bill of Rights Registry - Proposed Waste Free Ontario Act and Draft – Strategy for Waste Free Ontario: Building the Circular Economy (February 2, 2016 meeting of the CWC, Item #14)
- Waste Diversion – Update on Examination of Residential Organic Waste (Food Scraps) and Next Steps (April 20, 2015 meeting of the CWC, Item #13)
- Garbage and Recycling Collection – Status and Potential Next Steps (December 16, 2014 meeting of the CWC, Item #12)
- Quarterly Report on Internal Audit Results - Engineering and Environmental Services: Solid Waste (Garbage) Collection and Recycling Process Review (Submitted by PwC to December 15, 2014 meeting of the Audit Committee, Item #5)
- Interim Waste Diversion Plan (July 21, 2014 meeting of the CWC, Item #18)
- Status Report: Update of Road Map to Maximize Waste Diversion 2.0 (July 22, 2013 meeting of CWC, Item #14)

STRATEGIC PLAN 2015-2019

Municipal Council has recognized the importance of solid waste management, climate change, other related environmental issues and innovation in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)). With respect to this Civic Works Committee (CWC) Report, three of the four Areas of Focus are addressed:

Building a Sustainable City

- Strong and healthy environment

Growing our Economy

- Local, regional, and global innovation

Leading in Public Service

- Proactive Financial Management
- Excellent service delivery

BACKGROUND

PURPOSE:

The purpose of this report is to provide an update and next steps on specific items that were added to the Solid Waste Services workplan by Municipal Council for 2015 and 2016 (Deferred Matter, Item No. 7, File No. 33) as a result of work identified during the PwC audit including:

- adjusting collection zones to optimize collection efficiency; and
- The advantages and disadvantages of:
 - semi or fully automated, cart-based, garbage collection system;
 - compressed natural gas (CNG) to fuel garbage packers; and
 - a tag system for bulky items.

CONTEXT:

Municipal Council at its December 18, 2014 meeting directed the Civic Administration to add to the solid waste services 2015 and 2016 workplan a number of new items as follows:

Garbage and Recycling Collection - Status and Potential Next Steps Reports to the Municipal Council in 2015 and 2016:

i) a report(s) reviewing and/or taking action on the recommendations as presented by PricewaterhouseCoopers (PwC) in its audit report entitled Solid Waste (Garbage) Collection and Recycling Process Review and any further recommendations identified by the Audit Committee, and approved by the Municipal Council;

ii) a report examining the advantages and disadvantages of using a cart-based, semi or fully automated, garbage collection system;

iii) a report examining the advantages and disadvantages of compressed natural gas (CNG) to fuel garbage packers and other compatible City fleet, along with potential synergies with fleet from other agencies, boards and commissions;

iv) [this item (e.g., Green Bin, organics management) was addressed in April 2015];

v) a report examining the advantages and disadvantages of adding a tag system for bulky items;

DISCUSSION

This section contains updates under the following headings:

1. New Waste Free Ontario Act (WFOA) plus Appendix A
2. Review of collection zones to optimize collection efficiency
3. Semi or fully automated, cart-based, garbage collection system plus Appendix B
4. Compressed natural gas (CNG) to fuel garbage packers plus Appendix C
5. Tag System for the collection of bulky items plus Appendix D

1. New Waste Free Ontario Act (WFOA)

In November 2015, the Minister of the Environment and Climate Change (MOECC) introduced a new legislative framework for managing waste in Ontario under Bill 151, *Waste Free Ontario Act*. The legislation is comprised of two Acts, the *Resource Recovery and Circular Economy Act* (RRCE), and the *Waste Diversion Transition Act* (WDTA).

Bill 151 received Royal Assent in June of this year and was proclaimed November 30, 2016. The legislation also contains a draft Strategy for a Waste Free Ontario: Building the Circular Economy to support Ontario in achieving its goals. The draft strategy will be updated by MOECC in late 2016 or early 2017. Comments on the proposed legislation and draft strategy were approved by Council and submitted to the Environmental Bill of Rights (EBR) Registry in February 2016.

