



Agenda Including Addeds Civic Works Committee

11th Meeting of the Civic Works Committee

July 17, 2018, 4:00 PM

Council Chambers

Members

Councillors V. Ridley, T. Park, P. Hubert, P. Squire, H. Usher, Mayor M. Brown

The City of London is committed to making every effort to provide alternate formats and communication supports for Council, Standing or Advisory Committee meetings and information, upon request. To make a request for any City service, please contact accessibility@london.ca or 519-661-2489 ext. 2425.

The Committee will recess at approximately 6:30 PM for dinner, as required.

	Pages
1. Disclosures of Pecuniary Interest	
2. Consent	
2.1 5th Report of the Transportation Advisory Committee	3
2.2 4th Report of the Rapid Transit Implementation Working Group	16
2.3 Strategic Plan Progress Variance Report	27
2.4 Amendments to the Traffic and Parking By-law	32
2.5 Water and Erosion Control Infrastructure (WECI) Program: 2018 Provincially Approved Project Funding	35
2.6 Clean Water and Wastewater Fund Project Budget Amendments	42
2.7 Dingman Creek and Colonel Talbot Pumping Stations Budget Adjustments	50
2.8 Adjust 3 Container Exemption Collection Periods and Changes to Collection Zones	56
2.9 Nortel Networks Limited and Nagata Auto Parts Canada Co., LTD. - Appeals to the Environment Review Tribunal Case No.s - 11-125/1-126	60
3. Scheduled Items	
3.1 60% Waste Diversion Action Plan	81
4. Items for Direction	
4.1 King Street Bike Lanes - Public Submissions	
a. A. Hunniford	356
b. B. Cowie	357

c.	D. Vanden Boomen	361
d.	Dr. M. Prado	362
e.	J. Cameron	363
f.	J. Fisher	364
g.	S. Climans	365
h.	B. Groot	366
i.	K. Walmsley	367
j.	C. Groot	368
k.	C. McCreery	369
4.2	Request for Delegation - D. Davis, Filthy Revena Vintage	370
4.3	7th Report of the Cycling Advisory Committee	371
4.4	Presentation – Canadian Urban Transit Research and Innovation Consortium (CUTRIC)	389
4.5	Traffic Light - South Carriage Road and Hyde Park Road	390
a.	<i>(ADDED) Request for Delegation - D. Foster, Red Light Movement Committee</i>	
b.	<i>(ADDED) Request for Delegation Status - D. Szpakowski, General Manager, Hyde Park Buisness</i>	
4.6	Residential Damage - Storm Water Discharge	391
5.	Deferred Matters/Additional Business	
5.1	Deferred Matters List	392
5.2	<i>(ADDED) 3rd Report of the Waste Management Working Group</i>	397
6.	Adjournment	

Transportation Advisory Committee

Report

5th Meeting of the Transportation Advisory Committee
June 26, 2018
Committee Room #4

Attendance PRESENT: A. Farahi (Chair), G. Bikas, G. Debbert, D. Doroshenko, D. Foster, T. Khan, J. Scarterfield and A. Stratton and J. Bunn (Committee Secretary)

ABSENT: S. Brooks, J. Madden, H. Moussa and L. Norman

ALSO PRESENT: J. Ackworth, D. Chang, M. Elmadhoon, Sgt. S. Harding, J. Kostyniuk, T. Koza, T. Macbeth and A. Spahiu

The meeting was called to order at 12:15 PM.

1. **Call to Order**

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. **Scheduled Items**

2.1 Southdale Road West Class Environmental Assessment

That it BE NOTED that the attached presentation from B. Huston, Dillon Consulting Ltd., with respect to the Southdale Road West Class Environmental Assessment, was received.

2.2 Adelaide Street and Canadian Pacific Railway Grade Separation Environmental Assessment Project

That it BE NOTED that the attached presentation from A. Spahiu, Transportation Design Engineer, with respect to the Adelaide Street and Canadian Pacific Railway Grade Separation Environmental Assessment Project, was received.

2.3 2018 PXO Education and Enforcement Campaign

That it BE NOTED that the attached presentation and colouring sheet from J. Scarterfield, London-Middlesex Road Safety Committee, with respect to the Pedestrian Crossover (PXO) Education and Enforcement Campaign, was received.

3. **Consent**

3.1 4th Report of the Transportation Advisory Committee

That it BE NOTED that the 4th Report of the Transportation Advisory Committee, from its meeting held on April 24, 2018, was received.

3.2 Municipal Council Resolution - Introduction of connected and autonomous vehicle technology

That it BE NOTED that the Municipal Council resolution, from its meeting held on June 12, 2018, with respect to the development of a policy and

pilot project to address the introduction of connected and autonomous vehicle technology, was received.

3.3 Connected and Autonomous Vehicles Technology Strategy

That it BE NOTED that the staff report dated May 28, 2018, from K. Scherr, Managing Director, Environmental and Engineering Services and City Engineer, with respect to the Connected and Autonomous Vehicles Technology Strategy, was received.

3.4 City of London Long Term Water Storage Municipal Class Environmental Assessment - Notice of Project Commencement and Public Information Centre #1

That it BE NOTED that the Notice of Project Commencement and Public Information Centre #1, from P. Lupton, City of London and N. Martin, AECOM Canada, with respect to the City of London Long Term Water Storage Municipal Class Environmental Assessment, was received.

3.5 Southdale Road West - Environmental Assessment Study - Notice of Public Information Centre 2

That it BE NOTED that the Notice of Public Information Centre #2, from B. Huston, Dillon Consulting Limited and T. Koza, City of London, with respect to the Southdale Road West Environmental Assessment Study, was received.

4. Sub-Committees and Working Groups

None.

5. Items for Discussion

None.

6. Deferred Matters/Additional Business

6.1 (ADDED) Revised Notice of Application - DLN Group Inc. on behalf of 2178254 Ontario Inc. - 3425 Emily Carr Lane

That it BE NOTED that the Corrected, Revised Notice of Application, dated June 22, 2018, from C. Smith, Senior Planner, with respect to an application by DLN Group Inc. related to a property located at 3425 Emily Carr Lane, was received.

6.2 (ADDED) 2018 Transportation Advisory Committee Work Plan

That D. Foster BE APPOINTED to the Transportation Advisory Committee Work Plan Working Group.

6.3 (ADDED) Summer Meeting Date

That it BE NOTED that the Transportation Advisory Group will meet on July 24, 2018 and will not meet in August, 2018.

7. Adjournment

The meeting adjourned at 1:35 PM.



PROJECT OVERVIEW

Project limits include Southdale Road West and Wickerson Road corridors between Wickerson Gate and Byronhills Drive

The EA will identify the requirements for improving the roads to a 2-lane standard:

- Significant improvements are required to the grade and cross-section of Southdale Road West and Wickerson Road



EXISTING NATURAL HERITAGE FEATURES

An Environmental Impact Study was completed to understand natural heritage features in the Study Area, including existing aquatic, terrestrial and wildlife conditions.

Natural Heritage features outside of the impacted areas will be mitigated.

LEGEND

1. Naturalized Coniferous Plantation
2. Dry-Fresh Sugar Maple-Oak Deciduous Forest
3. Dry Fresh Sugar Maple-Oak Deciduous Forest
4. Common Reed Graminoid Mineral Meadow Marsh
5. Cattail Graminoid Mineral Meadow Marsh
6. Dry-Fresh Mixed Meadow
7. Greenlands
8. Business Sector
9. Transportation
10. Sewage and Water Treatment
11. Single Family Residential
12. Rural Property
13. Annual Row Crops
14. Perennial Cover Crop
15. Open Pasture
16. Open Aquatic
17. Fencerow
18. Fresh-Moist Mixed Meadow



SUMMARY OF EXISTING REPORTS

Road Safety Strategy (RSS) 2014-2019

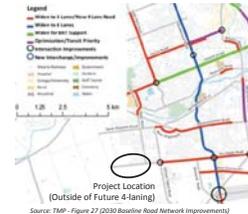
Recommendations fall under Action Item 12 in the RSS. This EA focuses on improvements to vertical profile, cross section (lane widths), and provisions for pedestrians and cyclists to provide a safer road environment.

ACTION No.	ACTION	DESCRIPTION
12	Roadway Alignment Improvement Program	Engineering improvements to horizontal and vertical alignments for reconstruction projects. Improved coordination with all 4R (reconstruction, rehabilitation, resurfacing, restoration) projects.

Source: RSS Table (Target Areas and Action)

Transportation Master Plan (TMP), May 2013

Outside of Future Widening Recommendations



Source: TMP - Figure 27 (2030 Baseline Road Network Improvements)

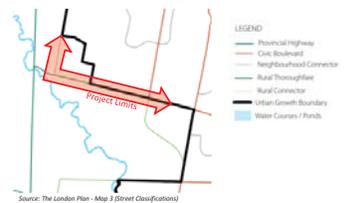
Secondary and Area Plans

N/A – outside limits

Official Plan (The London Plan, December 2016)

Street Classifications:

- Southdale Road West – Rural Thoroughfare
- Wickerson Road – Neighbourhood Connector



Source: The London Plan - Map 9 (Street Classifications)

EA PROGRESS REVIEW

Phase 1 (Completed) - The process involved the development of a Problem Statement:

Improvements are required to the grades and cross sections of Southdale Road West and Wickerson Road to meet the City's minimum design standards and improve road safety. The improvements will be planned and designed to:

- Implement the policies of the *London Plan**, *London ON Bikes Cycling Master Plan Update* and *2030 TMP*
- Avoid or minimize impacts to the Lower Dingman Corridor Environmentally Significant Area, surrounding farmlands, neighbourhoods, natural heritage features and cultural heritage features
- Incorporate required infrastructure and make provisions for future infrastructure, where feasible.



EA PROGRESS REVIEW

Phase 2 (Completed) - The process involved the development of alternative solutions for improvements to the roads.

Two alternative solutions were developed:

- **Do Nothing** – Southdale Road West and Wickerson Road would remain in the same condition with no improvements
- **Improvements** to Southdale Road West and Wickerson Road to meet minimum design standards
 - Alternative 1 – vertical and cross section reconstruction to meet design standards on the existing horizontal alignment
 - Alternative 2 – horizontal realignment of Southdale Road West and Wickerson Road outside of the current footprint of the roadway. This alternative would also include vertical and cross section reconstruction to meet design standards.

Alternative 2 was dismissed due to the significant impacts outside of the existing road footprint.



EA PROGRESS REVIEW



Phase 2 (Completed) - The process involved the development of alternative solutions for improvements to the roads.

Evaluation Factors		"Do Nothing"		Alternative 1
Road Design Standards	✗	Does not meet design standards	✓	Meets design standards
Traffic Operations and Safety	✗	Does not meet design standards	✓	Meets design standards
Opportunities for Active Mobility	✗	No opportunities	✓	Opportunities available
Opportunities for new infrastructure installation (watermain, etc.)	✗	No opportunities	✓	Opportunities available
Impacts on Natural Heritage	✓	No impacts	✗	Impacts
Impacts on Land Uses, Socio-Economic Environment and Cultural Heritage Resources	✓	No impacts	✗	Impacts

7

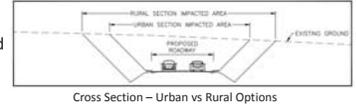
EA PROGRESS REVIEW



Phase 3 (Completed) - The process involved the evaluation of design options for implementing the preferred solution.

During the design development, several options were evaluated to minimize impacts to trees and the natural environment, including:

- Rural vs. Urban Cross Section**
 - Urban section was chosen to minimize footprint and manage stormwater
- Cut Slopes in constrained areas** - Options included: retaining walls/reinforced slopes/2:1 slopes
 - Standard 2:1 slopes were chosen to minimize cost, simplify construction, provide a more natural appearance and provide additional area for replanting on slopes with no significant increase in impacts to trees or vegetation



Cross Section – Urban vs Rural Options

...continued

8

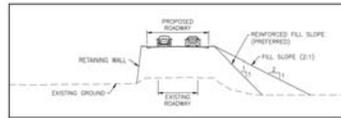
EA PROGRESS REVIEW



continued...

- Fill Slopes at culvert in valley** - Options included: retaining walls/reinforced slopes/2:1 slopes

- 1:1 Reinforced slopes were chosen to minimize the footprint, provide a more natural appearance and minimize the length of culvert



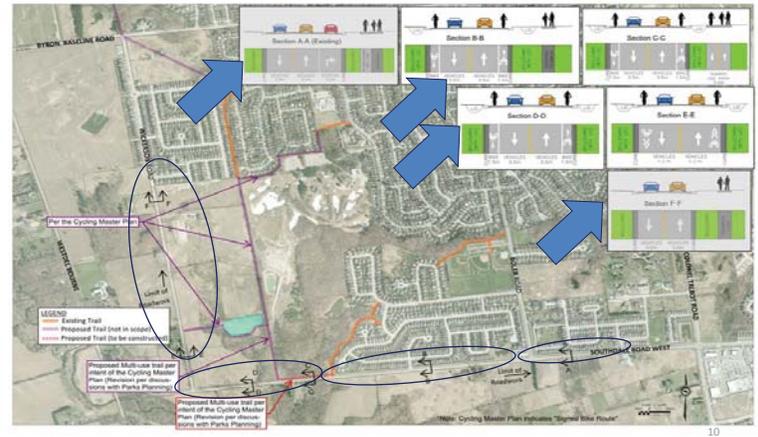
Cross Section – Fill Slope Options

- Profile Optimization** - Options included: standard (6% max) / substandard (8%) grades
 - Current profile was chosen to meet standards for arterial roads, manage cuts/fills and minimize driveway impacts
 - No significant benefit by increasing grades to 8%

- Stormwater Management** - Storm sewers and low impact developments (LIDs) will be implemented to manage stormwater
- Active Transportation** - Sidewalks to be provided on North side of Southdale Road/East side of Wickerson Road, multi-use trail to be implemented per cycling master plan and on-street bike lanes to be provided

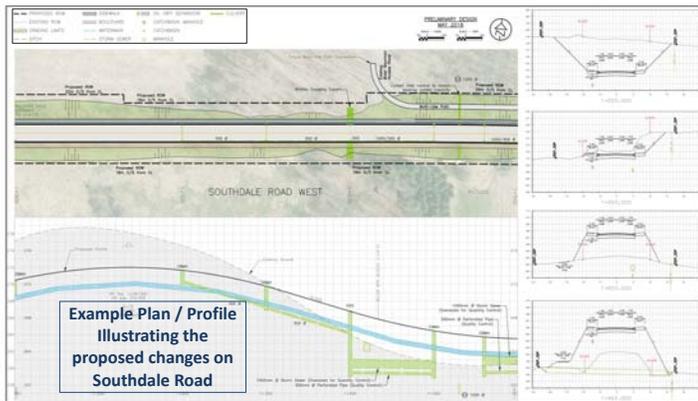
9

PROPOSED ACTIVE TRANSPORTATION



10

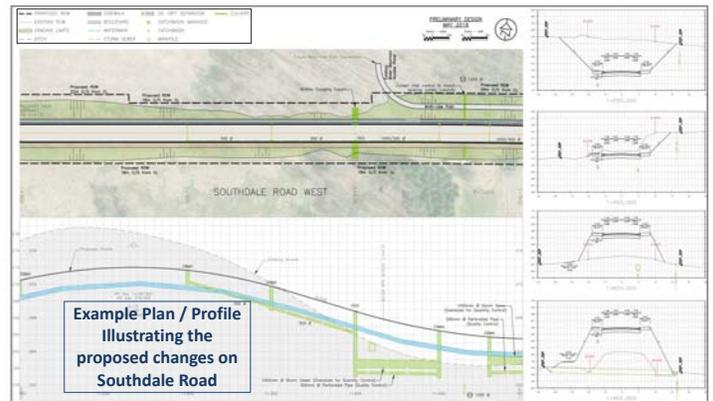
PHASE 3 - PREFERRED SOLUTION



Example Plan / Profile illustrating the proposed changes on Southdale Road

11

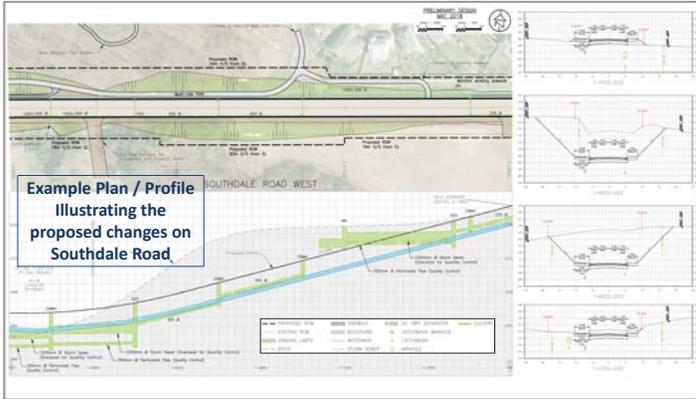
PHASE 3 - PREFERRED SOLUTION



Example Plan / Profile illustrating the proposed changes on Southdale Road

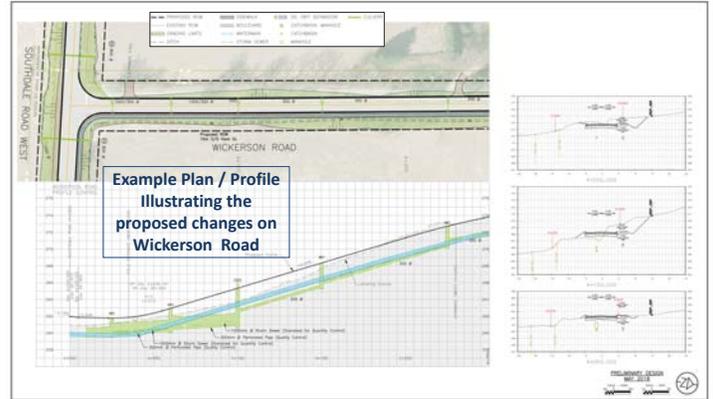
12

PHASE 3 - PREFERRED SOLUTION



13

PHASE 3 - PREFERRED SOLUTION



14

NEXT STEPS



- Respond and update design based on input from the public and TAC committee
- Complete Environmental Study Report (ESR) – Summer 2018
 - Finalize EA document
 - Present EA document to council for endorsement
 - 30-day public and agency review period
- Detailed Design Phase – Anticipated to be 2018/2019
- Construction Phase – Anticipated to begin 2020

15

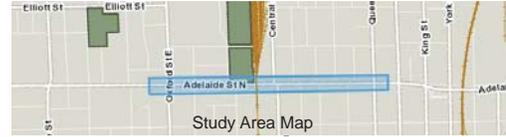


Adelaide Street / Canadian Pacific Railway (CPR) Grade Separation EA



Study Background / Context

- ✓ City's highest priority new rail-road grade separation candidate site as per the **2005 Rail Exposure Index Study** and **2013 Blockage Study**
- ✓ The **Smart Moves 2030 Transportation Master Plan and Development Charge Background Study (2014)** identifies needs for optimization and for the implementation of the grade separation in the 2031 planning horizon respectively.
- ✓ Subsequently, in 2017 Council approved moving project forward in a 3-5 timeframe.



Problems and Opportunities

Problems

- **Frequent train crossings** result in road being blocked significantly affecting vehicles, transit, cyclists and pedestrians
- Blockages result in significant delays and causes **cut-through traffic** onto local streets
- Implementation of rapid transit on Richmond Street is expected to cause future **increase in traffic** on Adelaide Street
- Excessive delays will **increase idling time** and emissions loadings
- Uninterrupted road corridor needed for **emergency planning** and response

Opportunities

- **Separate rail traffic** from vehicles, cyclists and pedestrians on Adelaide Street, improving access and circulation
- Provide **improved rail safety**
- Develop an **innovative design** that prioritizes pedestrians, cyclist and improves the urban environment, while avoiding some of the common drawbacks to underpasses
- Preserve and **enhance the heritage character** of the neighbourhood and McMahan Park
- Create **additional public space** that complements the area surrounding the new bridge and creates a strong connection from one side to the other for pedestrians and cyclists
- Improve the surrounding streetscape and intersections to create a **safe, pedestrian-friendly and welcoming public space**

3



Preliminary Preferred Concept

An Underpass (road under rail) is preferred because:

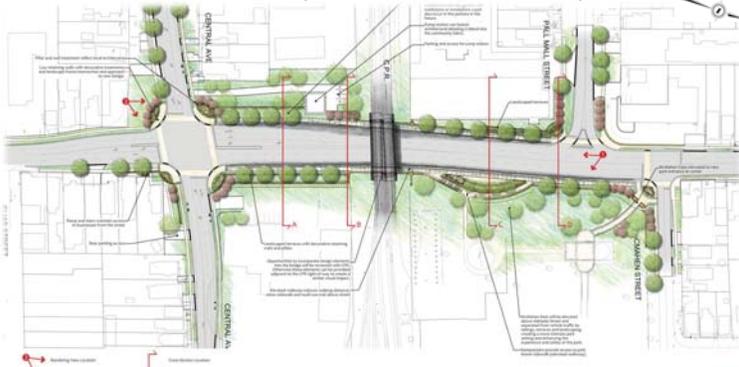
- ✓ Has fewer overall property impacts
- ✓ Relatively little visual intrusion to the surrounding community
- ✓ Decreased traffic noise from the depressed roadway
- ✓ Provides more opportunity for a context sensitive design to respect the existing character of the roadway and adjoining neighbourhoods
- ✓ Maintains intersections with Central Avenue, Elias Street, Pall Mall Street and McMahan Street
- ✓ Is more attractive to pedestrians and cyclists
- ✓ Preferred by community



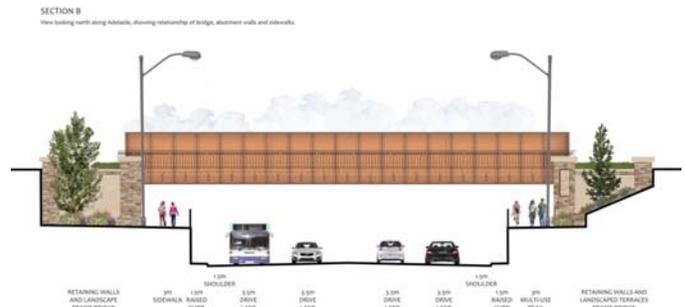
4



Preliminary Preferred Concept



Adelaide St Cross-Section



6





Temporary Road Detour

East Detour

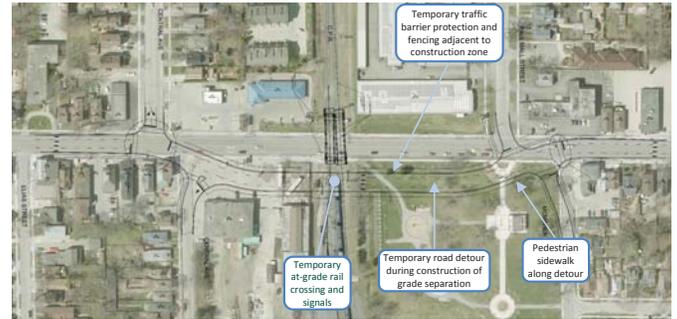
- ✓ Maintains north-south traffic for the duration of construction
- ✓ Avoids property impacts beyond those already required
- ✓ Utilizes the same footprint as the municipal service / utility corridor
- ✓ Maintains emergency service access



7



Proposed Detour



8



Project Timelines



Municipal Class EA Process

9



Questions?



<https://getinvolved.london.ca/adelaide-streetcpr-grade-separation>

10



2018 PXO Education & Enforcement Campaign

Jayne Scarterfield RN BScN CCHN(c)

Transportation Advisory Committee Meeting
June 26, 2018

Collaboration & Partnership

- LMRSC mandate to improve safety, prevent injury, save lives
- ASRTS priority is active transportation/school travel planning
- Collaboration between LMRSC and local ASRTS
- MTO Road Safety Community Partnership Grant matched by LMRSC and partners – City of London, MLHU
- Universal approach with focus on school-age population



Tony the Street-Wise Cat

Crossing Safely at Traffic Lights
Crossing Safely at Pedestrian Crossovers
Driving Safely at Pedestrian Crossovers



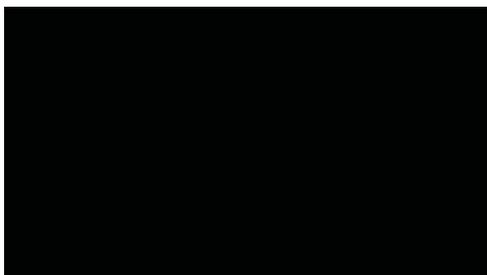
Tony the Street-Wise Cat

Crossing Safely



Tony the Street-Wise Cat

Driving Safely



Campaigns: Raising the profile

- Social Media, April 16 – May 18
- School Event, May 4
- London Police Enforcement Blitz, May 7-11



Presentations in March

- Presentations delivered in advance of the campaign:
 - School Nurses
 - ASRTS meeting
 - CSCP
 - CYN – HEHPA Priority
 - School Travel Planning Knowledge Exchange

126 participants + their networks



Social Media

How did we do?



e-Newsletter Distribution

- e-Newsletter with PXO rack card/poster and video link
 - Family Centre e-blast
 - Child & Youth Network e-bulletin
 - Middlesex-London Health Unit, Health-4-All newsletter

358 Agencies + their networks



YouTube (Ad Tube Campaign)

42,699	Total views (both videos combined)
73,058	Impressions
58%	View rate (both videos)



Facebook Campaign

6	Advertised posts
53,539	People reached
207,274	Impressions
131,114	Video views (>3 sec.)
4,023	Video views (100% each)
131,490	Engagements



10	Tweets
46,485	Impressions
466	Engagements



Tony the Street-Wise Cat PRESENTS

- 21,859 Crossing Safely at Pedestrian Crossovers
- 23,159 Driving Safely at Pedestrian Crossovers

45,018 Total views*

+ City of London
 South West Regional Trauma Network – healthchat.ca
 Trauma Program, Pediatric Emergency, LHSC
*LMRSC & MLHU



School Event

How did we do

May 4, 2018: Stoneybrook Public School

- Students coming to school and parents
- LPS presentation: 20 students
- PXO Demonstration: 4 classrooms



School Promotion – 2 PHNs

Resource	# Schools
Tony Videos	3
Rack Cards	6
Posters	7
School Announcements	15
School Newsletter	25
Student Presentation	1
Demonstration Resource	4
Colour Sheet	2

Contents

The following resources are intended to promote the safe and accurate use of PXO's in elementary schools.

- [Educational & Promotional Materials](#)
 - ["NEW" Lego Stop-Motion VIDEOS!](#)
 - [Rack Cards & Posters](#)
 - [School Announcements](#)
 - [Newsletter Inserts](#)
 - [Student Presentations](#)
- [Activities & Events](#)
 - [Colouring & Activity Sheet](#)
 - [Demonstration Resource](#)
 - [Event with Tony the Streetwise Cat](#)



PXO Police Enforcement Blitz

How did we do

PXO Week-Long Safety Blitz May 7-11 2018



London Police ON @psmediaoffice · May 14
The LPS thanks London drivers, cyclists & pedestrians for safely using Pedestrian Crossovers (PXOs). Remember pedestrians, cyclists and drivers have specific duties at PXOs. More information can be found here: healthunit.com/pedestrian-cro... and london.ca/residents/Road... #Idnont



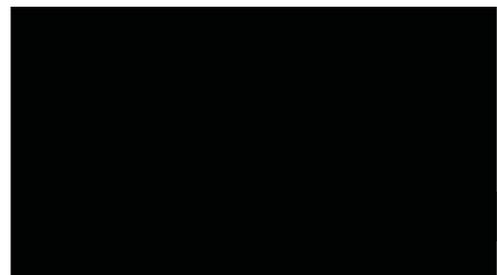
MLHealthUnit
6 13



TONY, LE CHAT DE RUE FUTÉ traverser sans risque

Tony, Le Chat De Rue Futé

PXO videos in French



TONY, LE CHAT DE RUE FUTÉ

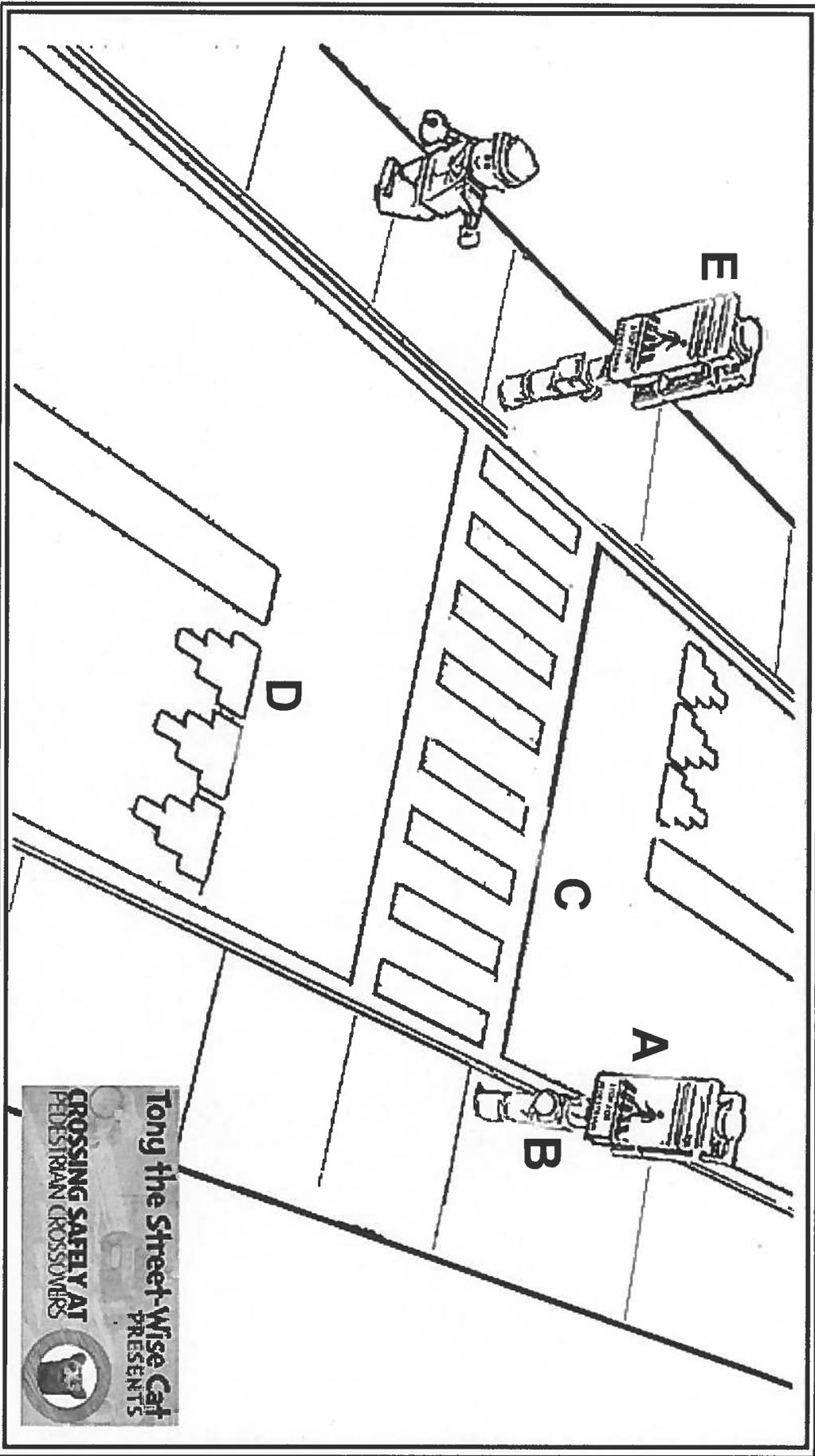
conduire en toute sécurité



Thank You, Merci.



Pedestrian Crossovers with Tony the Street-Wise Cat



Match the letter to the correct name:

- _____ Button _____ Ladder Markings _____ Stop for Pedestrian Sign
- _____ Light _____ Shark's Teeth



Rapid Transit Implementation Working Group

Report

4th Meeting of the Rapid Transit Implementation Working Group
July 5, 2018
Council Chambers

Attendance PRESENT: S. Rooth (Chair), Mayor M. Brown, Councillors J. Helmer, and H.L. Usher; D. Sheppard and E. Southern, and B. Westlake-Power (Acting Secretary).

ABSENT: Councillors P. Hubert , T. Park, M. van Holst and P. Squire.

ALSO PRESENT: A. Kemick, K. Paleczny, A. Rammeloo, J. Ramsay, M. Ribera, A. Rosebrugh and K. Scherr.

The meeting was called to order at 4:59 PM.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

2.1 J. Ramsay, Project Director - Bus Rapid Transit Project Updates

That it BE NOTED that the Bus Rapid Transit Project Update presentation from J. Ramsay, Project Director, as included on the July 5, 2018 Rapid Transit Implementation Working Group Agenda, was received.

2.2 Josipa Petronic - Executive Director and CEO of the Canadian Urban Transit Research and Innovation Consortium (CUTRIC)

That it BE NOTED that the attached presentation from J. Petronic, Executive Director and CEO of the Canadian Urban Transit Research and Innovation Consortium (CUTRIC), with respect to the Pan-Canadian Electric Bus Demonstration and Integration Trial: Phase I, was received.

3. Consent

3.1 3rd Report of the Rapid Transit Implementation Working Group

That it BE NOTED that the 3rd Report of the Rapid Transit Implementation Work Group, from its meeting held on March 8, 2018, was received.

4. Items for Discussion

4.1 Briefing Package - Upcoming Public Consultation for London's Bus Rapid Transit System

That it BE NOTED that the Briefing Package with respect to the Upcoming Public Consultation for London's Bus Rapid Transit System, from J. Ramsay, Project Director, was received.

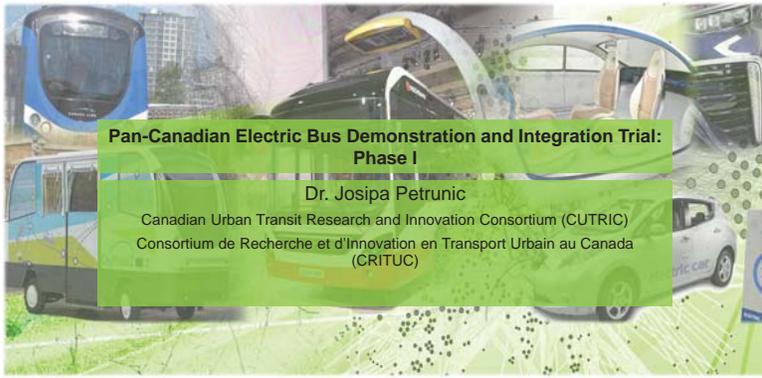
5. Deferred Matters/Additional Business

5.1 Update on Proposed Audit - Rapid Transit Project

That it BE NOTED that a verbal update from K. Scherr, Managing Director Environmental & Engineering Services and City Engineer, with respect to the rescheduling of the proposed internal audit of the Rapid Transit Project, on the recommendation of the outsourced internal auditor, was received; it being noted that the adjusted schedule is expected to better align to milestones the audit was originally matched to.

6. Adjournment

The meeting adjourned at 6:19 PM.



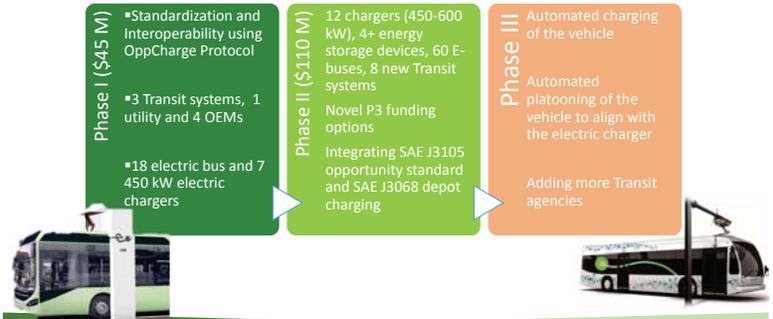
Pan-Canadian Electric Bus Demonstration and Integration Trial: Phase I

Dr. Josipa Petronic
 Canadian Urban Transit Research and Innovation Consortium (CUTRIC)
 Consortium de Recherche et d'Innovation en Transport Urbain au Canada (CRITUC)

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Pan-Canadian Electric Bus Demonstration & Integration Technology Trial: Outcomes Phases I, II, III



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Pan-Canadian Electric Bus Demonstration and Integration Trial: Phase I: Project Planning and Launch Video

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

Project Partners: Phase I (2017 – 2020)



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

Pan-Canadian Electric Bus Demonstration & Integration Trial: Phase I

Green Car Congress
 Energy, technology, innovation and policies for sustainable mobility

CUTRIC launches \$40M Pan-Canadian electric bus trial

The Pan-Canadian Electric Bus Demonstration and Integration Trial Phase I was launched at TransLink in Vancouver as part of a multi-year effort to advance zero-emission transit technology, spearheaded by the Canadian Urban Transit Research and Innovation Consortium (CUTRIC).

The \$40-million project encompasses 38 standardized and interoperable electric buses, seven standardized and interoperable overhead chargers, and five routes in three cities, led by CUTRIC Executive Director & CEO Josipa Petronic.

CUTRIC brought together manufacturers, transit agencies, utilities, funding partners, research teams, and technology development specialists for the demonstration trial that is launching first in TransLink's system in Vancouver, B.C. TransLink is joined by Brampton Transit and the Regional Municipality of York as sites for the trial, with Brampton Transit having spearheaded the trial planning process back in 2014.