Under the new framework funding to the City of London will increase to potentially 100% of program costs for residential recycling services. How that funding is administered is unknown along with many other aspects such as the municipal role. The Association of Municipalities of Ontario captured many details in a recent Member Release (Appendix A).

Next Steps

City staff and Municipal Council have been engaged in the discussion and review of Bill 151 and the creation of new legislation. As is traditionally done, the operational aspects of legislation are contained in regulations still to be written along with future policy documents. City staff are recommending that a future report to CWC contain additional details (once details from the regulations are known) including the potential impacts on London residents, businesses and the City's waste management system.

2. Review of Collection Zones to Optimize Collection Efficiency

Curbside garbage collection services for London are based on 6 collection zones (Zone A through Zone F). Within a zone there are defined collection routes ('beats'). As the City grows, collection routes are adjusted to accommodate growth (e.g., new subdivisions requiring collection in the north, infill town home complexes developed in older neighborhoods). Each year some routes go through minor adjustments to accommodate annual growth of the city.

In 2014, it was identified that the ongoing, minor adjustments and balancing were becoming more difficult to accommodate and a comprehensive analysis of collection zones and routes would soon be required. The last time that a major review of beats was undertaken was in 1996 with the introduction of the 'six day garbage collection cycle'. In 2007, there were some significant changes to Zone A and Zone F.

A review of collection zones and routes is important to undertake now since it dovetails nicely with implementation and expansion of existing and emerging systems/tools such as geographic information systems (GIS), computerized maintenance management system (CMMS) ESRI CityWorks, waste collection models and programs (route optimization software) and vehicle location and tracking technologies. Integrated automated vehicle location (AVL) solutions provide real time tracking, idling control, record weights, improved data collection/recording/reporting, enhanced staff and vehicle performance monitoring, all of which are critical measures for providing this service and maximizing operational efficiencies and effectiveness.

In the 2016-2019 multi-year budget, Municipal Council approved budget for the CMMS project (multi years) and budget in 2018 and 2019 to specifically help with technology for garbage collection vehicles.

A review of collection zones and routes requires examining:

- Customer expectations
- Weight and volume of waste including seasonality impacts
- Type and configuration of households being served (e.g., household route density)

- Type of road network being traveled and traffic flow patterns (e.g. avoid main streets during rush hour)
- Number and capacity of vehicles
- Vehicle speeds
- Loading and unloading times
- Impacts on other services such as recycling collection, yard waste collection

The analysis is done using a combination of technology and experience (e.g., 'beat/street & neighborhood knowledge'). The goal is to strike an appropriate balance between customer service (expectations), financial and environmental considerations.

Next Steps

This comprehensive project requires balancing existing workload, upcoming projects in solid waste services and with new project workload dealing with CMMS. The following general timeline will be followed noting that the potential impacts associated with the *Waste Free Ontario Act* are not known at this time:

Additional data compilation and final project requirements	April - June 2017
Develop options for Zones and routes	July - September 2017
Field test new zones and routes	October - December 2017
Present proposed changes to CWC/Council	January - March 2018
Undertake final changes, prepare documentation, adjust Calendars and develop implementation strategy	April - June 2018
Implement major revisions	October 1, 2018

It must be noted that during the above time period, ongoing minor adjustments to the collection system continue.

3. Semi or fully automated, cart-based garbage collection system

Current System for Curbside Collection in London

London's curbside collection system is manual collection of garbage cans and bags by two-person-crew rear loading collection vehicles. The truck is driven by one operator while the other operator loads garbage at each stop. Both operators will load at heavy stops (e.g., large couch, many bulky items). Single-operator side-loading collection vehicles are used in high traffic locations. Loading garbage from the side instead of the rear is a safer option in these locations.