This funding investment will support the first global trial to integrate competitive bus manufacturers with competitive charging station manufacturers – all of whom are developing and delivering interoperable high-powered charging systems for on-route charged electric buses – across multiple

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

Technologies in Focus for E-Bus Phase II

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

Transit Partners for E-Bus Phase II



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

10

Prospective OEM and Utility Partners for Phase II



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

11

Prospective Academic Partners for Phase II



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

12

Scope for E-Bus Phase II



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.

13

Techno-economic modelling of an electric bus demonstration project in London Ontario Fast Transit Route "7" & "L"

Anaïssia Franca
 Dr. Yutian Zhao
 Dr. Garret Duffy
 Dr. Anahita Jami
 Dr. Josipa Petrunic

Canadian Urban Transit Research and Innovation Consortium (CUTRIC)
 Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC)
 July 5th, 2018

Outline

- Routes and duty cycles
- E-bus energy consumption and SOC calculations
- Charging infrastructure simulation
- Comparative simulation of diesel bus fuel consumption
- Electricity costs estimations, simulation results and emissions calculation for each route
- GHG emission savings

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Routes and duty cycles

Route "7" map (28.6 km RT)



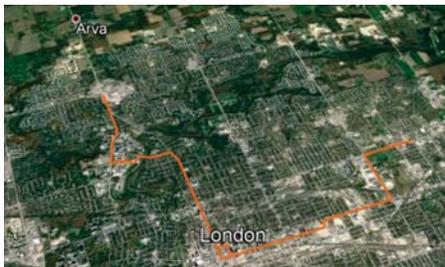
Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Route "L" map (29.2 km RT)



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Route statistics

Name of route	Length of the route round trip (km)	Estimated time to complete the route round trip (min)
London route "7"	28.6	~ 70
London route "L"	29.2	~ 70

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Model the route elevation profile & topography

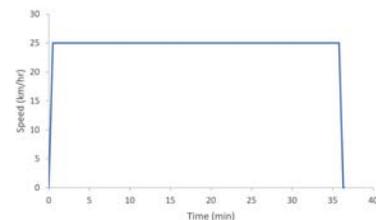
- Used Google Earth to define the path (.kml files)
- Calculated the distances between the nodes
- Used a DEM (Digital Elevation Model) database to obtain the raw data for elevations
- Used filtration/smoothing to obtain realistic road grades (multiple steps of Savitzky-Golay filter)

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Route L (29.2 km RT) - Duty cycles development

- Light duty cycle (1 driver, no auxiliary load)
 - Constant velocity, no stop

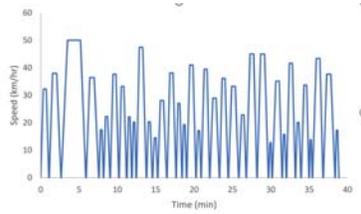


Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Route L (29.2 km RT) - Duty cycles development

- Medium duty cycle (half full passenger load, half auxiliary load)
 - Stop for all scheduled (major) bus stops
 - Additional stops at 50 % of other stops: randomly selected from all the traffic lights, stops signs, passenger walks and other (unscheduled) bus stops

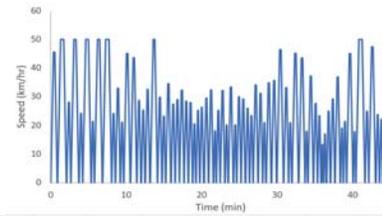


Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Route L (29.2 km RT) - Duty cycles development

- Heavy duty cycle (full passenger load, full auxiliary load)
 - Stop for all bus stops (scheduled/unscheduled), traffic lights, stop signs and additional stopping for pedestrians



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



E-bus energy consumption and SOC calculations

Key variables affecting the energy consumption

- Weight of the vehicle
- Auxiliary load
- Tire rolling coefficient
- Regenerative braking usage
- Gear ratio

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



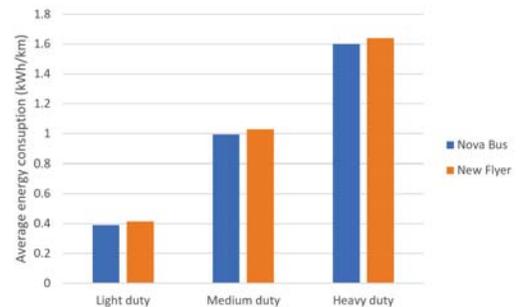
Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Ebus energy consumption and charging power calculations

- Used in-house Matlab and Python code
- Physical characteristics of 12m New Flyer XE40 and a 12m Nova Bus LFSE
- Accounted for variation in topography
- Regenerative braking power split: 35%
- Constant accessory draw
 - Heavy duty cycle: 10,000 W
 - Medium duty cycle: 5,000 W
 - Light duty cycle: 0 W

Average energy consumption Route "7" (28.6 km RT) with Nova Bus (76 kWh) & New Flyer (200 kWh)



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



State of Charge (SOC) - Route "7" (28.6 km RT) with Nova Bus (76 kWh)

	South to West				West to South			
	kWh per km	Total kWh used	SOC at route end		kWh per km	Total kWh used	SOC at route end	
			5 % buffer	10% buffer			5 % buffer	10 % buffer
Light duty	0.4	5.79	87.0%	82.0%	0.38	5.45	87.5%	82.5%
Medium duty	0.99	14.29	75.2%	70.2%	1.0	14.3	75.2%	70.2%
Heavy duty	1.6	23.04	63.1%	58.1%	1.6	23.0	63.1%	58.1%

Note: Ideal battery initial SOC = 100%, 5 % buffer initial SOC = 95%, 10 % buffer initial SOC = 90 %

© 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



State of Charge (SOC) - Route "7" (28.6 km RT) with New Flyer (200 kWh)

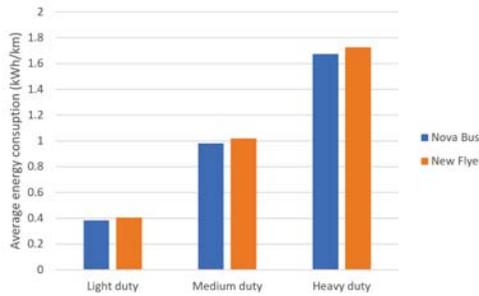
	South to West				West to South			
	kWh per km	Total kWh used	SOC at route end		kWh per km	Total kWh used	SOC at route end	
			5 % buffer	10% buffer			5 % buffer	10 % buffer
Light duty	0.43	6.12	91.8%	86.8%	0.4	5.73	92.0%	87.0%
Medium duty	1.03	14.82	87.2%	82.2%	1.03	14.76	87.2%	82.2%
Heavy duty	1.64	23.63	82.6%	77.6%	1.64	23.58	82.6%	77.6%

Note: Ideal battery initial SOC = 100%, 5 % buffer initial SOC = 95%, 10 % buffer initial SOC = 90 %

© 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Energy consumption Route "L" (29.2 km RT) with New Flyer (200 kWh)



© 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



State of Charge (SOC) - Route "L" (29.2 km RT) with Nova Bus (76 kWh)

	East to North direction				North to East direction			
	kWh per km	Total kWh used	SOC at route end		kWh per km	Total kWh used	SOC at route end	
			5 % buffer	10% buffer			5 % buffer	10 % buffer
Light duty	0.35	5.17	87.8%	82.8%	0.42	6.1	86.5%	81.5%
Medium duty	0.95	13.94	75.7%	70.7%	1.01	14.79	74.5%	69.5%
Heavy duty	1.66	24.19	61.5%	56.5%	1.69	24.74	60.7%	55.7%

Note: Ideal battery initial SOC = 100%, 5 % buffer initial SOC = 95%, 10 % buffer initial SOC = 90 %

© 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



State of Charge (SOC) - Route "L" (29.2 km RT) with New Flyer (200 kWh)

	East to North direction				North to East direction			
	kWh per km	Total kWh used	SOC at route end		kWh per km	Total kWh used	SOC at route end	
			5 % buffer	10% buffer			5 % buffer	10 % buffer
Light duty	0.37	5.45	92.1%	87.1%	0.44	6.45	91.6%	86.6%
Medium duty	0.99	14.41	87.4%	82.4%	1.05	15.27	87.0%	82.0%
Heavy duty	1.71	24.91	81.9%	76.9%	1.74	25.44	81.6%	76.6%

Note: Ideal battery initial SOC = 100%, 5 % buffer initial SOC = 95%, 10 % buffer initial SOC = 90 %

© 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



© 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Charging infrastructure simulation

Electricity demand – Route “7” (28.6 km RT) Nova Bus (76 kWh) 450 kW charger

	South to West direction						West to South direction					
	Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%		Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%	
	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Endpoint charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)
Light duty	0.77	5.79	0.89	6.7	1.09	8.16	0.73	5.45	0.84	6.31	1.02	7.68
Medium duty	1.91	14.31	2.21	16.55	2.69	20.15	1.91	14.32	2.21	16.56	2.69	20.16
Heavy duty	3.08	23.07	3.56	26.68	4.33	32.49	3.07	23.02	3.55	26.63	4.32	32.43

Note: Ideal charging: the energy from the grid goes straight to the battery
 Typical efficiency: 86% of the energy from the grid goes to the battery (91% charger efficiency, 95 % battery management system efficiency)
 Worst case efficiency: 71% of the energy from the grid goes to the battery

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Electricity demand – Route “7” (28.6 km RT) New Flyer (200 kWh) 450 kW charger

	South to West direction						West to South direction					
	Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%		Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%	
	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Endpoint charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)
Light duty	0.82	6.12	0.94	7.08	1.15	8.63	0.77	5.74	0.89	6.64	1.08	8.08
Medium duty	1.98	14.84	2.29	17.16	2.79	20.9	1.97	14.77	2.28	17.08	2.77	20.8
Heavy duty	3.15	23.65	3.65	27.36	4.44	33.31	3.15	23.61	3.64	27.31	4.43	33.25

Note: Ideal charging: the energy from the grid goes straight to the battery
 Typical efficiency: 86% of the energy from the grid goes to the battery (91% charger efficiency, 95 % battery management system efficiency)
 Worst case efficiency: 71% of the energy from the grid goes to the battery

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Electricity demand – Route “L” (29.2 km RT) Nova Bus (76 kWh) 450 kW charger

	East to North direction						North to East direction					
	Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%		Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%	
	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Endpoint charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)
Light duty	0.69	5.17	0.8	5.98	0.97	7.28	0.81	6.11	0.94	7.06	1.15	8.6
Medium duty	1.86	13.96	2.15	16.15	2.62	19.66	1.97	14.8	2.28	17.13	2.78	20.85
Heavy duty	3.23	24.21	3.73	28.0	4.55	34.1	3.3	24.76	3.82	28.64	4.65	34.88

Note: Ideal charging: the energy from the grid goes straight to the battery
 Typical efficiency: 86% of the energy from the grid goes to the battery (91% charger efficiency, 95 % battery management system efficiency)
 Worst case efficiency: 71% of the energy from the grid goes to the battery

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Electricity demand – Route “L” (29.2 km RT) New Flyer (200 kWh) 450 kW charger

	East to North direction						North to East direction					
	Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%		Ideal charging 100 %		Typical efficiency 86 %		Worst case efficiency 71%	
	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Endpoint charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)	Charging time (min)	Energy from the grid (kWh)
Light duty	0.73	5.46	0.84	6.31	1.03	7.69	0.86	6.46	1.0	7.47	1.21	9.09
Medium duty	1.92	14.43	2.23	16.69	2.71	20.32	2.04	15.28	2.36	17.68	2.87	21.53
Heavy duty	3.32	24.93	3.85	28.84	4.68	35.12	3.4	25.47	3.93	29.46	4.78	35.87

Note: Ideal charging: the energy from the grid goes straight to the battery
 Typical efficiency: 86% of the energy from the grid goes to the battery (91% charger efficiency, 95 % battery management system efficiency)
 Worst case efficiency: 71% of the energy from the grid goes to the battery

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Comparative simulation of diesel bus fuel consumption

Fuel consumption simulation – New Flyer 2013 XD35

- Used Python code developed in-house, based on work from [1]

Vehicle parameters	Value	Unit
Vehicle curb weight	11,113	kg
Mean passenger weight	75	kg
Maximum passengers	65	-
Engine maximum power	209	kW
Drivetrain efficiency	95	%
Rolling coefficient	Provided by OEM	-

Fuel parameters	Value	Unit
LHV of low sulfur diesel	42.6	MJ/kg
Diesel density	850	kg/m ³
CO ₂ content of fuel *	2.630	kg CO ₂ /L fuel

*Note: emission factors for mobile fuel combustion of diesel in heavy-duty vehicles, see [2]

[1] W. Edwardes and H. Rakha "Modeling Diesel and Hybrid Bus Fuel Consumption with Virginia Tech Comprehensive Power-Based Fuel Consumption: Model Enhancements and Calibration Issues Model". Transportation Research Record: Journal of the Transportation Research Board, No. 2533
 [2] BC Ministry of Environment "2016/17 B.C. Best practices Methodology for quantifying greenhouse gas emissions" Victoria, May 2016

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Fuel consumption - Route "7" (28.6 km RT)

Runs (Round trips) per week to compare with fast charging: 744

	Light-Duty	Medium-Duty	Heavy-Duty
Fuel used per run (round trip) per bus (L)	6.4	10.9	16.1
Fuel efficiency of diesel equivalent (L/100km)	22.3	37.9	56.1
Emitted CO2e per year (kg)	656,227	1,114,254	1,646,306
Cost of diesel per year @\$0.9116/L (\$)	\$227,459	\$386,218	\$570,636

* Note: \$0.9116/L based on London Transit's average fuel price over the last 10 years

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Fuel consumption - Route "L" (29.2 km RT)

Runs (Round trips) per week to compare with fast charging: 1488

	Light-Duty	Medium-Duty	Heavy-Duty
Fuel used per run (round trip) per bus (L)	6.5	10.9	16.9
Fuel efficiency of diesel equivalent (L/100km)	22.2	37.4	58
Emitted CO2e per year (kg)	1,326,210	2,231,419	3,460,870
Cost of diesel per year @\$0.9116/L (\$)	\$459,686	\$773,446	\$1,199,593

* Note: \$0.9116/L based on London Transit's average fuel price over the last 10 years

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Electricity costs estimations, emission reduction and simulation results for each route

Assumptions on the schedule (revised)

Rapid Transit Operating Schedule Information

The "7" Corridor will operate on a 10 minute frequency during the following periods
 Monday – Saturday from 6am to midnight (**18 hours of operation**)
 Sunday & Stat Holidays from 7am to 11pm (**16 hours of operation**)

The "L" Corridor will operate on a 5 minute frequency during the following periods
 Monday – Saturday from 6am to midnight (**18 hours of operation**)
 Sunday & Stat Holidays from 7am to 11pm (**16 hours of operation**)

Stop at the terminal station: 5 min (maximum charging time is less than 4 min)

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Sample route "7" weekday schedule

Total # round trips/day: Weekday: 108, Saturday: 108, Sunday: 96

West to South			South to West		
Wonderland & Oxford (starts)	White Oaks (arrive)	STOP time (min)	White Oaks (starts)	Wonderland & Oxford (arrive)	STOP time (min)
6:00	6:35	5	6:00	6:35	5
6:10	6:45	5	6:10	6:45	5
6:20	6:55	5	6:20	6:55	5
6:30	7:05	5	6:30	7:05	5
6:40	7:15	5	6:40	7:15	5
6:50	7:25	5	6:50	7:25	5
7:00	7:35	5	7:00	7:35	5
7:10	7:45	5	7:10	7:45	5
...

eBus B - 10 min frequency
eBus A - 10 min frequency

Sample route "L" weekday schedule

Total # round trips/day: Weekday: 216, Saturday: 216, Sunday: 192

West to South			South to West		
Wonderland & Oxford (starts)	White Oaks (arrive)	STOP time (min)	White Oaks (starts)	Wonderland & Oxford (arrive)	STOP time (min)
6:00	6:35	5	6:00	6:35	5
6:05	6:40	5	6:05	6:40	5
6:10	6:45	5	6:10	6:45	5
6:40	7:15	5	6:40	7:15	5
6:45	7:20	5	6:45	7:20	5
6:50	7:25	5	6:50	7:25	5
...

eBus B - 5min frequency
eBus A - 5min frequency

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Fully electrifying the route is possible

- According to the developed schedule, **8 buses are required for route "7", 16 buses are required for route "L"**, therefore **24 electric buses** are needed
- Four chargers are required, at each North, East, West and South terminals
- Route "7" : Two buses charge in a 15min interval (used for demand charges calculations)
- Route "L": Three buses charge in a 15min interval (used for demand charges calculations)
- There is a possibility to refine the model to include longer stops and charging at the Central Transit Hub if this is a preferred strategy

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Charging costs – Route "7" (28.6 km RT) Nova Bus (76 kWh)

	Light	Medium	Heavy
Yearly MWh estimated	507	1,290	2,077
Electricity cost (CAD \$)	\$59,258	\$150,692	\$242,669
Regulatory cost (CAD \$)	\$5,531	\$14,062	\$22,642
Delivery cost (CAD \$)	\$11,058	\$21,625	\$32,477
Total charging cost for a year (CAD \$)	\$75,848	\$186,378	\$297,789
Diesel cost for a year (CAD \$)*	\$227,459	\$386,218	\$570,636
Diesel cost for a year with cap & trade (SCAD)	\$239,271	\$406,275	\$600,270
Benefits (CAD \$)	\$151,611	\$199,840	\$272,847
Benefits (CAD \$) if cap & trade	\$163,423	\$219,897	\$302,481

Note:

Used London Hydro Rates: General Service, Greater Than 50 KW with no interval meter rates

* at \$0.9116/L based on London Transit's average fuel price over the last 10 years
** with a current carbon price of \$18/TCO2e

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Charging costs – Route "7" (28.6 km RT) New Flyer (200 kWh)

	Light	Medium	Heavy
Yearly MWh estimated	535	1,334	2,130
Electricity cost (CAD \$)	\$62,475	\$155,913	\$248,837
Regulatory cost (CAD \$)	\$5,832	\$14,549	\$23,218
Delivery cost (CAD \$)	\$11,468	\$22,271	\$33,210
Total charging cost for a year (CAD \$)	\$79,775	\$192,732	\$305,264
Diesel cost for a year (CAD \$)*	\$227,459	\$386,218	\$570,636
Diesel cost for a year with cap & trade (SCAD)	\$239,271	\$406,275	\$600,270
Benefits (CAD \$)	\$147,684	\$193,486	\$265,372
Benefits (CAD \$) if cap & trade	\$159,496	\$213,543	\$295,006

Note:

Used London Hydro Rates: General Service, Greater Than 50 KW with no interval meter rates

* at \$0.9116/L based on London Transit's average fuel price over the last 10 years
** with a current carbon price of \$18/TCO2e

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Charging costs – Route "L" (29.2 km RT) Nova Bus (76 kWh)