In 2011 to 2012 London conducted a pilot project of semi-automated cart collection for garbage at approximately 500 homes in five areas of the city. The pilot project consisted of distributing approximately 100 carts to residents within one garbage collection route on a "first come first serve" basis (this represents approximately 10% of the route). Residents had a choice of two cart sizes to select from 360 litres (holds 3 regular garbage cans) or 240 litres (holds 2 regular garbage cans). The location of the pilot project was moved at regular intervals to gain experience in different parts of the city.

In 2012 London conducted a 12 month pilot project of semi-automated cart collection for Green Bin organics at approximately 750 homes in one neighbourhood.

General findings from the two projects indicated general satisfaction with the carts by the residents using them.

Other Municipal Experience

Many municipalities are moving to cart-based collection systems for waste collection, including garbage, recycling and organic waste. This section and Appendix B will focus on cart-based collection for garbage.

Appendix B provide details on Ontario programs and some municipalities from other provinces. Appendix B also contains the general advantages and disadvantages of semi or fully automated, cart-based garbage collection systems.

Cart-based programs may be fully automated or semi-automated collection. Fully automated collection vehicles use a mechanical arm that lifts the cart to be emptied into the truck. The arm is controlled from within the truck by the operator who is not required to leave the truck. Semi-automated collection requires the operator to leave the truck and attach the cart to the truck to be lifted and emptied. A cart tipper at the back of the rear packer can also be used.

Generally, in cart-based programs, carts are mandatory and the municipality administers the cart purchase and distribution, which may include a user-fee often based on the cart size. The program in Windsor and Woodstock differs in a number of ways, in particular, the carts are optional for residents. The municipality provides information on the required cart specifications and residents purchase direct from vendors.

Next Steps

Based on current information and growth that is being observed with cart-based garbage collection systems in Ontario and across Canada, City staff are recommending that a Business Case and detailed feasibility study be prepared that more thoroughly examines the advantages, disadvantages, costs, customer and operational impacts, and implementation strategy of a fully or semi-automated cart-based system for garbage collection.

4. Compressed natural gas (CNG) to fuel garbage packers

The use of compressed natural gas (CNG) as a fuel for garbage collection vehicles (packers) is a growing industry trend. Several municipalities in Ontario such as the Region of Peel, the Cities of Hamilton, Ottawa and Quinte West, and the Counties of Dufferin and Simcoe have awarded contracts to service providers proposing the use of CNG collection vehicles. In addition, locations like the Bluewater Recycling Association (comprised of over 20 municipalities representing nearly 150,000 people) have switched to CNG powered packers.

City staff are currently working on a research project with the Canadian Biogas Association and Union Gas with funding support from the Federation of Canadian Municipalities Green Municipal Fund that is looking at the economic feasibility and environmental benefits of producing biogas by anaerobically digesting the organic fraction of the City's residential waste stream, and subsequently converting the biogas to renewable natural gas (RNG) for use in CNG vehicles. This work has permitted City staff to become more knowledgeable in CNG as a fuel for vehicles. Preliminary cost estimates developed as part of this research project indicate that a switch to CNG may or may not be economically advantageous for London. This will depend on several factors including potential incentives for CNG vehicles and/or fuelling infrastructure as part of Ontario's and the Federal Government's Climate Change Action Plans.

The above work coupled with previous conversations with Union Gas, other municipalities that have directly or indirectly implemented CNG systems for municipal fleet, and the current understanding of the advantages and disadvantages of switching to CNG-powered garbage packers (Appendix C) and other fleet have provided a reasonable understanding of the complexities of any transition to a new fuel source.

Next Steps

Based on current information and growth that is being observed with CNG-powered garbage packers and potentially other municipal fleet, City staff are recommending that a Business Case and detailed feasibility study be prepared that more thoroughly examines the advantages, disadvantages, costs, environmental benefits and implementation strategy of making a switch to CNG-powered vehicles.