	Light	Medium	Heavy
Yearly MWh estimated	1,009	2,571	4,379
Electricity cost (CAD \$)	\$117,964	\$300,735	\$512,190
Regulatory cost (CAD \$)	\$10,998	\$28,032	\$47,739
Delivery cost (CAD \$)	\$15,230	\$31,416	\$49,948
Total charging cost for a year (CAD \$)	\$144,192	\$360,182	\$609,876
Diesel cost for a year (CAD \$)*	\$459,686	\$773,446	\$1,199,593
Diesel cost for a year with cap & trade (SCAD)	\$483,557	\$813,611	\$1,261,889
Benefits (CAD \$)	\$315,494	\$413,264	\$589,717
Benefits (CAD \$) if cap & trade	\$339,365	\$453,429	\$652,013

Note:

Used London Hydro Rates: General Service, Greater Than 50 KW with no interval meter rates

* at \$0.9116/L based on London Transit's average fuel price over the last 10 years
** with a current carbon price of \$18/TCO2e

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Charging costs – Route "L" (29.2 km RT) New Flyer (200 kWh)

	Light	Medium	Heavy
Yearly MWh estimated	1,065	2,656	4,507
Electricity cost (CAD \$)	\$124,558	\$310,679	\$527,054
Regulatory cost (CAD \$)	\$11,613	\$28,959	\$49,124
Delivery cost (CAD \$)	\$15,882	\$32,310	\$51,252
Total charging cost for a year (CAD \$)	\$152,053	\$371,947	\$627,430
Diesel cost for a year (CAD \$)*	\$459,686	\$773,446	\$1,199,593
Diesel cost for a year with cap & trade (SCAD)	\$483,557	\$813,611	\$1,261,889
Benefits (CAD \$)	\$307,633	\$401,499	\$572,163
Benefits (CAD \$) if cap & trade	\$331,504	\$441,664	\$634,459

Note:

Used London Hydro Rates: General Service, Greater Than 50 KW with no interval meter rates

* at \$0.9116/L based on London Transit's average fuel price over the last 10 years
** with a current carbon price of \$18/TCO2e

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Ontario 2015 Grid Emissions [2]

	Solar / Wind / Bioenergy	Natural Gas	Nuclear	Coal	Waterpower
Electricity production (TWh)	14.2	15.9	92.3	0	37.3
Percentage of the grid use (%)	8.89	9.96	57.80	0.00	23.36

- Total electricity production (2015): 159.7 TWh
- Total emission (2015): 7.1 MT CO₂e
- The emission is calculated as **0.044 Tonne CO₂e/MWh**

*Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Emission reduction – Route “7” (28.6 km RT) Nova Bus (76 kWh)

	Light	Medium	Heavy
Yearly electricity estimated (MWh)	507	1290	2077
Yearly diesel use (L)	249,516	423,671	625,972
CO2e from electricity (Tonne)	22	57	91
CO2e from diesel (Tonne)*	656	1,114	1,646
CO2e reduction for a year (Tonne)	634	1,057	1,555

* : Mobile emission factor for mobile fuel combustion of diesel in heavy-duty vehicles is 2.63 kg CO2e/L

Emission reduction – Route “7” (28.6 km RT) New Flyer (200 kWh)

	Light	Medium	Heavy
Yearly electricity estimated (MWh)	535	1334	2130
Yearly diesel use (L)	249,516	423,671	625,972
CO2e from electricity (Tonne)	24	59	94
CO2e from diesel (Tonne)*	656	1,114	1,646
CO2e reduction for a year (Tonne)	633	1,056	1,553

* : Mobile emission factor for mobile fuel combustion of diesel in heavy-duty vehicles is 2.63 kg CO2e/L

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Emission reduction – Route “L” (29.2 km RT) Nova Bus (76 kWh)

	Light	Medium	Heavy
Yearly electricity estimated (MWh)	1009	2571	4379
Yearly diesel use (L)	504,262	848,448	1,315,920
CO2e from electricity (Tonne)	44	113	193
CO2e from diesel (Tonne)*	1,326	2,231	3,461
CO2e reduction for a year (Tonne)	1,282	2,118	3,268

* : Mobile emission factor for mobile fuel combustion of diesel in heavy-duty vehicles is 2.63 kg CO2e/L

Emission reduction – Route “L” (29.2 km RT) New Flyer (200 kWh)

	Light	Medium	Heavy
Yearly electricity estimated (MWh)	1065	2656	4507
Yearly diesel use (L)	504,262	848,448	1,315,920
CO2e from electricity (Tonne)	47	117	198
CO2e from diesel (Tonne)*	1,326	2,231	3,461
CO2e reduction for a year (Tonne)	1,279	2,115	3,263

* : Mobile emission factor for mobile fuel combustion of diesel in heavy-duty vehicles is 2.63 kg CO2e/L

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



Thanks for your attention !

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.



TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING OF JULY 17, 2018
FROM:	MARTIN HAYWARD CITY MANAGER
SUBJECT	STRATEGIC PLAN PROGRESS VARIANCE

RECOMMENDATION

That, on the recommendation of the City Manager, with the concurrence of the Managing Director of Environmental and Engineering Services and City Engineer, the following report on the Strategic Plan Progress Variance **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

- Strategic Priorities and Policy Committee, Strategic Plan: Semi-Annual Progress Report, May 7, 2018
- Civic Works Committee, Strategic Plan Progress Variance, February 6, 2018
- Strategic Priorities and Policy Committee, Strategic Plan: Semi-Annual Progress Report And 2017 Report To The Community, November 22, 2017
- Civic Works Committee, Strategic Plan Progress Variance, July 31, 2017
- Strategic Priorities and Policy Committee, Strategic Plan: Semi-Annual Progress Report, May 29, 2017
- Civic Works Committee, Strategic Plan Variance, February 21, 2017

BACKGROUND

On March 10, 2015, City Council approved the *2015-2019 Strategic Plan* for the City of London, establishing a vision, mission, areas of focus and numerous strategies for this term of Council. In December 2015, Council directed administration to prepare Semi-Annual Progress Reports (every May and November). The Progress Reports identify a status for each milestone: complete, on target, caution, or below plan.

On November 23, 2016, Council resolved that, on the recommendation of the City Manager, the following action be taken with respect to Council’s 2015-2019 Strategic Plan:

- c) the Civic Administration **BE DIRECTED** to refer strategic plan milestones that are “caution” or “below plan” to meetings of the appropriate Standing Committee, following the tabling of the May and November update reports on the Strategic Plan;

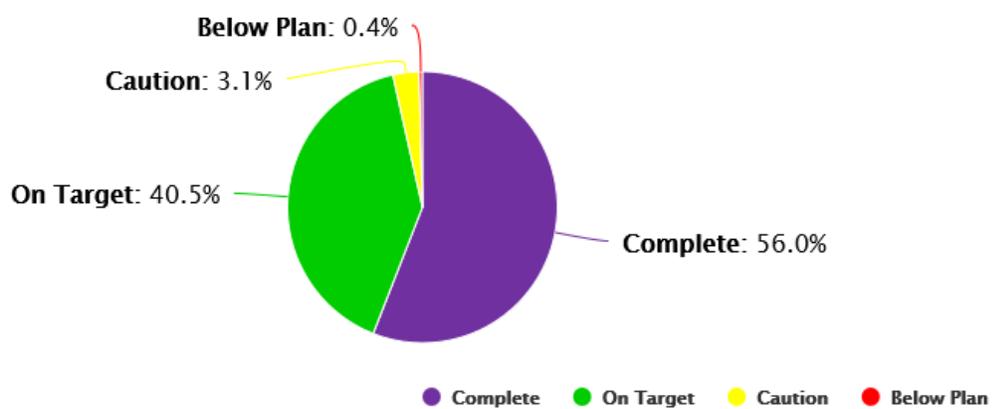
Council re-confirmed this direction at the May 7, 2018 Strategic Priorities and Policy Committee meeting.

DISCUSSION

This report outlines the milestones corresponding to the Civic Works Committee that, as of May 2018, were identified as caution or below plan. This report covers 12 milestones that were flagged as caution and 1 milestone that was flagged as below plan.

Overall Strategic Plan Progress

As of May 7, 2018, 573 milestones were complete, 415 milestones were on target, 32 milestones were caution and 4 milestones were below plan in the entire Strategic Plan. As indicated in the chart below, 56.0% of milestones are complete, 40.5% are on target, 3.1% of milestones are caution and 0.4% of milestones are below plan.



Variance Explanations

■ Building a Sustainable City - Caution

Milestone	What	Why	Implications
What are we doing? Fund innovative ways to adapt to Climate Change			
How are we doing it? Climate Change Adaptation Strategy (EES)			
Award flood proofing design for Greenway plant End Date: 12/31/18	On hold pending future federal/provincial funding announcement.	Flood proofing construction work is an excellent candidate for federal government funding.	Federal government funding announcements anticipated in late 2018. If approved, project could be initiated in Q4 2018.
Award flood proofing design for Adelaide plant End Date: 12/31/18	On hold pending future federal/provincial funding announcement.	Flood proofing design work is an excellent candidate for federal government funding.	Federal government funding announcements anticipated late in 2018. If approved, project could be initiated in Q4 2018.

Milestone	What	Why	Implications
Award flood proofing construction for Adelaide plant End Date: 3/31/19	On hold pending future federal/provincial funding announcement.	Flood proofing construction work is excellent candidate for federal government funding.	Federal government funding announcements anticipated in late 2018. If approved, project could be completed by Q4 2019.
What are we doing? Implement and enhance safe mobility choices for cyclists, pedestrians, transit users and drivers through the provision of complete streets, connected pathways, and enhanced transit services How are we doing it? Transportation Master Plan (EES)			
Complete Environmental Assessment – Western Road / Sarnia Road Intersection Improvements End Date: 6/30/18	Completion of Environmental Assessment is delayed.	Coordination is required with the Rapid Transit initiative and alternatives analysis will take into account the Western University Campus Master Plan.	New completion date is June 2019.
Complete detailed design – Western Road / Sarnia Road Intersection Improvements End Date: 12/31/19	Completion of Environmental Assessment is delayed.	Coordination is required with the Rapid Transit initiative and alternatives analysis will take into account the Western University Campus Master Plan.	New completion date for detail design is end of 2020.
Complete construction Western Road / Sarnia Road Intersection Improvements End Date: 12/31/19	Completion of Environmental Assessment is delayed.	Coordination is required with the Rapid Transit initiative and alternatives analysis will take into account the Western University Campus Master Plan.	Construction is anticipated to be completed by end of 2021.
What are we doing? Implement and enhance safe mobility choices for cyclists, pedestrians, transit users and drivers through the provision of complete streets, connected pathways, and enhanced transit services How are we doing it? Rapid Transit Implementation Strategy (EES)			
Complete Environmental Assessment End Date: 6/30/18	Completion of the Transit Project Assessment Process has been delayed.	Additional consultation and technical evaluation was undertaken.	New completion date is end of 2018.
Design First Phase End Date: 12/31/19	Completion of the Transit Project Assessment Process has been delayed.	Additional consultation and technical evaluation was undertaken.	Timing of design phase is subject to funding. Anticipated new completion date is mid 2020.

Milestone	What	Why	Implications
What are we doing? Expand support for resident and community driven initiatives that encourage waste reduction and other environmentally friendly behaviours			
How are we doing it? Property Assessed Clean Energy (EES)			
Phase 3: Submit to Committee/Council End Date: 3/31/18	A report was submitted to Civic Works Committee on February 21, 2017 and approved by Council that highlighted revisions to milestone dates based on potential changes at the provincial government with respect to funding and the proposed "Green Bank." As of June 2018, there have been further changes.	City staff had provided support for the Clean Air Partnership's Expression of Interest submission to the GreenON Fund for a multi-municipality LIC pilot project to test the delivery of such a program. However, the new provincial government has indicated that it will stop participation in the Cap & Trade Program and cancel all programs funded by Cap & Trade.	This initiative will be reviewed by staff in fall 2018 when additional details may be available, including an update from the Clean Air Partnership on other potential funding for the proposed multi-municipality LIC pilot project. New dates will be approved by Council after the update report.
Phase 4: Implement approved strategy End Date: 5/31/2018	Delayed – see above.	Delayed – see above.	See above - new dates will be approved by Council after the update report.

 Building a Sustainable City – Below Plan

Milestone	What	Why	Implications
What are we doing? Expand support for resident and community driven initiatives that encourage waste reduction and other environmentally friendly behaviours			
How are we doing it? Property Assessed Clean Energy (EES)			
Phase 2: Undertake stakeholder engagement and prepare Draft Business Case for a Local Improvement Charges Pilot Project including implementation scope, framework, costs, and risks End Date: 9/30/17	A report was submitted to Civic Works Committee on February 21, 2017 and approved by Council that highlighted revisions to milestone dates based on potential changes at the provincial government with respect to funding and the proposed "Green Bank." As of June 2018, there have been further changes.	City staff had provided support for the Clean Air Partnership's Expression of Interest submission to the GreenON Fund for a multi-municipality LIC pilot project to test the delivery of such a program. However, the new provincial government has indicated that it will stop participation in the Cap & Trade Program and cancel all programs funded by Cap & Trade.	This initiative will be reviewed by staff in fall 2018 when additional details may be available, including an update from the Clean Air Partnership on other potential funding for the proposed multi-municipality LIC pilot project.

■ Growing Our Economy – Caution

Milestone	What	Why	Implications
What are we doing? Lead the development of new ways to resource recovery, energy recovery, and utility and resource optimization with our local and regional partners to keep our operating costs low and assist businesses with commercialization to help grow London’s economy How are we doing it? London Waste to Resources Innovation Centre (EES)			
Phase 3: Undertake stakeholder engagement and prepare a Draft Business Case for a Centre including implementation scope, framework, costs, and risks End Date: 6/30/17	The City has six active Memorandums of Understanding (MoUs) with businesses and Western University. The outcome of Western’s proposal to Natural Sciences and Engineering Research Council (NSERC) of Canada will be known in Q3.	The Draft Business Case will be completed after the NSERC proposal outcome.	New completion date is Q4 2018.
Phase 4: Implement approved strategy End Date: 3/31/18	Delayed – see above.	Delayed - See above.	New completion date is Q1 2019.

CONCLUSION

The Semi-Annual Progress Report tracks nearly 1000 milestones. This tool allows Council and Administration to track progress and monitor implementation of the 2015-19 Strategic Plan for the City of London. In some cases milestones have been delayed due to shifting priorities or emerging circumstances. The Strategic Plan Variance Reports are intended to provide Council with a more in-depth analysis of these delays. Information included in this report can support Council in strategic decision making and inform the work of Civic Administration.

CONCURRED BY:	RECOMMENDED BY:
KELLY SCHERR MANAGING DIRECTOR ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER	MARTIN HAYWARD CITY MANAGER

cc. Strategic Management Team
 Strategic Thinkers Table

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17, 2018
FROM:	KELLY SCHERR, P. ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER
SUBJECT:	AMENDMENTS TO THE TRAFFIC AND PARKING BY-LAW

RECOMMENDATION

That on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer, the proposed by-law, attached as Appendix A **BE INTRODUCED** at the Municipal Council meeting to be held on July 24, 2018 for the purpose of amending the Traffic and Parking By-law (PS-113).

2015-19 STRATEGIC PLAN

The following report supports the Strategic Plan through the strategic focus area of **Building a Sustainable City** by improving safety, traffic operations and residential parking needs in London's neighbourhoods.

BACKGROUND

The Traffic and Parking By-law (PS-113) requires an amendment to address traffic safety, operations and parking concerns on King Street between Covent Market Place and Richmond Street. Civic Administration received a letter from the Covent Garden Market expressing concerns that traffic exiting their parking garage and Covent Market Place were having difficulty due to the increased traffic on King Street. In order to help mitigate the concerns, it is recommended that an afternoon rush route be created on the north side of King Street between Covent Garden Place and Richmond Street. This will facilitate the movement of traffic turning onto northbound Richmond Street and allow improved flow of traffic travelling east on King Street. This change will remove the existing parking on the north side of King Street during the rush route times (3:30 pm to 6:30 pm, Monday to Friday); however, parking will still be allowed before 3:30 pm and after 6:30 pm and all-day on Saturdays, Sundays and holidays. It should be noted that the above changes do not affect the review currently underway related to garbage collection, traffic circulation and the delivery of goods at Covent Garden Market.



Figure 1: King Street between Covent Market Place and Richmond Street

This report was prepared by Doug Bolton and Shane Maguire of the Roadway Lighting & Traffic Control Division.

PREPARED BY:	REVIEWED & CONCURRED BY:
SHANE MAGUIRE, P. ENG. DIVISION MANAGER, ROADWAY LIGHTING & TRAFFIC CONTROL	EDWARD SOLDI, P.ENG. DIRECTOR, ROADS AND TRANSPORTATION
RECOMMENDED BY:	
KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER	

Y:\Shared\Administration\COMMITTEE REPORTS\PS-113 Amendments\2018\2018-07-17\CWC July 17 2018 Council July 24 2018 (TRAFFIC PARKING BY-LAW AMENDMENTS) Ver 1.docx

July 9, 2018/sm

Attach: Appendix A: Proposed Traffic & Parking By-Law Amendments

cc. City Solicitor's Office
Parking Office

APPENDIX A

BY-LAW TO AMEND THE TRAFFIC & PARKING BY-LAW (PS-113)

Bill No.

By-law No. PS-113

A by-law to amend By-law PS-113 entitled, “A by-law to regulate traffic and the parking of motor vehicles in the City of London.”

WHEREAS subsection 10(2) paragraph 7. Of the *Municipal Act, 2001*, S.O. 2001, c.25, as amended, provides that a municipality may pass by-laws to provide any service or thing that the municipality considers necessary or desirable to the public;

AND WHEREAS subsection 5(3) of the *Municipal Act, 2001*, as amended, provides that a municipal power shall be exercised by by-law;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. No Stopping

Schedule 1 (No Stopping) of the By-law PS-113 is hereby amended by **adding** the following rows:

King Street	North	Covent Market Place	Richmond Street	3:30 p.m. to 6:30 p.m.
-------------	-------	---------------------	-----------------	------------------------

This by-law comes into force and effect on the day it is passed.

PASSED in Open Council on July 24, 2018

Matt Brown
Mayor

Catharine Saunders
City Clerk

First Reading – July 24, 2018
Second Reading – July 24, 2018
Third Reading – July 24, 2018

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17, 2018
FROM:	KELLY SCHERR, P.ENG. MANAGING DIRECTOR ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER
SUBJECT:	WATER AND EROSION CONTROL INFRASTRUCTURE (WECI) PROGRAM: 2018 PROVINCIALY APPROVED PROJECT FUNDING (SOLE SOURCED)

RECOMMENDATION

That, on the recommendation of the Managing Director Environmental & Engineering Services and City Engineer, the following action **BE TAKEN** with respect to City of London's contribution to infrastructure funded through the Ministry of Natural Resources and Forestry's Water and Erosion Control Infrastructure capital cost share program:

- a) The Upper Thames River Conservation Authority **BE AUTHORIZED** to carry out the following projects in concert with the City in the total amount of \$1,534,375.00, including contingency, excluding HST; noting the requirements of this provincial funding program are unique, in that only conservation authorities can apply, requiring 14.3.a) of the Procurement of Goods and Services Policy:
 - a. Dam Ice Safety Signs;
 - b. Fanshawe Dam Hoist Licensing and Refurbishment;
 - c. Fanshawe Dam Phase 5 Paint and Concrete Repairs;
 - d. Fanshawe Dam Roof Replacement; and,
 - e. West London Dyke Phase 4A Reconstruction.

- b) The financing for this work **BE APPROVED** as set out in the Sources of Financing Report attached hereto as Appendix "A";

- c) The Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
--

Civic Works Committee – July 17, 2017 – Water and Erosion Control Infrastructure (WECI) Program: 2017 Provincially Approved Project Funding (Sole Sourced)

Civic Works Committee – August 22, 2016 – Water and Erosion Control Infrastructure (WECI) Program: 2016 Provincially Approved Project Funding (Sole Sourced)

Civic Works Committee – February 2, 2016 – West London Dyke Master Repair Plan Municipal Class Environmental Assessment Study

Strategic Priorities and Policy Committee – January 28, 2016 – Downtown Infrastructure Planning and Coordination

Council – March 21, 2011 – UTRCA 2010 and 2011 Levies for Remediating Flood/Erosion Control, Dykes and Dam Structures within the City

2016-2019 CORPORATE STRATEGIC PLAN ALIGNMENT

The 2016-2019 Strategic Plan identifies the following objectives that relate directly to the recommendations provided by the West London Dyke Master Repair Plan EA:

- BUILDING A SUSTAINABLE CITY: 1B-Manage and improve stormwater infrastructure and services; and
- BUILDING A SUSTAINABLE CITY: 1E-Fund innovative ways to adopt to Climate Change.

BACKGROUND

Purpose

This report seeks approval to commit the City's share of projects eligible for 50% provincial capital funding through the Ministry of Natural Resource and Forestry (MNR) Water and Erosion Control Infrastructure (WECI) program.

Context

The WECI program is a MNR capital cost share program that provides funding for flood or erosion control structures such as dams and dykes. This funding can only be accessed by Conservation Authorities (CAs), but can be used for infrastructure owned by municipalities in cases where the infrastructure is maintained by the CA. Over the last 14 years, in partnership with the UTRCA, over \$10,000,000 in WECI funding has been used to repair and reconstruct City-owned infrastructure. This program contributes to public safety and natural hazard prevention at the local watershed level.

DISCUSSION

WECI Program

The WECI program provides matched funding to CAs for the major reconstruction and maintenance of flood or erosion control structures that are either owned or maintained by CAs. Because of this requirement, the City must use Clause 14.3.a) "*statutory or market based monopoly*" of its Procurement Policy to engage in this project.

The funding is provided through a prioritization process that includes existing flood and erosion control infrastructure. Projects are selected for funding by a committee made up of five CA representatives, one MNR representative, and one Conservation Ontario (CO) staff representative. There is one UTRCA staff member on this committee. The committee reviews and scores project submissions and determines the priority list of eligible projects on an annual basis.

Major projects must meet the following criteria:

1. Submissions are made by CAs.
 - The project must be for existing infrastructure. WECI funding is not for new infrastructure.

2. The Infrastructure must be CA owned or maintained.
3. The works proposed must involve an existing asset from one of the four main infrastructure categories:
 - a. Dams – these can range in size from small rural mill dams to large urban flood control structures.
 - b. Dykes – examples include those that protect urban core areas or agricultural areas, such as the West London Dykes and those near the Lake Erie shoreline.
 - c. Shoreline Erosion Protection – examples include erosion works along the Great Lakes shoreline and inland waterways and lakes.
 - d. Flood Control Channels – these typically involve river channels in urban areas and can also include diversion channels.
4. The program is a 50/50 cost share with the local municipality or other contributors with flood or erosion control infrastructure needs and must have a Council resolution or legally binding agreement to demonstrate financial commitment.
5. Projects must be completed in the fiscal year, April 1 to March 15, in which they are approved and funded.

The UTRCA and City of London have successfully received nearly \$10,000,000 in funding through this program since 2003. The most recent reconstruction of West London Dyke Phase 3, from Rogers Avenue to Carothers Avenue, was completed in 2017. This project also increased the wall height of the previously constructed Phase 1 dyke, from Queens Avenue to Rogers Avenue, by approximately 1m. This project was funded through WECl with a City commitment of \$1,800,000 as well as support from the federal government's National Disaster Mitigation Program (NDMP).

Multi-year Budget Funding

The multi-year budget includes funding for the renewal of the City of London's flood and erosion control infrastructure. The multi-year budget item "ES2474 UTRCA Remediating Flood Control Works within City Limits" provides the City's share of WECl eligible maintenance and reconstruction works with a total of \$6,100,000 over the four year period. This investment would result in \$12,200,000 in overall capital renewal works by 2020.

Project Management

UTRCA and City of London staff have worked closely to manage WECl-related projects. These projects often are located in high profile areas (West London Dyke) or within the natural heritage system (the City's various earthen dykes). As the WECl funding program provides funding directly to CAs, all project procurement and project management is the ultimate responsibility of the UTRCA project manager and the UTRCA Board of Directors. With this being the case, UTRCA has been diligent in collaborating with City staff in the delivery of the various WECl projects.

Financial Administration

As required by the WECl funding guidelines, a resolution is made by the UTRCA Board annually to demonstrate its financial commitment and willingness to complete the funded project within the WECl fiscal year (April 1 to March 15). All funding and related project billing is managed directly by the CA. As the CA is responsible for all of the administrative aspects of the project, the procurement for the study and construction contracts are made directly by the CA in accordance with its established procurement policies. The municipality is subsequently billed a 50% share of eligible costs.

Table 1 summarizes the 2018 provincially approved WECl project funding:

Table 1: 2018 Approved WECl Project Funding

Project	Full Project Amount	NDMP Funding	WECl Share	London Share
Dam Ice Safety Signs at Fanshawe Dam	\$5,000	-	\$2,500	\$2,500
Fanshawe Dam Hoist Licensing and Refurbishment	\$20,000	-	\$10,000	\$10,000
Fanshawe Dam Phase 5 Paint and Concrete Repairs	\$1,037,750	-	\$518,875	\$518,875
Fanshawe Dam Roof Replacement	\$30,000	-	\$15,000	\$15,000
West London Dyke Phase 4A Reconstruction ¹	\$2,800,000	\$1,435,000	\$377,000	\$988,000 ¹
Total	\$3,892,750	\$1,435,000	\$923,375	\$1,534,375

¹The City portion is less than 50% for this project due to additional NDMP funding in the amount of \$1,435,000. In this instance, the WECl portion is reduced to approximately \$377,000.

2018 WECl Projects

The 2018 WECl projects largely focus on repairs and maintenance at the Fanshawe Dam with some continued work to reconstruct the West London Dykes.

The Fanshawe Dam is owned by the UTRCA. It was constructed between 1950 and 1952 at a cost of \$5,000,000. At that time, the construction of the dam was funded by the Federal and Provincial governments and the UTRCA. The purpose to the dam is to assist flood control by regulating the flow of water from the upstream reservoir (Fanshawe Lake) into the downstream Thames River prior to it passing through the City. As a result, the peak flow of the river is reduced, in turn reducing the high water level of the Thames River and limiting the extent of potential flooding. The City entirely receives the benefit from this structure and, thus, are ultimately responsible for 100% of the capital costs of any repairs. The WECl program helps to offset the costs of these repairs.

The continuation of the West London Dykes Phase 4A project will extend the reconstructed section of the dyke from Carothers Avenue to south of Blackfriars Bridge.



Figure 1: West London Dykes Phase 3 (2017)

CONCLUSIONS

City staff and UTRCA staff will continue to work closely to ensure the best technical and public outcomes for each identified WECl funded project.

Both teams will continue to work together to complete the current program of approved WECl funded projects and endeavour to maximize the City of London’s potential to receive future provincial funding for City-owned flood and erosion control infrastructure.

This report was prepared by Chris McIntosh, P. Eng., of the Stormwater Engineering Division.

SUBMITTED BY:	REVIEWED AND CONCURRED BY:
SHAWNA CHAMBERS, P. ENG. DIVISION MANAGER, STORMWATER ENGINEERING	SCOTT MATHERS, MPA, P. ENG. DIRECTOR, WATER AND WASTEWATER
RECOMMENDED BY:	
KELLY SCHERR, P. ENG., FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER	

July 6, 2018

Attach: Appendix ‘A’ – Source of Financing
Appendix ‘B’ – Locations Map

APPENDIX 'A'

Chair and Members
Civic Works Committee

#18126
July 17, 2018
(Award Contract)

**RE: Water and Erosion Control Infrastructure (WECI) Program
2018 Provincially Approved Project Funding (Sole Sourced)
(Subledger SWM1804A) - a. Dam Ice Safety Signs
(Subledger SWM1804B) - b. Fanshawe Dam Hoist Licensing & Refurbishment
(Subledger SWM1804C) - c. Fanshawe Dam Phase 5 Paint and Concrete Repairs
(Subledger SWM1804D) - d. Fanshawe Dam Roof Replacement
(Subledger SWM1804E) - e. West London Dyke Phase 4A Reconstruction
Capital Project ES2474 - UTRCA - Remediating Flood Control Works within City Limits
Upper Thames River Conservation Authority - \$1,534,375.00 (excluding H.S.T.)**

FINANCE & CORPORATE SERVICES REPORT ON THE SOURCE OF FINANCING:

Finance & Corporate Services confirms that the cost of this project can be accommodated within the financing available for it in the Capital Works Budget and that, subject to the adoption of the recommendations of the Managing Director, Environmental and Engineering Services and City Engineer, the detailed source of financing for this project is:

<u>ESTIMATED EXPENDITURES</u>	<u>Approved Budget</u>	<u>Committed To Date</u>	<u>This Submission</u>	<u>Balance for Future Work</u>
Engineering	\$1,954,803	\$1,784,355		\$170,448
Construction	6,354,688	4,793,287	1,561,380	21
City Related Expenses	75,000	46,668		28,332
NET ESTIMATED EXPENDITURES	<u>\$8,384,491</u>	<u>\$6,624,310</u>	<u>\$1,561,380</u>	<u>\$198,801</u>
<u>SOURCE OF FINANCING:</u>				
Debenture By-law No. W.-5610-251	\$2,750,000	\$989,819	\$1,561,380	\$198,801
Drawdown from Sewage Works Reserve Fund	5,634,491	5,634,491		0
TOTAL FINANCING	<u>\$8,384,491</u>	<u>\$6,624,310</u>	<u>\$1,561,380</u>	<u>\$198,801</u>

Financial Note:

1) Contract Price	\$1,534,375
Add: HST @13%	199,469
Total Contract Price Including Taxes	<u>1,733,844</u>
Less: HST Rebate	172,464
Net Contract Price	<u>\$1,561,380</u>

JG

Jason Davies
Manager of Financial Planning & Policy

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17, 2018
FROM:	KELLY SCHERR, P. ENG, MBA, FEC MANAGING DIRECTOR ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER
SUBJECT:	CLEAN WATER AND WASTEWATER FUND PROJECT BUDGET AMENDMENTS

RECOMMENDATION

That, on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer the following report with respect to housekeeping budget adjustments for Clean Water and Wastewater Fund (CWWF) Phase One projects **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
--

Civic Works Committee – October 24, 2017 – Vauxhall Wastewater Treatment Plant Flood Protection Construction Tender Award

Civic Works Committee – June 7, 2017 - Infrastructure Canada – Phase One Investments Clean Water & Wastewater Fund – Approved Projects

Civic Works Committee – October 4, 2016 – Infrastructure Canada Phase 1 Project Requests – Clean Water and Wastewater Fund

2016-2019 CORPORATE STRATEGIC PLAN ALIGNMENT

The following report supports the Strategic Plan through the strategic focus area of Building a Sustainable City by managing and improving water and wastewater infrastructure and services to provide robust infrastructure.

BACKGROUND

Purpose

The purpose of this report is to inform Council about housekeeping budget adjustments to the Clean Water and Wastewater Fund (CWWF) phase one projects approved by the Provincial Government on behalf of the Government of Canada. Housekeeping budget adjustments are normally presented to Municipal Council for information purposes with the bi-annual capital monitoring reports, but are being presented at this time due to the magnitude of the CWWF program’s contribution to the Corporation of the City of London’s (the City) water & wastewater capital budgets.

DISCUSSION

In the 2016 budget, the Federal Government announced the implementation of a plan to invest more than \$120 billion in infrastructure over 10 years, including \$60 billion in new funding for public transit, green infrastructure, and social infrastructure, to better meet the needs of Canadians and better position Canada's economy for the future. Included is water and wastewater infrastructure funding that will be delivered via the provinces and territories.

Clean Water & Wastewater Fund (CWWF) Program Phase 1

Under CWWF Phase 1, the City applied and received approval for 23 projects in June 2017. Through the CWWF program, the City finances 25% of the work while the other 75% of the cost is claimable from the fund. The \$41.4 million in eligible CWWF projects includes Federal government funding of \$20.2 million, Province of Ontario funding of \$10.1 million and the City of London funding \$10.1 million. One project will also receive a \$900 thousand grant from the Independent Electricity System Operators (IESO). Excluding this grant, the Federal contribution is 50% of the funding, while the Province of Ontario and City share equally the remaining 50%.

The approved projects include both water (\$6.9 million) and wastewater & treatment (\$34.5 million) infrastructure projects further described below:

Table 1: CWWF Initial Approval Summary

	Wastewater	Water	Total
Total Project Cost	\$34.5M	\$6.9M	\$41.4M
CWWF Funding*	\$25.2M	\$5.2M	\$30.3M
Number of Projects	16	7	23

**Amounts subject to rounding*

In the spring of 2018 the deadline to complete all projects was extended from March 31, 2018 to March 31, 2020 and an opportunity was provided to amend the amount of the individual funding requests.

CWWF Project Budget Amendments

The initial project funding requests were based on preliminary cost estimates developed in 2016. These estimates have been further refined during the detailed design phase of each project which commenced following provincial/federal project funding approval. A number of the projects require less funding than initially estimated. The Province's amendment process allows the funding from these projects to be allocated to other approved projects as long as the change does not exceed the initial overall funding envelope. The following amendments were requested and subsequently approved by the Province:

Project Details		Revised Budget	Change
Wastewater Projects			
LON-003	ES2453 Applegate Stormwater Management Facility Retrofit - Construction	697,000	↑ 239,000
LON-004	ES6075 Power Generation and Waste Heat Recovery Systems & Biosolids Optimization - Purchase and Design (ORC)	5,899,000	↑ 200,000
LON-005	ES5403 East London - Sanitary Servicing Study	300,000	↓ (56,000)

Project Details		Revised Budget	Change
LON-006	ES6078 Wastewater Treatment Plants - Improvement Studies	171,000	↑ 39,000
LON-007	ES5085 Treatment Plant Energy Reduction With Turbo Blowers	1,157,576	↑ 339,000
LON-008	ES3042 Vauxhall PCP Climate Change Resiliency - Design & Construction	4,683,000	↑ 1,630,000
LON-009	ES5019 Treatment Plants Odour Control Upgrades - Design & Construction	3,334,000	↓ (228,000)
LON-010	ES5432 SCADA and Security Upgrades at Treatment Plants	1,500,000	↓ (1,100,000)
LON-011	ES6076 Sanitary Pump Stations - Variable Frequency Drives	658,000	↓ (665,000)
LON-013	ES3043 Mornington Area Storm Drainage Servicing - Environmental Assessment	129,600	↓ (318,400)
LON-014	ES2331 Sewer Separation Program Acceleration	10,496,281	↑ 905,630
LON-015	ES2334 Sewer Separation and Infrastructure Renewal - Planning and Design for future projects	2,689,769	↑ 2,139,769
Water Projects			
LON-017	EW3506 Arva Water Pumping Station Optimization & Energy Efficiency - Study	183,000	↓ (224,000)
LON-018	EW2410 Trunk Watermain, Syphons, and Pipeline - Inspections and Condition Rating	1,185,000	↓ (850,000)
LON-020	EW3548 Watermain Cleaning & Relining	1,053,000	↓ (2,000,000)
LON-023	EW3539 Springbank Reservoirs 1 & 3	51,000	↓ (51,000)
Difference (Water and Wastewater)			\$0.00

At its October 31, 2017 meeting, Council approved an increase to the budget for the Vauxhall PCP Climate Change Resiliency project in conjunction with the construction tender award. At that time, only \$3.1M of the total \$4.7M project cost was approved by the CWWF program resulting in a \$1.6M shortfall. This was addressed through additional funding from the Sewage Works Reserve Fund. However, the end result was a partially approved CWWF project with a budget split out of alignment with the aforementioned CWWF federal/provincial/municipal program splits of 50/25/25. In its previous state the City was funding 51% (\$2.4M) of the total project cost while receiving \$49% (\$2.3M) of the project cost via CWWF funding. With the recent Provincial approval the full \$4.7M project cost of LON008-Vauxhall PCP Climate Change Resiliency project is now approved for CWWF funding. This allows administration to bring the sources of financing for the full project cost into alignment with the CWWF program splits, return previously approved City funding sources to their origin, and reallocate funding within the approved CWWF Phase One projects. This new approval and subsequent amendments result in a net zero effect on the CWWF program funding.

The approved projects now consist of both Water (\$3.8 million) and Wastewater & Treatment (\$37.6 million) projects further described below:

Table 2 CWWF Amended Approval Summary

	Wastewater	Water	Total
Total Project Cost	\$37.6M	\$3.8M	\$41.4M
CWWF Funding*	\$27.6M	\$2.8M	\$30.3M
Number of Projects	16	7	23

**Amounts subject to rounding*

The effect of the required housekeeping budget adjustments reduces funding for projects where it is no longer required and allocates the funding to projects where it can be completely utilized prior to the March 31, 2020 funding deadline. A summary and rationale for these budget changes has been provided in Appendix 'A' CWWF Funding Amendment Rationale.

CONCLUSION

The City of London is approved for project funding of \$41.4M under the CWWF Phase One program. This comprises \$30.3M of combined Federal/Provincial funding and \$10.1M of City funding. Subsequent Provincial approvals within the CWWF program have resulted in \$3.1M in funding being reallocated from Water projects to Wastewater projects. This includes an adjustment for the approval of the full cost of the Vauxhall PCP Climate Change Resiliency project, resulting in previously approved City funding sources being returned to their origin and subsequently replaced via reallocation of funding within the approved CWWF Phase One projects. With Federal/Provincial approval of these funding amendments, the City is in an excellent position to fully utilize the maximum CWWF approved value before the deadline of March 31, 2020.

Acknowledgements

This report was prepared with assistance from Debbie Gibson Financial Business Administrator.