5. Tag System for the Collection of Bulky Items

Current Practice in London

London provides bulky item collection as part of regular curbside collection every garbage day. Bulky items include most furniture such as couches, mattresses, box springs, tables, kitchen chairs, carpet and bathroom fixtures (e.g., toilet). There are specific requirements for some items, for example, carpet must be bundled in one metre lengths.

Bulky item collection at the same time as garbage pickup has been in place since 1995. Prior to this bulky items were only collected twice per year, summer and fall. This service was discontinued due to high cost as the volume of bulky items was difficult to handle. In addition, some items like a mattress or couch had been outside for weeks or months and were now even heavier than normal. Spreading the collection of bulky item through the year was viewed as providing a higher level of customer service and removed the peak generation that occurred twice per year.

Bulky item collection is not provided to locations that are serviced by top-loading garbage trucks. These are most multi-residential buildings and some town homes. These locations use bulk bins for garbage and receive more frequent collection (most locations would receive twice weekly with some receiving weekly collection).

London's garbage collection system is a valued service by Londoners. Corporation customer surveys about City of London services indicate that garbage collection services receive consistently high scores for levels of satisfaction.

Question: Please rate how satisfied you are with the garbage collection services provided by the City of London, using a scale of very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied.		
	2015	2016
Very satisfied	56%	54%
Somewhat satisfied	30%	32%
Total	86%	86%

Overview of Practice in other Ontario Municipalities

Practices for bulky item collection are varied across comparable Ontario municipalities. Appendix D provides details on practices, which can be divided generally as follows:

Bulky items collected each garbage pickup - No fee required			
Municipality	Collection Frequency Per Year	Bulky Item Limit	
London	42	No	
Sudbury, Waterloo Region	52	No	
Bulky items collected each garbage pickup - No fee required			
Markham, Toronto, Region of Peel	26	No	
Limit on bulky items collected each garbage pickup - No fee required			
Ottawa, Aurora, Ajax, Pickering, Region of Halton	26	Between 2 & 6	
Bulky items collected curbside with regular garbage - Fee required			
Municipality	Collection Frequency	Cost Per Item	Bulky Limit
Richmond Hill, Newmarket	Biweekly	\$2 to \$12	No
Vaughan	Biweekly	\$1.20	13

Collected by appointment or limited collection service			
Municipality	Collection Period	Fee per collection/ item	Bulky Item Limit
Oshawa, Whitby, Guelph, Hamilton, Niagara Region	All year	\$0 to \$32	No limit to 12
Simcoe County	June – Sept	\$35 per collection	5
Bulky items not collected curbside with garbage			
Municipality	Disposal Options		
Barrie, St. Thomas, Windsor	Public drop-off depots or City landfill		

Next Steps

As noted in Section 1 above, City staff are recommending that a future report to CWC contain additional details including the potential impacts on London residents, businesses and the City's waste management system associated with the *Waste Free Ontario Act*. Until the future impacts and changes are better understood coupled with the current satisfaction rating for the existing system, City staff are not recommending making any further changes as to how Londoners handle to bulky items at this time.

ACKNOWLEDGEMENTS

This report was prepared with assistance from Mike Bushby, Division Manager, Fleet & Operational Services; Kevin Springer, Manager, Waste Collection; and Jamie Skimming, Manager, Air Quality.

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- Appendix A: Member Release from the Association of Municipalities of Ontario Dealing with the *Waste Free Ontario Act*
- Appendix B: Semi and Fully Automated, Cart-based Garbage Collection Systems Including Advantages and Disadvantages
- Appendix C: Advantages and Disadvantages of Compressed Natural Gas (CNG) to Fuel Garbage Packers
- Appendix D: Overview of Municipalities with Tag Systems for the Collection of Bulky Items Including Advantages and Disadvantages

APPENDIX A

Member Release from the Association of Municipalities of Ontario Dealing with the *Waste Free Ontario Act*

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November 30, 2016

The Province Proclaims Bill 151 - *The Waste-Free Ontario Act* – and Moves Toward Full Producer Responsibility

Today the provincial government proclaimed Bill 151, *The Waste-Free Ontario Act* (WFOA). This Act creates a new legislative framework for waste management in the Province and will transition the existing diversion programs under the *Waste Diversion Act* (WDA) including the Blue Box, Municipal Hazardous and Special Waste, Waste Electrical and Electronic Equipment and Tires to the new framework. The Act is focused on creating a circular economy strategy through supporting Provincial Policy Statements and the development of an organic strategy.