SUBMITTED BY:	REVIEWED & CONCURRED BY:
SCOTT MATHERS, P.ENG., MPA DIRECTOR, WATER AND WASTEWATER	JASON DAVIES, CPA, CMA MANAGER III, FINANCIAL PLANNING & POLICY
RECOMMENDED BY:	
KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER	

SGM/

Cc:

Appendix A – CWWF Funding Amendment Rationale

<p>LON-003 ES2453</p>	<p>Applegate Stormwater Management Facility</p>	<p>This project will improve the water quality discharging to the receiver, Dingman Creek; it involves constructing a retrofit design to an existing stormwater management facility in a residential neighbourhood. It will increase the volume of the pond and improve the flow paths through the facility to decrease areas of stagnant water, and increase treatment capacity.</p> <p><i>Change: Increased construction requirements to manage higher than anticipated groundwater levels with the construction of a clay liner.</i></p>
<p>LON-004 ES6075</p>	<p>Design and purchase of Organic Rankine Cycle equipment for Power Generation and Waste Heat Recovery Systems & Biosolids Optimization at Greenway Pollution Control Plant</p>	<p>The main focus of this project will involve the pre-purchase of the critical components including an Organic Rankine Cycle engine power unit and heat exchanger, preliminary building modifications and process and electrical designs to generate 450 kW of electricity from waste heat recovered from the Greenway biosolids incinerator. A secondary component is a study to evaluate the potential to use waste heat from the incineration process to replace several natural gas Heating, Ventilation, and Air Conditioning (HVAC) units; the study will also evaluate the plant's end of life hydronic heating piping system and any upgrades needed to handle additional heating loads.</p> <p>Biosolids Optimization Study: Currently 40% of the biosolids generated in the City of London are dewatered to 3-4 % solids at satellite plants then trucked to Greenway for incineration. This study will evaluate the feasibility of dewatering those solids to 25% solids at the satellite plants before transportation to Greenway thereby reducing the number of loads from approximately 7000 per year to 2000. Waste Heat Utilization and Optimization: The Greenway plant currently uses waste heat from the biosolids incinerator to heat most plant buildings and spaces through a hydronic heating system; however, there are several natural gas fired HVAC units onsite that can potentially be converted to utilize the hydronic system. A study will evaluate the feasibility of converting the natural gas units to the hydronic systems as well as any upgrades needed. This system is independent of the proposed Organic Rankine Cycle system. Future projects will be identified.</p> <p><i>Change: During the design phase it was discovered that the addition of Rotating Drum Thickener (RDT) is required to accommodate tight space requirements of the Organic Rankine Cycle (ORC) with new access to penthouse required.</i></p>
<p>LON-005 ES5403</p>	<p>East London - Sanitary Servicing Study</p>	<p>This project will provide a Master Plan and Servicing Co-ordination Study to evaluate interim and ultimate sanitary servicing strategies, including adjacent external lands that may impact ultimate servicing; it will also examine current and planned sewer separation projects as well as drinking water distribution projects to establish preferred timelines that allow coordination of construction projects. Future projects will be identified.</p> <p><i>Change: Scope of work for the successful consultant was reduced due to knowledge gained during previous work done by the same company.</i></p>

Appendix A – CWWF Funding Amendment Rationale

<p>LON-006 ES6078</p>	<p>Conduct Facility Improvement Studies at 4 Wastewater Treatment Facilities across the city.</p>	<p>This Wastewater Treatment Plant improvement study will evaluate: Increased Phosphorus Removal; Capacity Optimization; Flood Proofing Measures. This study will evaluate potential technologies that can improve phosphorus removal while potentially adding plant treatment capacity. This project will also evaluate the vulnerability of the Adelaide and Greenway plants to flooding and evaluate the flood proofing measures required. Future projects will be identified.</p> <p><i>Change: Preliminary recommendation of the study was to explore an emerging technology to reduce phosphorus in plant effluents. The increase in scope included pilot testing of CoMag and BioMag technology in order to validate the findings and preliminary recommendation of the wastewater treatment plant study.</i></p>
<p>LON-007 ES5085</p>	<p>Treatment Plant Energy Reduction With Turbo Blowers - Supply and Install</p>	<p>The main process air blowers at the Greenway Wastewater Treatment Plant are 30-40 years old, are inefficient by current standards and have reached the end of their service life. Upgrading some of these blowers to more efficient Turbo blowers will save 3.38 million kWh/year worth approximately \$600,000. The electrical efficiency at the Pottersburg plant will also be improved with this new technology. A grant of \$900k from the Independent Electricity System Operator is included as Other Contributions.</p> <p><i>Change: Purchase of fourth blower for Greenway Section 3, as the existing blower failed to function properly in parallel with new blowers. Aeration field valve actuators have also been identified to be failing, without replacing these, the full energy efficiencies will not be realized.</i></p>
<p>LON-008 ES3042</p>	<p>Design and Construction of Flood Protection Measures at the Vauxhall Pollution Control Plant</p>	<p>This project will evaluate and construct the flood proofing measures needed to protect the plant against stormwater damage, including berming the perimeter of the plant as well as effluent pumping. It will also relocate a surplus generator to the Vauxhall plant for emergency power protection adding to the plant's climate change resiliency.</p> <p><i>Change: During the design phase the addition of sheet piling over earthen berm, additional channels to accommodate future phosphorus upgrades, overland flows are recommended.</i></p>
<p>LON-009 ES5019</p>	<p>Treatment plan odour control upgrades</p>	<p>London has several wet chemical (chlorine) scrubbers at the Adelaide, Pottersburg and Greenway treatment plants and the Clarke Road Pumping Station biofilter. Recent upgrades at other facilities have used ozone disinfection and have also incorporated heat recovery to reduce the seasonal energy required to heat the air as well as reducing maintenance costs. This project will replace the remaining wet chemical scrubbers with ozone and heat recovery.</p> <p><i>Change: Reduced the scope of the project to replace the scrubbers at Clarke Road biofilter in place of the Gordon Avenue and Wonderland Road biofilters.</i></p>

Appendix A – CWWF Funding Amendment Rationale

<p>LON-010 ES5432</p>	<p>Design and Construction of Technology Upgrades (Supervisory Control and Data Acquisition (SCADA) and Security) at 30 Wastewater and 14 Water locations across the City</p>	<p>This project will modernize London's sewage treatment plants and drinking water facilities in three ways:</p> <ol style="list-style-type: none"> 1. Security improvements with new operated gates, access control and camera systems to better secure 5 Wastewater and 1 Water facility. 2. Replace aging Programmable Logic Controllers (PLC) and update Supervisory Control and Data Acquisition (SCADA) software to improve operating reliability at 30 Wastewater and 14 Water sites. 3. Design a city wide surface water quality monitoring program. Future projects will be identified. <p><i>Change: Scope of work reduced to accommodate increased scope in Vauxhall project (LON008). Eliminated several lower priority satellite locations. The satellite locations that are to be eliminated completely from work are Pottersburg, Vauxhall, Adelaide and Oxford. We would also reduce the amount of work to be done at the Springbank Reservoir and Station.</i></p>
<p>LON-011 ES6076</p>	<p>Purchase and Install of Variable Frequency Drives at 4 Sanitary Pump Stations</p>	<p>Replace aging Variable Frequency Drives at 4 Pumping Stations. Complete Electrical upgrade including Master Control Centre, automatic transfer switch and generator at Trafalgar Pumping Station.</p> <p><i>Change: Existing equipment was re-used on site as much as possible to reduce overall installed cost.</i></p>
<p>LON-013 ES3043</p>	<p>Mornington Area Storm Drainage Servicing - Environmental Assessment</p>	<p>Identifying an outlet and strategy for storm drainage for this area of the City will allow the separation of existing combined sewers. It will also help allow an existing storm/relief sewer which currently conveys some of these storm flows to be rededicated as a sanitary relief sewer. Future projects will be identified.</p> <p><i>Change: Scope of work for the successful consultant was reduced due to knowledge gained during previous work done by the same company.</i></p>
<p>LON-014 ES2331</p>	<p>Sewer Separation Program Acceleration -Design and Construction</p>	<p>Design and construction to install separated sewers where combined and replace watermain where required.</p> <ul style="list-style-type: none"> - Frances Street -425m, 52 customers (replacing 100mm watermain & 200mm concrete Sanitary; new storm sewers to separate combined flows) - Margaret Street -330m, 38 customers (replacing 200mm watermain & 200mm Sanitary; new storm sewers to separate combined flows) - Ethel Street -100m, 0 customers (remove old watermain, replace 300mm sanitary, new sewers to separate combined flows) - Elworthy Avenue -440m, 35 customers (replacing 200mm watermain; 200mm & 250mm sanitary; 200mm & 375mm storm which is undersized) - Franklin Avenue -275m, 30 customers (replacing 150mm watermain; 200mm sanitary; 250mm storm which are undersized and do not cover entire street) - Grosvenor Street -490m, 63 customers (replacing many sizes of watermain & 200mm and 250mm sanitary; new sewers to separate combined flows) <p><i>Change: Expanded scope on Frances Street (additional 120m) including a trenchless railway crossing to replace sanitary sewer which was required to accommodate proper sewer gradient not originally anticipated prior to completion of detailed design of project. Ethel Street retained existing watermain and did not require sanitary sewer. Storm sewer was installed as planned.</i></p>

Appendix A – CWWF Funding Amendment Rationale

LON-015 ES2334	Sewer Separation and Infrastructure Renewal - Planning and design for future projects and construction of one high priority project	<p>This project will accelerate the design phase of projects for the replacement of combined sewers with separated and replace watermains where required – Wistow St, Waterloo St., Talbot Ave. By completing the design project now, including public engagement as most of these are in the downtown core area, the City will be able to separate these combined sewers and reduce overflows to the Thames River much earlier than planned. These projects will support the phosphorous reduction strategies for Lake Erie by reducing bypasses and overflows to the Thames River watershed.</p> <p><i>Change: Expanded scope to construct Wistow Street; design work only included in the original application. Wistow Street has been identified as a high priority need for immediate construction. This project along with a few future projects will allow the decommissioning the Paardeberg Sanitary Pumping Station. Elimination of this pump station will result in a reduction of sanitary overflows as well as energy savings.</i></p>
LON-017 EW3506	Arva Water Pumping Station Optimization and Energy Efficiency - Planning Study	<p>We will hire a consultant to complete a study that will identify and develop options to improve energy efficiency at the pumping station. Future capital projects and needs will be identified.</p> <p><i>Change; Scope of work for the successful consultant was reduced due to knowledge gained during previous work done by the same company.</i></p>
LON-018 EW2410	Trunk Watermains Syphons and Pipeline - Inspections and Condition Rating	<p>We will complete a condition assessment of critical feeder mains in our water distribution system that have been recommended to be inspected based on their risk of failure. We will also inspect critical wastewater syphons. Future projects will be identified.</p> <p><i>Change: A different less intrusive method of inspection has been selected based on availability of City support forces and the different pipe materials being inspected.</i></p>
LON-020 EW3548	Watermain Cleaning and Relining - Design and Construction	<p>We will complete structural relining of 400 mm and 450 mm Cast Iron and Ductile Iron Watermain to extend its useful life by 60 years along a total length of 2100 metres. (Wortley Road from Beaconsfield to Devonshire – 1750 m of 450mm diameter watermain. Wortley Road from Base Line to Commissioners – 350 m of 450mm diameter watermain.) The project will reduce disruptive water main breaks and improve water quality for roughly 250 properties directly fed by the Wortley Road watermain. This includes mostly multi-family and single family residential properties, several small businesses including restaurants, retail, offices etc. all along Wortley Road.</p> <p><i>Change: Scope of work reduced to accommodate increased scope in Sewer Separation Planning (LON0015). Reduced overall length of Watermain being cleaned and relined. 340 metres on Wortely road will be lined from Base Line to Commissioners road and 810 metres on Colonel Talbot will be lined from Southdale to CherryGrove.</i></p>
LON-023 EW3539	Springbank Reservoirs No. 1 & 3 Protective Membrane Condition Assessment	<p>The project will assess the condition of the protective membranes on two reservoirs (Springbank Reservoirs No. 1 & 3) and identify needs for repairs or replacement. Future projects will be identified.</p> <p><i>Change; Scope of work for the successful consultant was reduced due to knowledge gained during previous work done at this facility by the same company.</i></p>

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17, 2018
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER
SUBJECT:	DINGMAN CREEK AND COLONEL TALBOT PUMPING STATIONS BUDGET ADJUSTMENTS

RECOMMENDATION

That on the recommendation of the Managing Director of Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to budget adjustments for the new Dingman Creek and Colonel Talbot Pumping Stations:

- a) Budget adjustments to advance 2024 DC funding from ES5263-Southwest Capacity Improvement and ES5264-Wonderland Pumping Station Upgrade **BE APPROVED** to fund construction of the new Dingman Creek (Wonderland) Pumping Station, in the total amount of \$19,006,387;
- b) A budget adjustment to increase 2018 DC funding for project ES5263-Southwest Capacity Improvement **BE APPROVED** in the total amount of \$5,000,000 to fund construction of the new Dingman Creek (Wonderland) Pumping Station;
- c) Budget adjustments to reallocate surplus approved DC funding from ES5256-Exeter Road Trunk Sanitary Sewer, ES5260-Lambeth Southland Servicing Solution and ES2685-Greenway Expansion and Upgrade totalling \$4,100,000 **BE APPROVED** to fund construction of the Colonel Talbot Pumping Station;
- d) the financing for the projects **BE APPROVED** in accordance with the “Sources of Financing Report” attached hereto as Appendix “A” and Appendix “B”.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
--

Civic Works Committee, May 15, 2018 – Appointment of Consulting Engineer, Design and Construction Administration Services, Dingman Creek Pumping Station Upgrades.

Civic Works Committee, April 17, 2018 – South London Wastewater Servicing Study Municipal Class Environmental Assessment: Notice of Completion.

Civic Works Committee, February 21, 2018 – Colonel Talbot Pumping Station Fee Increase.

Civic Works Committee, December 1, 2015 - Appointment of Consultant for Environmental Assessment, Design and Contract Administration for the Colonel Talbot Pumping Station & Sanitary Servicing Works.

Southwest Area Sanitary Servicing Master Plan:
<http://www.london.ca/residents/Environment/EAs/Pages/SW-Area-Sanitary-Servicing-Master-Plan.aspx>

2015-19 STRATEGIC PLAN

The 2015-2019 Strategic Plan identifies this objective under: Building a Sustainable City: 1B – Manage and improve our wastewater infrastructure and services; and 5B – Build new wastewater infrastructure as London grows.

BACKGROUND

Purpose

The purpose of this report is to seek approval to:

- advance capital project funding from 2024;
- increase project funding to accommodate the pressing need for residential and industrial wastewater servicing capacity in south London through the construction of the new Dingman Creek Pumping Station; and,
- reallocate approved capital project funding from other growth-related capital projects with surpluses to enable the construction of the Colonel Talbot Pumping Station.

Context

Both the new Dingman Creek Pumping Station and the Colonel Talbot Pumping Station are essential pieces of wastewater servicing infrastructure being constructed to facilitate residential and industrial development across the southern portions of London. The pace and extent of residential and industrial growth within south London will be significantly limited if these critical pieces of new infrastructure are not constructed in a timely manner.

DISCUSSION

Dingman Creek Pumping Station

The existing Dingman Creek (Wonderland) Pumping Station is a key component of the City's wastewater collection system and is currently the only means to convey wastewater collected from the southwest quadrant of the City, including such areas as White Oaks, Pond Mills, industrial areas south of Highway 401 and parts of Lambeth north to Southdale Road. Currently, this pumping station operates near its rated capacity on a regular basis in conjunction with the Dingman Storage Facility, which is used to reduce peak flows to the station.

A Municipal Class Environmental Assessment and the South London Wastewater Servicing Study were undertaken to examine opportunities to construct additional servicing capacity. The preferred alternative identified in the environmental assessment included the construction of a new pumping station facility at the current Dingman Creek Pumping Station site that would include preliminary treatment, septage receiving facilities, and additional peak shaving capacity. This solution replaced the need to upgrade the existing pumping station.

Dingman Creek Project Schedule and Budget Implications

The 2014 Wastewater Servicing Master Plan Update and Development Charge (DC) Background Study identified two projects in the year 2024 for capacity improvements in south London. These projects are ES5263-Southwest Wastewater Capacity Improvement and ES5264-Wonderland Pumping Station Upgrade. Due to the increased need for wastewater capacity to support new development, the requirement for

additional capacity is now identified in 2019. This need requires that the DC funding initially scheduled for 2024 be advanced to 2018 in order to meet the wastewater servicing capacity required in 2019. It is recommended to advance DC funding in ES5263-Southwest Capacity Improvement and ES5264-Wonderland Pumping Station Upgrade from 2024 to 2018 in order to support the construction of the new pumping station and force main in 2019.

This report also seeks approval to increase the budget of ES5263 in the total amount of \$5M to fund construction of the new Dingman Creek (Wonderland) pumping station. In order to advance \$19M of DC funding from 2024 to 2018 and increase the project budget by \$5M, financing adjustments are required. Previously ES5263 and ES5264 were scheduled to draw a combined total of \$12M from the City Services Sanitary Sewerage Reserve Fund in 2024. Currently this fund does not have an uncommitted balance that can support a \$12M draw in 2018. To accommodate, just over \$20M of the total \$25M project budget will require debt financing within the Sanitary Sewerage Reserve Fund, resulting in increased debt servicing costs. To help offset the impact of these budget adjustments on the reserve fund, surplus approved DC funding from ES523616-Fox Hollow Trunk Sanitary Sewer (\$200K) and ES5248-Wharncliffe Road South Trunk Sanitary (\$539K) will be released back to the City Services Sanitary Sewerage Reserve Fund through the 2018 Mid-Year Capital Monitoring Report in September 2018; these transfers will modestly strengthen the financial position of this reserve fund.

Colonel Talbot Pumping Station

In 2014, the City completed the Southwest Area Sanitary Servicing (SASS) Master Plan which developed a sanitary servicing strategy for the Lambeth, North Lambeth, North Talbot and Bostwick neighbourhoods as defined by the Southwest Area Plan (SWAP). The SASS Master Plan considered sanitary servicing strategy alternatives for growth within the study area. The SASS Master Plan recommended the construction of a new pumping station, forcemain and a trunk sewer to provide servicing for portions of southwest London. Ultimately, this station will act as a swing station, allowing flows from the southwest to be treated at either Oxford Wastewater Treatment Plant (WWTP) or Greenway WWTP (via Wonderland PS).

The project scope has increased significantly from the concepts developed during the SASS Master Plan. During the EA process, it became apparent that the high-level concept for the pumping station presented in the Master Plan needed significant changes in order to better coordinate with other work in the area, minimize impacts to residents, and maximize the opportunity to provide servicing to future developable lands. This included constructing to higher environmental protection standards and relocating new infrastructure to existing servicing corridors and easements where possible.