We are transitioning from the municipally-run and co-funded Blue Box program toward an Extended Producer Responsibility (EPR) regime that requires producers to cover all end-of-life costs for waste. The municipal role in this system will be evolving. Eventually, producers will be fully responsible for meeting target recovery rates for designated products and packaging.

Until we know significant post-transition issues such as level of diversion rates, geographic requirements and what materials will be designated, our municipal programs will continue to run so that our communities receive a convenient, reliable waste services that residents depend on. Although it is too early for councils make informed decisions, municipal governments may be approached by producers to provide post-transition collection and/or processing services for designated materials.

The WFOA is based on open competition and free markets instead of the previous industry monopolies. The government has voiced a commitment to ensuring competition at the producer level throughout the market. We fully support and need competition in the system.

One of the biggest municipal risks is that this transition period could be drawn out — or worse, become the new normal. Municipal governments remain responsible for the majority of the waste management system until the transition is complete. Therefore, AMO will continue to work with our members, the government, the new Resource Productivity and Recovery Authority, Producers, Waste Management Service Providers and other interested stakeholders to ensure that the transition period is as efficient as possible, and maintains the same level of quality that residents come to expect with the Blue Box program.

In addition to working with key stakeholders, AMO is planning a one-day session for municipal elected officials to discuss the transition to the WFOA and the municipal challenges and opportunities. Mark your calendars for February 8, 2017 (location TBD). Admission will be free with participation by teleconference and web also available. More information about this session will be posted shortly on our website at www.amo.on.ca.

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APPENDIX B

Semi and Fully Automated, Cart-based Garbage Collection Systems Including Advantages and Disadvantages

Ontario Cart-based Garbage Collection Systems¹

Fully automated collection			
Municipality	Cart Sizes Litres ²	Collection Frequency	Is Extra Garbage Collected?
Toronto	80, 130, 240, 360 L	Biweekly	Yes. Garbage bag with a tag.
Peel Region (Caledon, Brampton, Mississauga)	130, 240, 360 L	Biweekly	Yes. Garbage bag with a tag.
Guelph	80, 130, 240, 360 L	Biweekly	No. Additional carts may be purchased.
Bluewater Recycling Association	130, 240, 360 L	Weekly	No. Additional carts may be purchased.
Semi-automated collection			
Windsor ³	130, 180 L	Weekly	Yes
Woodstock ³		Weekly	Yes. Garbage/bags or containers within the container limit

¹ Only comparable sized programs were surveyed.

² Equivalent sizes for carts are: 120 litre – 1 garbage can, 240 litre – 2 garbage cans, 360 litre – 3 garbage cans.

³ Carts are optional and must be purchased by residents. Residents may also use bags or garbage cans.

Other Canadian Cart-based Collection Systems (fully automated)

Municipality	Cart Sizes Litres	Collection Frequency	Is Extra Garbage Collected?
Kelowna, British Columbia	120, 240, 360 L	Weekly	Yes Garbage bag with a tag
Richmond, British Columbia	80, 120, 240, 360 L	Biweekly	Yes Garbage bag with a tag
Surrey, British Columbia	80, 120, 240, 360 L	Biweekly	Yes Garbage bag with a tag
Vancouver, British Columbia	75, 120, 180, 240, 360 L	Biweekly	Yes Garbage bag with a tag
Calgary, Alberta	360 L	Weekly	Yes
Lethbridge, Alberta	240, 360 L	Weekly	No
Regina, Saskatchewan	240, 360 L	Weekly	No
Winnipeg, Manitoba	240, 360 L	Biweekly	Yes Extra garbage pick-up fee