Colonel Talbot Project Schedule and Budget Implications

Construction of the first two phases of this five-phased project are underway. The remaining three phases are planned for later this summer and throughout 2019, with completion of all work expected by fourth quarter 2019.

This project is DC funded from projects ES2204-Colonel Talbot Pumping Station and ES2498-North Talbot Sanitary Sewer Extension. The total combined budget, set prior to completion of the Environmental Assessment Master Plan, was approximately \$10.3M. Recent estimates for work completed to date, plus future phases, totals \$14.4M leaving a current funding shortage of \$4.1M.

In order to fully fund the project, it is recommended to reallocate surplus funds to cover the projected budget shortfall for the Colonel Talbot Pumping Station. Surplus funding is available from several development charge funded wastewater projects that have been completed or are projected to be completed for a value below the 2014 Development Charges Study and approved budget estimates. It is recommended that surplus approved DC funding from ES5256-Exeter Road Trunk Sanitary Sewer (\$2.5M), ES5260-Lambeth Southland Servicing Solution (\$550K) and ES2685-Greenway Expansion and Upgrade (\$1.05M) be reallocated to fund the additional \$4.1M required to construct the Colonel Talbot Pumping Station. This DC funding is a transfer of previously approved financing for the aforementioned projects in the current budget period and does not impact future budgets nor require an increase to previously approved financing.

CONCLUSIONS

The new Dingman Creek and Colonel Talbot Pumping Stations are essential pieces of infrastructure that are needed in the short term to provide wastewater servicing capacity to a large portion of south London. The requested budget adjustments and reallocations will allow for the timely constructing of critical wastewater infrastructure that will provide reliable servicing to support growth in the City.

Acknowledgements

This report was prepared with the assistance of Kirby Oudekerk, P.Eng., Wastewater Treatment Operations Division, and Jason Davies, Financial Planning & Policy.

PREPARED BY:	REVIEWED BY:
GEORDIE GAULD DIVISION MANAGER WASTEWATER TREATMENT OPERATIONS	SCOTT MATHERS, MPA, P.ENG. DIRECTOR WATER, WASTEWATER AND TREATMENT
RECOMMENDED BY:	
KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER	

Attachment: Appendix "A" and Appendix "B" Sources of Financing

- cc: Anna Lisa Barbon, Managing Director, Corporate Services and City Treasurer, Chief Financial Officer
 Jason Davies, Manager III, Financial Planning & Policy
 Jason Senese, Manager III, Development Finance
 John Millson, Senior Financial Business Administrator

APPENDIX 'A'

#18103

Chair and Members
Civic Works Committee

July 17, 2018
(Budget Adjustments)

**RE: Dingman Creek and Colonel Talbot Pumping Stations
Capital Project ES5263 - Southwest Capacity Improvement
Capital Project ES5264 - Wonderland Pumping Station Upgrade**

FINANCE & CORPORATE SERVICES REPORT ON THE SOURCE OF FINANCING:

Finance & Corporate Services confirms that the cost of this project cannot be accommodated within the financing available for it in the Capital Works Budget and that, subject to the adoption of the recommendations of the Managing Director, Environmental & Engineering Services & City Engineer, the detailed source of financing for this project is:

ESTIMATED EXPENDITURES:	Approved Budget	Budget Adjustment	Additional Request	Revised Budget
ES5263 - Southwest Capacity Improvement				
Engineering	\$993,613	\$506,387	\$1,000,000	\$2,500,000
Construction	0	13,500,000	4,000,000	17,500,000
City Related Expenses				0
	<u>993,613</u>	<u>14,006,387</u>	<u>5,000,000</u>	<u>20,000,000</u>
ES5264 - Wonderland Pumping Station Upgrade				
Engineering	0	200,000		\$200,000
Construction		4,800,000		4,800,000
City Related Expenses				0
	<u>0</u>	<u>5,000,000</u>	<u>0</u>	<u>5,000,000</u>
NET ESTIMATED EXPENDITURES	<u>\$993,613</u>	<u>\$19,006,387</u> 1)	<u>\$5,000,000</u> 2)	<u>\$25,000,000</u>
SOURCE OF FINANCING:				
ES5263 - Southwest Capacity Improvement				
Drawdown from City Services-Sewer Reserve Fund (Development Charges)	3)	\$993,613	\$4,000,000	\$4,993,613
Debenture Quota (Serviced through City Services Sewer R.F. (Development Charges))	3&4a)		1,000,000	15,006,387
		<u>993,613</u>	<u>5,000,000</u>	<u>20,000,000</u>
ES5264 - Wonderland Pumping Station Upgrade				
Debenture Quota (Serviced through City Services Sewer R.F. (Development Charges))	3&4b)	0	5,000,000	\$5,000,000
		<u>0</u>	<u>0</u>	<u>5,000,000</u>
TOTAL FINANCING	<u>\$993,613</u>	<u>\$19,006,387</u>	<u>\$5,000,000</u>	<u>\$25,000,000</u>

- 1) The budgets for ES5263-Southwest Capacity Improvement and ES5264-Wonderland Pumping Station Upgrades is included in the 2024 proposed budget. It is 100% funded by Development Charges. There will be no impact on the rate supported budget from this revision. A budget adjustment is required in 2018 and can be accommodated by advancing the 2024 budgets of \$14,006,387 from ES5263 and \$5,000,000 from ES5264 forward to 2018. Upon Council approval of this recommendation, the 2024 forecasted budgets for both projects will be automatically revised.
- 2) Additional funding of \$5 million is required to complete all phases for the wastewater servicing capacity in south London. This can be accommodated with an additional drawdown of \$4 million from City Services-Sewer Reserve Fund and \$1 million of additional debenture quota (serviced through City Services-Sewer Reserve Fund (Development Charges)).
- 3) Development charges have been utilized in accordance with the underlying legislation and the Development Charges Background Studies completed in 2014.

Note to City Clerk:

- 4) Administration hereby certifies that the estimated amounts payable in respect of this project does not exceed the annual financial debt and obligation limit for the Municipality of Municipal Affairs in accordance with the provisions of Ontario Regulation 403/02 made under the Municipal Act, and accordingly the City Clerk is hereby requested to prepare and introduce the necessary authorizing by-laws.
 - a) An authorizing by-law should be drafted to secure debenture financing for project ES5263-Southwest Capacity Improvement for the net amount to be debentured of \$15,006,387.
 - b) An authorizing by-law should be drafted to secure debenture financing for project ES5264-Wonderland Pumping Station for the net amount to be debentured of \$5,000,000.

ms

Anna Lisa Barbon
Managing Director, Corporate Services and
City Treasurer, Chief Financial Officer

APPENDIX 'B'

#18104

Chair and Members
Civic Works Committee

July 17, 2018
(Budget Adjustment)

**RE: Dingman Creek and Colonel Talbot Pumping Stations
Capital Project ES2204 - Colonel Talbot Pumping Station
Capital Project ES2498 - North Talbot Sanitary Extension**

FINANCE & CORPORATE SERVICES REPORT ON THE SOURCES OF FINANCING:

Finance & Corporate Services confirms that the cost of this project cannot be accommodated within the financing available for it in the Capital Works Budget and that, subject to the adoption of the recommendations of the Managing Director, Environmental & Engineering Services & City Engineer, the detailed source of financing for this project is:

<u>ESTIMATED EXPENDITURES:</u>	<u>Approved Budget</u>	<u>Additional Requirement</u>	<u>1)</u>	<u>Revised Budget</u>
<u>ES2204 - Colonel Talbot Pumping Station</u>				
Engineering	\$1,136,325			\$1,136,325
Land Acquisition	637			637
Construction	5,158,434	4,100,000		9,258,434
Other City Related	2,004			2,004
	<u>6,297,400</u>	<u>4,100,000</u>		<u>10,397,400</u>
<u>ES2498 - North Talbot Sanitary Extension</u>				
Engineering	\$447,306			\$447,306
Construction	3,578,448			3,578,448
	<u>4,025,754</u>	<u>0</u>		<u>4,025,754</u>
NET ESTIMATED EXPENDITURES	<u>\$10,323,154</u>	<u>\$4,100,000</u>		<u>\$14,423,154</u>

SOURCES OF FINANCING:

<u>ES2204 - Colonel Talbot Pumping Station</u>				
Debenture By-law No. W.-5593-37	2&3)	\$6,100,000		\$6,100,000
(Serviced through City Services-Sewer Reserve Fund (Development Charges))				
Cash Recovery from Property Owners (PDC)		2,400		2,400
Other Contributions		195,000		195,000
Debenture Quota - transferred from:	1,2&3)			
ES5256-Exeter Rd Trunk Sanitary Sewer			2,500,000	2,500,000
ES5260-Lambeth Southland Servicing Solution			550,000	550,000
ES2685-Greenway Expansion and Upgrade			1,050,000	1,050,000
		<u>6,297,400</u>	<u>4,100,000</u>	<u>10,397,400</u>
<u>ES2498 - North Talbot Sanitary Extension</u>				
Drawdown from City Services-Sewer Reserve Fund (Development Charges)	2)	\$4,025,754	\$0	\$4,025,754
TOTAL FINANCING		<u>\$10,323,154</u>	<u>\$4,100,000</u>	<u>\$14,423,154</u>

- 1) The additional \$4.1 million requirement for the Colonel Talbot Pumping Station project (ES2204) is available as a transfer of debenture quota from capital projects ES5256-Exeter Rd Trunk Sanitary Sewer, ES5260-Lambeth Southland Servicing Solution and ES2685-Greenway Expansion and Upgrade. These projects are all substantially complete with surplus funding and therefore available as a source of funding for the Colonel Talbot Pumping Station project.
- 2) Development charges have been utilized in accordance with the underlying legislation and the Development Charges Background Studies completed in 2014.
- 3) **Note to City Clerk:**
The City Clerk be authorized to increase Debenture By-law No.W.5593-37 by \$9,600,000 from \$600,000 to \$10,200,000.

ms

Anna Lisa Barbon
Managing Director, Corporate Services and
City Treasurer, Chief Financial Officer

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17, 2018
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER
SUBJECT:	ADJUST 3 CONTAINER EXEMPTION COLLECTION PERIOD AND CHANGES TO COLLECTION ZONES

RECOMMENDATION

That on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer, the following actions be taken:

- a) this report **BE RECEIVED**;
- b) the 3 Container Exemption Period that follows the three day Thanksgiving weekend in October moving to the week after the four day Easter weekend **BE APPROVED**; and,
- c) the Civic Administration **BE DIRECTED** to report back with a proposed by-law to amend the Municipal Waste & Resource Materials Collection By-law (WM-12) to move the 3 Container Exemption Period that currently follows the Thanksgiving weekend to follow Easter weekend.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

The relevant reports that can be found at www.london.ca under City Hall (Meetings) are:

- Proposed Changes to the Garbage Container Limit (June 8, 2016 meeting of the Civic Works Committee (CWC), Item #15)
- Garbage Container Limits (Waste Diversion) (May 10, 2016 meeting of the Civic Works Committee (CWC) Item # 6)

COUNCIL'S 2015-2019 STRATEGIC PLAN

Municipal Council has recognized the importance of solid waste management in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)) as follows:

Building a Sustainable City

- Strong and healthy environment
- Robust infrastructure

Leading in Public Service

- Proactive financial management
- Innovative & supportive organizational practices
- Excellent service delivery

BACKGROUND

PURPOSE

The purpose of this report is to provide Committee and Council with:

- a brief analysis and staff recommendation to address the amount of garbage that may accumulate after the Easter long weekend (Deferred Matters Item #13; File # 102); and,

- adjustments to recycling and garbage pickup zones to be implemented October 1, 2018 with the new Waste Reduction & Conservation Calendar.

CONTEXT

At the April 24, 2018 meeting of Municipal Council, staff were directed as follows:

That the Civic Administration BE REQUESTED to review the 2019 waste pick up calendar and report back to the Civic Works Committee with a recommendation related to the best dates in the Spring for the unlimited container [3 Container Exemption Period] pick up.

As part of the annual review of collection operations (garbage and recycling), this report also highlights changes to a number of collection zones to ensure that routes are as balanced as possible. The review includes an examination of the tonnage collected by routes and zones, number of homes served, travel distance to the landfill/material recovery facility (MRF), completion times for the beats by season, and how the yard waste/fall leaf collection is managed.

DISCUSSION

London Garbage/Recycling Longer Collection Cycles Caused by Holidays

Council has approved four Exemption Periods to the 3 Container Limit in one calendar year. These Exemption Periods typically coincide with traditionally higher amounts of garbage being placed at the curb due to longer collection cycles near holidays and/or higher amounts of garbage due to time of year (e.g., spring cleaning). The Extended Holiday Periods and the current Exemption Periods are identified on Table 1.

Table 1: Placement of 3 Container Exemption Periods Compared to Long Collection Cycles

Extended Holiday Period	General Timeframe for 3 Container Exemption Periods (One Pickup per Zone per Period)	Comments
Christmas Day, December 25; Boxing Day, December 26	Starts December 27 with 3 Zones usually before New Year's Day and 3 zones after (a)	Likely the highest garbage producing period of the year
Good Friday, Easter Monday (dates change each year ranging from the last few days of March to late April)	Usually starts the last week of April and ends first week of May (a)	Coincides with student move-outs; traditionally viewed as 'spring cleanup'
Labour Day (in the first week of September)	Starts right after Labour Day (b)	Coincides with student move-ins
Thanksgiving Day (generally at the beginning to mid-October)	Starts right after Thanksgiving Day (b)	'Fall cleanup' before colder months

Notes:

(a) These Exemption period were added when 4 Container Limit started on October 1, 2005

(b) These Exemption periods were added when 3 Container Limit started on October 1, 2016

To address Council's recommendation to review the best dates in the spring for the unlimited container pick up, three potential changes (Table 2 – next page) were considered versus the status quo (no change).

Table 2: Potential Changes to Provide Additional Service in the Spring Including Addressing the Four Day Easter Weekend

Potential Change	Advantages	Disadvantages
1. Allow one extra container (all Zones), without charge, after four day Easter weekend	<ul style="list-style-type: none"> Provides one additional container at the second longest cycle time of the year 	<ul style="list-style-type: none"> Minor revenue loss (<\$1,000) Adds potential confusion to 3 Container Limit by allowing a 4th container for 'one time' each year
2. Move the 'spring' Exemption Period to always follow the Easter weekend	<ul style="list-style-type: none"> Provides Exemption Period at the second longest cycle time of the year 	<ul style="list-style-type: none"> Minor revenue loss (<\$1,000) Will have impact on student neighbourhoods as Exemption Period no longer reliably occurs late April/May Additional costs may result dealing with student move-outs
3. Move the Exemption Period following Thanksgiving weekend (October) to after Easter weekend (April)	<ul style="list-style-type: none"> Provides Exemption period at the second longest cycle time of the year Provides 2 Exemption periods in the 'spring cleanup' period (moves one from an underutilized period) 	<ul style="list-style-type: none"> Minor revenue loss (<\$1,000) No late season final Exemption Period (last one is at the beginning of September)
No Change to current Calendar	<ul style="list-style-type: none"> Less than 10 concerns raised per year No additional time spent by staff on this item No minor revenue loss (<\$1,000) 	<ul style="list-style-type: none"> Does not address a few concerns in the community Does not optimize a light Exemption Period in October

As part of the review, it was also identified that the Container Exemption Period that follows the Thanksgiving three day weekend was not well used by Londoners. Moving this period from the fall to the spring would assist in two ways:

- An Exemption Period could follow the Easter weekend (dates would change each year) and provide relief for the second longest pickup cycle; and
- Two Exemption Periods in the spring would assist Londoners with curbside service when garbage quantities are traditionally higher (i.e., spring cleaning).

Based on the review, City staff are recommending that the 3 Container Exemption Period that follows the three day Thanksgiving weekend in October move to the week after the four day Easter weekend.

Modifications to Some Collection Zones

The city has been divided into six curbside collection zones since 1996. Each year the zones are reviewed to ensure that the routes are as optimized as possible. Every three or four years, there is a need for major changes to the zones as some areas of the city are experiencing more new homes constructed than others. In addition, many of the new homes are on the northern side of the city and furthest from W12A Landfill and the MRF.

The proposed changes (Table 3) for 2018/2019 will come into effect October 1, 2018 when the new Waste Reduction & Conservation Calendar is in place.

In the month of September, homes that will be moved to a different Zone will receive special notification of the change. There will also be some leniency with the calendar dates to help residents adjust. Based on past experience, there is some minor disruption to Londoners, but overall the amount of time required to make the transition is not long.

Table 3: Summary of Collection Zone Changes

Zone	General Area	Overview of Change
A	West/southwest	No Change
B	North/northwest	Reduce Zone size by about 4,000 households
C	North/north central	Reduce Zone size by about 800 households
D	Northeast/east	No Change
E	South/southeast	Increase Zone size by about 2,100 households
F	South central	Increase Zone size by about 2,700 households

ACKNOWLEDGEMENTS

This report was prepared with assistance from Anne Boyd, Manager, Waste Diversion Programs and Kevin Springer, Manager, Waste Collection.

PREPARED BY:	
MICHAEL LOSEE, B.SC., DIVISION MANAGER SOLID WASTE MANAGEMENT	
PREPARED AND SUBMITTED BY:	RECOMMENDED BY:
JAY STANFORD, M.A., M.P.A. DIRECTOR, ENVIRONMENT, FLEET & SOLID WASTE	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17th, 2018
FROM:	GEOFFREY BELCH CORPORATION COUNSEL
SUBJECT	NORTEL NETWORKS LIMITED AND NAGATA AUTO PARTS CANADA CO., LTD. APPEALS TO THE ENVIRONMENTAL REVIEW TRIBUNAL CASE NO.S: 11-125/1-126

RECOMMENDATION

That, on the recommendation of Corporation Counsel, this report **BE RECEIVED** regarding the conclusion of the appeals by Nortel Networks Limited and Nagata Auto Parts Canada Co., Ltd., to the Environmental Review Tribunal from an Order of the Director, Ministry of the Environment, Order No. 3250-8J4J3G, dated July 20th, 2011 (the "Director's Order").

PREVIOUS REPORTS PERTINENT TO THIS MATTER
--

- Report from the General Manager of Environmental and Engineering Services Department and City Engineer at its meeting held on March 22, 2010
- Report from the City Solicitor's Office to the Environment and Transportation Committee at its meeting held on September 27, 2010
- Report from the City Solicitor's Office to the Built and Natural Environment Committee at its meeting held on October 17, 2011
- Confidential Report from the City Solicitor's Office to Civic Works Committee at its meeting held on January 9th, 2018.

BACKGROUND

Summary

The City was a Party to Environmental Review Tribunal (ERT) proceedings in which Nortel Networks Limited ("Nortel") and Nagata Auto Parts Canada Inc. ("Nagata") appealed the Ministry of the Environment and Climate Change ("MOECC") Director's Order against them.

Both of these appeals have now been withdrawn and the ERT proceedings are concluded. The City did not object to the appeals being withdrawn. The ERT decisions are attached to this report, and can also be found online at: <http://elto.gov.on.ca/tribunals/ert/decisions-orders/>.