Advantages and disadvantages of semi or fully automated, cart-based garbage collection systems

Some of the general advantages of automated, cart-based collection are as follows:

- Convenient and easy method for most residents to dispose of garbage.
- Size of carts can vary to match the resident's needs (e.g., from a cart that holds one or two bags to carts that hold 4 to 6 bags).
- Wheeled carts are usually easier, more maneuverable, and safer for residents because there is no carrying or lifting of heavy garbage cans.
- Carts significantly reduce access to garbage by rodents and pets.
- Generally, cleaner neighborhoods can occur as litter tends to be reduced. With automated pickup, carts have lids and are more resistant to tipping than traditional garbage cans.
- Neighbourhoods will have a different aesthetic appeal as there is uniformed appearance on garbage day.
- Health and safety benefits as cart-based systems have less physical impact on employees.
- A number of cart-based programs report overall operational savings and/or a higher level of customer satisfaction.
- Carts can include an ID tag that ties the cart back to a household.
- Carts are reused each week and may reduce the number of one-way plastic garbage bags.

Disadvantages include:

- Initial costs of purchasing carts tippers for existing vehicles and/or specialized vehicles. For example, an automated sideloader may cost about 20% more (\$40,000 to \$50,000) than a manual side-loader.
- Automated vehicles typically have a shorter lifecycle than manual packers because of the additional moving parts performing continuous activities.
- Automated vehicles require specialized training of technicians and generally have higher maintenance cost compared with traditional rear packers.
- The cost of carts generally average between \$35 and \$50 each depending on container size and number purchased.
- Carts need to be cleaned by the owner from time-to-time.
- Carts need maintenance and ultimately need to be replaced.
- Homeowners must be educated on where to place carts at the edge of the road.
- Bulky items (e.g., furniture, mattresses) require a separate collection service, either run by the municipality or left to the residents.
- Householders can abuse the system by overloading carts or placing non-collectible items inside the cart.
- Automated collection requires special procedures in high population density areas and/or in areas where parked vehicles interfere with collection.

APPENDIX C

Advantages and Disadvantages of Compressed Natural Gas (CNG) to Fuel Garbage Packers



CNG garbage packers operate in the Region of Peel. One person, fully automated, side loader (packers) picks up carts at the curb (left photo). Right photo shows a CNG-powered front-end loader that collects bulk-lift containers.

Source: Region of Peel application to the Solid Waste Association of North America (SWANA) Awards of Excellence

The following outlines the advantages of switching from diesel-powered packers to CNG-powered packers:

- Help the City of London become a cleaner and environmentally friendly City.
- Natural Gas is an accessible, plentiful and renewable energy source in Canada.
- Investment in innovation and cleaner fuels could bring additional economic value and technology opportunities to London and region enhancing growth and business development.
- CNG is a cleaner burning fuel than diesel. CNG-powered vehicles produce an estimated 10% lower greenhouse gas emissions (GHGs), 50% lower particulate matter (PM) emissions and 90% lower nitrogen oxide (NO_x) emissions than diesel-powered vehicles.
- The price of CNG, as a fuel, has typically been 35% to 45% lower than diesel. Longer term estimates from the U.S. Energy Information Administration suggests that the price of diesel is going to increase annually at about 6% versus 2% for CNG.
- Natural Gas will provide cost and risk control to the new carbon tax systems being phased in.
- The City may be able to create renewable natural gas (RNG) from landfill gas at the W12A Landfill that could be used to directly or indirectly fuel the garbage packers.
- When idling, CNG-powered collection vehicles produce between 10% and 15% less noise than diesel-powered vehicles.
- CNG-powered vehicles are equipped with onboard gas detectors and other safety devices such as tank safety valves.
- Natural gas is lighter than air therefore it will not pool as a liquid or vapour on the ground as it will rise and disperse rapidly.
- Natural gas has a higher ignition temperature than diesel or gasoline; therefore, it is much harder to ignite.

The disadvantages of CNG-powered garbage collection vehicles include:

- Significant capital outlay for both infrastructure and equipment assets.
- Fleet Maintenance Facilities will require capital upgrades to meet the regulatory requirements of the Technical Standards & Safety Authority (TSSA).
- From purely an economic perspective the CNG investment (infrastructure and vehicle assets) will not reach a return on investment for many years.
- CNG-powered heavy duty vehicles have initial capital outlay of up to \$50,000 more per vehicle than equivalent diesel-powered vehicles to cover engine technology, chassis design and CNG tanks.
- A fuelling system does not currently exist in London therefore the financing to build one will have to be obtained. There is some private sector commercial station interest based on an anchor tenant scenario.
- Currently the natural gas fuel market has not been exposed to some taxes that diesel fuels have like the Road Tax. If these taxes eventually flow through to natural gas prices this will lessen the current pricing advantage over time.
- The purchase price, maintenance costs, fuel stability and salvage values of CNG-powered collection vehicles are not established which increases the risk and potential impact to internal rental rates.
- Depending on how CNG-powered collection vehicles are acquired, the older diesel powered packers may need to be sold before their useful life has been reached and at prices that are less favourable than traditional salvage values.
- Compared to diesel powered vehicles with a long track record in all Canadian seasons, there is much less experience with CNG-powered vehicles in cold weather climates.

APPENDIX D

Overview of Municipalities with Tag Systems for the Collection of Bulky Items Including Advantages and Disadvantages

Overview of Ontario Municipal Collection of Bulky Items

Bulky items collected curbside with regular garbage – No fee required				
Municipality	Collection Frequency	Bulky Item Limit		
Halton Region (Burlington, Milton, Oakville, Halton Hills) ¹	Biweekly	3		
Durham Region (Ajax, Pickering)	Biweekly	2		
London	42 per year	No		
Ottawa	Biweekly	6 ²		
York Region (Aurora)	Biweekly	5		
York Region (Markham)	Biweekly	No		
Peel Region (Caledon, Brampton, Mississauga)	Biweekly	No		
Sudbury	Weekly ³	No		
Toronto	Biweekly	No		
Waterloo Region (Cambridge, Kitchener, Waterloo)	Weekly ⁴	No		
Bulky items collected curbside with regular garbage, Fee required				
Municipality	Collection Frequency	Cost Per Item	Bulky Limit	Bulky Item counted as garbage container
York Region (Newmarket)	Biweekly	\$12	No	X
York Region (Richmond Hill)	Biweekly	\$2	No	X
York Region (Vaughan)	Biweekly	\$1.20	13	✓
Collected by appointment or limited collection service				
Municipality	Collection Period	Fee per collection/item	Bulky Item Limit	
Durham Region (Oshawa)	All year	\$0 first occasion, \$25 for additional collections	12	
Durham Region (Whitby)	All year	Same as above	12	
Guelph	All year	\$32 first item, \$26 for additional items	No limit	
Hamilton	All year	\$0	4	
Niagara Region	All year	\$0	No limit	
Simcoe County	June – Sept	\$35 per collection	5	
Bulky items not collected curbside with Regular Garbage				
Municipality	Disposal Options			
Barrie	City landfill. One day per year for curbside 'swap program'			
St. Thomas	Public drop-off depots			
Windsor	Public drop-off depot			

¹ Not all Halton Hills collection areas receive bulky item curbside collection.

² Bulky item are counted as a garbage container and included within the container limit.

³ Items will be collected within five working days (before the next scheduled collection day). Bi-weekly effective October 2021.

⁴ Bi-weekly garbage collection begins March 2017.