Background

Summary of Director's Order

Nortel owns lands generally located at 811 Wilton Grove Road. Nagata owns lands located at 1477 Sise Road, generally to the east of the Nortel lands. The City owns lands generally to the south of these sites consisting of an open drainage ditch. Freightliner Ltd. ("Freightliner") owns land at 795 Wilton Grove Road, generally to the west of the Nortel lands. Both the Nagata lands and the Freightliner lands were at one time part of a larger Nortel site. Both properties were impacted by Nortel's operations and are contaminated by the Nortel operations.

On October 29, 2009, the Director of the MOECC confirmed an Order of the Provincial Officer dated October 7, 2009 that, amongst other things, ordered Nortel and Nagata to undertake certain preventive measures in connection with lands generally municipally located at Sise Road and Wilton Grove Road in the City of London (the "Director's Order"). The Director's Order required, amongst other things, that Nortel and Nagata prepare a work plan that included as a minimum, an assessment of the existing System, and evaluation of the potential for offsite contamination

--	--

and an assessment of the groundwater quality down-gradient to defined areas.

Summary of Appeal to Environmental Review Tribunal

Nortel and Nagata appealed the Director’s Order to the Environmental Review Tribunal (“ERT”) in or about November 17, 2009. The matter went to a pre-hearing conference before the ERT in or about March 2010. The City of London was granted participant status at the proceeding. The MOECC subsequently issued a new Order to Nortel, Nagata, Freightliner and the City, and revoked a previous Order. At the City’s request, the Tribunal granted the City Party status as it relates to Site 3 on June 17, 2016.

Companies’ Creditors Arrangement Act - Settlement Agreement – approved – MOECC and Nortel

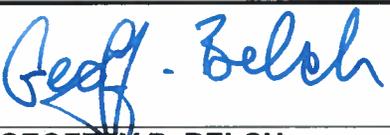
Nortel was engaged in a liquidating insolvency through *Companies’ Creditors Arrangement Act* (CCAA) proceedings. The MOECC made a claim in those insolvency proceedings; Nortel and the MOECC reached a proposed settlement of that claim. Nortel has stated that under the settlement agreement it will pay the MOECC approximately \$3,000,000. Nortel submits this is more than sufficient to address the outstanding work under the Director’s Order.

ERT Decision

The City did not object to the revocation of the Director’s Order against Nortel and Nagata, nor the withdrawal of the appeals. The City took the position that the City is relying on the MOECC’s assessment and expertise to have obtained the best CCAC settlement, and it is relying on the MOECC’s assessment and expertise to appropriately manage and monitor contaminants on the site.

The ERT, with respect to the Nortel appeal, found that the proposed withdrawal of the appeal and revocation of the Director’s Order was “consistent with the purpose and provisions of the *EPA*”, and that they are “in the public interest”. While the ERT noted concern that there are “outstanding risks to human health and the environment at the Sites”, it is “satisfied by the assurances of both of the Director’s experts and of Nortel’s expert that the funding to be provided will be sufficient to address these outstanding issues and to ensure the protection and conservation of the natural environment.”

With respect to the Nagata appeal, the ERT similarly found that the proposed withdrawal of the appeal is consistent with the purpose and provisions of the *EPA*, and that it is “in the public interest”.

PREPARED BY:	PREPARED BY:
	
GEOFFRY P. BELCH CORPORATION COUNSEL	LYNN P. MARSHALL SOLICITOR II

- cc: K. Scherr, City Engineer
 S. Mathers, Director of Water and Wastewater
 S. Chambers, Division Manager, EES – Stormwater Management

Attachments:
 ERT Orders dated February 15, 2018 and May 2, 2018

Environmental Review Tribunal
Tribunal de l'environnement



ISSUE DATE: February 15, 2018

CASE NO.:

11-125

PROCEEDING COMMENCED UNDER section 140(1) of the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended

Appellant: Nagata Auto Parts Canada Co., Ltd.
(ERT Case No. 11-125)

Appellant: Nortel Networks Limited/Corporation Nortel
Networks Limited (ERT Case No. 11-126)

Respondent: Director, Ministry of the Environment and Climate
Change

Subject of appeal: Order regarding the maintenance and operation of a
groundwater extraction and treatment system, the
name of a qualified Consultant to carry out the work
of a clean-up plan and the discharge of volatile
organic compounds, trichloroethylene and its
breakdown products from operations impacting
groundwater

Reference No.: 3250-8J4J3G

Property Address/Description: Site 1) Concession 3, PT Lot 15 RP 33R13850 Parts
3 to 5
Site 2) Concession 3, PT Lots 14 & 15 RP
33R12879 Parts 1 & 2
Site 3) Concession 3, PT Lots 14 & 15 RP
33R12879 Parts 3 to 9, and
Site 4) Concession 3, PT Lot 15 RP EER13850
Parts 6 to 8

Municipality: County of Middlesex

ERT Case No.: 11-125

ERT Case Name: Nagata Auto Parts Canada Co., Ltd. v. Ontario
(Environment and Climate Change)

Heard: January 19, 2018 by telephone conference call

APPEARANCES:

<u>Parties</u>	<u>Counsel</u>
Nortel Networks Limited/Corporation Nortel Networks Limitee	Alexandria Pike
Nagata Auto Parts Canada Co., Ltd.	Laird French
Director, Ministry of the Environment and Climate Change	Justin Jacob
Freightliner Properties Ltd.	Aaron Atcheson
The Corporation of the City of London	Geoffrey Belch and Lynn Marshall

ORDER DELIVERED BY HUGH S. WILKINS

REASONS**Background**

[1] This Order is regarding a proposed settlement of an appeal. It arises from a Director's Order from the Ministry of the Environment (now the Ministry of the Environment and Climate Change ("MOECC")) requiring work to be done at a contaminated site in the County of Middlesex ("County").

[2] Until 1994, Nortel Technology Limited/Nortel Technologie Limitee (together with its relevant successor companies referred to as "Nortel" in this Order) carried on business at a property in the County. Nortel's property was subdivided into four sites in 1997, with Nortel retaining ownership of Site 1 (Concession 3, PT Lot 15 RP 33R13850 Parts 3 to 5). Site 2 (Concession 3, PT Lots 14 and 15 RP 33R12879 Parts 1 and 2) is now owned by Nagata Auto Parts Canada Co., Ltd. ("Nagata") and is occupied by London Automotive and Manufacturing. Site 3 is owned by the Corporation of the City

of London ("City") (Concession 3, PT Lots 14 and 15 RP 33R12879 Parts 3 to 9). Site 4 is owned by Freightliner Properties Ltd. ("Freightliner") (Concession 3, PT Lot 15 RP EER13850 Parts 6 to 8). Collectively, Sites 1, 2, 3 and 4 are referred to as the "Sites" in this Order.

[3] In 1999, Nortel paid for the installation of a groundwater extraction and treatment system to address groundwater contamination on Sites 1 and 2. The system operated under Certificate of Approval No. 5590-5J9TE4. A consultant was retained to manage the system and to provide annual monitoring program reports to the MOECC.

[4] When reviewing annual reports in June 2009, technical staff at the MOECC questioned the effectiveness of the system and its ability to keep contamination from migrating from Sites 1 and 2. On October 7, 2009, Provincial Officer Don Hayes issued Provincial Officer's Order Number 6548-7WJKV4 ("Provincial Officer's Order") to Nortel, Nagata, the City and Freightliner concerning the impacts of contamination from volatile organic compounds ("VOC") and trichloroethylene ("TCE") and its breakdown products at various locations on the Sites. It required Nortel to retain a consultant to prepare a plan containing an assessment of the system's effectiveness, an evaluation of potential offsite contaminant migration, a delineation of the area, location and extent of contamination, and an assessment of groundwater quality down gradient of the areas of contamination.

[5] On October 26, 2009, Nortel requested a review of the Provincial Officer's Order by the Director. On October 29, 2009, Director's Order No. DO-6548-7WJKV4 was issued to Nortel confirming the Provincial Officer's Order in its entirety. On November 17, 2009, Nortel filed a Notice of Appeal with the Environmental Review Tribunal ("Tribunal").

[6] On July 26, 2011, the Director informed the Tribunal that she intended to revoke her Order and that she had already issued a new Order on July 20, 2011 to replace it. This new Order was Director's Order No. 3250-8J4J3G ("Director's Order"). It too was

appealed by Nortel and also by Nagata.

[7] While the 2011 Director's Order is substantially similar to the 2009 Order, it addresses additional concerns about the Sites. Among other things, the Director's Order requires that Nortel and Nagata prepare and obtain MOECC approval of a work plan for specified locations of groundwater impacts at the Sites in order to prevent or reduce the risk of discharge of contaminated groundwater into the natural environment and to prevent, decrease or eliminate any adverse effects that might result from such a discharge in, on or under the Sites.

[8] During the course of the above-noted events, Nortel obtained protection under the *Companies' Creditors Arrangement Act* ("CCAA"). Since January 14, 2009, it has been subject to the oversight of the Ontario Superior Court of Justice (Commercial List) ("Superior Court") with respect to issues regarding its insolvency.

[9] The Parties updated the Tribunal as the matter proceeded through the courts under the CCAA. Over this time period, the Tribunal convened numerous telephone conference calls ("TCCs") at which it was informed of the Parties' efforts to resolve the matters and at which procedural issues were addressed. Orders staying the Director's Order were issued and the Tribunal granted party status to the City and Freightliner.

[10] On December 18, 2017, a TCC was held at which the Director and Nortel informed the Tribunal that they had reached a settlement with respect to the Nortel appeal (Tribunal File No. 11-126). They requested the scheduling of a settlement TCC at which the proposed settlement would be presented to the Tribunal and the dismissal of that proceeding considered. As part of the proposed settlement, Nortel agreed to withdraw its appeal and the Director agreed to have the Director's Order revoked as against Nortel. The proposed settlement arises from an agreement, dated November 6, 2017, that was reached between the MOECC and Nortel with respect to the MOECC's claim in the CCAA proceedings. That agreement was approved by the Superior Court on November 28, 2017. Negotiations regarding a settlement of the Nagata appeal are

ongoing and a settlement of that appeal is not being presented to the Tribunal at this time.

[11] As required under Rule 198 of the Tribunal's *Rules of Practice* ("Rules"), Nortel notified the Tribunal and the other Parties by letter on December 19, 2017 that it proposed withdrawal of its appeal. Although the Director did not notify the Parties in writing of the proposed revocation of the Director's Order as against Nortel, Nortel did indicate the Director's support to have the Director's Order revoked in its December 19, 2017 letter and the Director did give verbal notice at the December 18, 2017 TCC to all the Parties of her intention that it be revoked.

[12] On January 19, 2018, the Tribunal convened a settlement TCC at which it considered the proposed settlement. During the call, Freightliner asked to withdraw as a party to the proceeding, which the Tribunal acknowledged. As Freightliner was not an Appellant, its withdrawal was not subject to Rules 198 to 201.

Relevant Legislation and Rules

[13] The following are the relevant provisions of the *Environmental Protection Act* ("EPA") and the Tribunal's Rules:

EPA

Purpose of the Act

- 3.(1) The purpose of this Act is to provide for the protection and conservation of the natural environment.

Tribunal's Rules

Termination of Proceedings

198. A Proponent or Applicant who proposes to withdraw an application, an Appellant who proposes to withdraw an appeal, or a Director, Risk Management Inspector or Official, Authority or

municipality who proposes to revoke a decision that is the subject of the appeal shall notify the Tribunal, other Parties, Participants and Presenters by letter. Any Party, Participant or Presenter who objects to the proposed withdrawal of an appeal or revocation, with the exception of the revocation of an order made under section 74 of the *Ontario Water Resources Act*, shall notify the Tribunal and the other Parties, Participants and Presenters within ten days of the date of the letter.

...

201. Where there has been a proposed withdrawal of an appeal as part of a settlement agreement not objected to by any Party that alters the decision under appeal, the Tribunal shall review the settlement agreement and consider whether the agreement is consistent with the purpose and provisions of the relevant legislation and whether the agreement is in the public interest. The Tribunal shall also consider the interests of Participants and Presenters. After consideration of the above factors, the Tribunal may decide to continue with the Hearing or issue a decision dismissing the proceeding.
202. Where a Director, Risk Management Inspector or Official, Authority or municipality proposes to revoke a decision that is the subject of an appeal, the Tribunal shall consider whether the proposed revocation is consistent with the purpose and provisions of the relevant legislation and whether the proposed revocation is in the public interest. The Tribunal shall also consider the interests of Parties, Participants and Presenters. After the consideration of the above factors, the Tribunal may decide to continue with the Hearing or issue a decision dismissing the proceeding.

Issues

[14] The issues to be addressed are whether the Tribunal should accept the proposed withdrawal of the appeal brought by Nortel, accept the proposed revocation of the Director's Order as against Nortel, and dismiss the corresponding proceeding under Rules 201 and 202.

Discussion, Analysis and Findings

[15] The Tribunal's Rules require the Tribunal to consider whether a proposed withdrawal of an appeal (under Rule 201) and a proposed revocation of an order (under Rule 202) are consistent with the purpose and provisions of the *EPA* and whether they are in the public interest. In these regards, the Tribunal must also consider the interests

of parties, participants and presenters. The Tribunal has the discretion either to continue with a proceeding or to dismiss it.

[16] Prior to the settlement TCC, Nortel filed the Affidavit of Leanne Burns, which was sworn on January 8, 2018. She is an environmental engineer at Golder Associates Ltd. ("Golder"). Among other tasks, Golder was retained by Nortel to undertake investigatory and risk assessment work at two critical areas on the Sites (identified by Ms. Burns as the "Swale Area" and the "Nagata Area"). In her affidavit, Ms. Burns states that Golder's risk assessments of these two areas concluded that there are no remaining unacceptable risks to human receptors with the exception of risks to onsite utility maintenance workers, landscape maintenance workers and indoor workers (in any future building) in specific areas of the Sites. She states that potentially unacceptable ecological risks are limited to onsite terrestrial plants and soil organisms. In her affidavit, Ms. Burns states that risk management measures have been identified to address these risks and that groundwater monitoring is proposed. She states that the identified risk management measures are:

- potential mitigation related to any future construction of buildings (e.g., soil vapour intrusion mitigation requirements) in specific areas of the Sites;
- implementation of a health and safety plan with respect to utility workers in specific areas of the Sites; and
- a barrier to site soils (soil or hard cap) to address risks related to landscape workers and ecological exposure in a specific area of the Sites.

Ms. Burns states that the investigations and risk assessments conducted by Golder satisfy the requirements of the Director's Order "to a significant extent" and that under the current land use, only the implementation of the proposed risk management measures and monitoring is required. In her affidavit, she confirms the sufficiency of settlement funds proposed in the proposed settlement to undertake the future risk

management measures and monitoring activities proposed in Golder's risk assessment reports.

[17] In its submissions, Nortel states that it is insolvent and its assets will be distributed in accordance with the Court's directions in the CCAA proceedings. It submits that it has spent significant resources to address the items in the Provincial Officer's Order and the Director's Order. It submits that the risk assessments that it has undertaken confirm that impacts could remain in place with limited risk and that any risks can be addressed through the management measures set forth in the risk assessment reports. It submits that the risk management measures and monitoring are the only remaining items of work to be done under the Director's Order and that they are not significant. Nortel states that under the proposed settlement it will pay the MOECC approximately \$3,000,000, which it submits is more than sufficient to address the outstanding work under the Director's Order.

[18] The Director filed affidavits sworn by Todd Fleet and Jeffrey Markle, both dated January 17, 2018. They support the proposed revocation of the Director's Order. Mr. Fleet is the District Engineer in the MOECC's London District Office and Mr. Markle is a hydrogeologist employed there. They each state that they have reviewed Golder's environmental risk assessments and are satisfied that they provide acceptable approaches to protecting the environment and human health in respect of the Sites. Mr. Fleet states that he is of the opinion that Nortel's site investigations, assessments and reports "substantially satisfy" the environmental requirements of the Director's Order and that the funds to be provided to the MOECC under the proposed settlement "are sufficient to implement the risk management measures described in the risk assessments". He states that they will enable the MOECC to ensure that groundwater and soil contamination at the Sites are addressed and that measures will be taken that will be protective of the environment and human health. Mr. Markle adopts these statements made by Mr. Fleet.

[19] The Director submits that the focus of the Director's Order was to identify the

contamination and environmental risks in specific areas of the Sites, which has been done. She submits that the proposed revocation of the Director's Order as against Nortel is a pre-condition for allowing funds to be provided to the MOECC under the proposed settlement for the purpose of addressing the environmental issues on the Sites. She submits that these funds provide for work that will ensure that the contamination that is the subject of the Director's Order will be managed and/or remediated. She submits that the proposed settlement is consistent with the polluter pays principle and that, absent the settlement, such funding may not be made available. The Director submits that the proposed revocation and appeal withdrawal support the MOECC's mandate to protect the environment and human health, are consistent with the purpose and provisions of the *EPA* and are in the public interest.

[20] None of the Parties oppose the proposed withdrawal of Nortel's appeal and the proposed revocation of the Director's Order as against Nortel. There are no participants or presenters in this proceeding.

[21] Taking into account the provisions of the Director's Order, the work that has already been completed by Nortel, Nortel's insolvency, and the funding that will be provided under the terms of the proposed settlement for further work to be undertaken at the Sites, the Tribunal finds that the proposed withdrawal of the Nortel appeal and revocation of the Director's Order as against Nortel are consistent with the purpose and provisions of the *EPA*. The Tribunal also finds that they are in the public interest. The Tribunal notes with concern that there are outstanding risks to human health and the environment at the Sites, but is satisfied by the assurances of both of the Director's experts and of Nortel's expert that the funding to be provided will be sufficient to address these outstanding issues and to ensure the protection and conservation of the natural environment.

[22] The Tribunal accepts Nortel's withdrawal of its appeal, revokes the Director's Order as against Nortel, and dismisses the proceeding in Tribunal Case No. 11-126 pursuant to Tribunal Rules 201 and 202. Tribunal Case No. 11-125 (the Nagata appeal)

remains open.

ORDER

[23] The withdrawal of Nortel's appeal is accepted and the Director's Order as against Nortel is revoked. The corresponding appeal (Tribunal Case No. 11-126) is dismissed.

*Director's Order Revoked in Part
Appeal 11-126 Dismissed*

"Hugh S. Wilkins"

HUGH S. WILKINS
MEMBER

If there is an attachment referred to in this document,
please visit www.elto.gov.on.ca to view the attachment in PDF format.

Environmental Review Tribunal

A constituent tribunal of Environment and Land Tribunals Ontario
Website: www.elto.gov.on.ca Telephone: 416-212-6349 Toll Free: 1-866-448-2248

Environmental Review Tribunal
Tribunal de l'environnement



ISSUE DATE: May 02, 2018

CASE NO.:

11-125

PROCEEDING COMMENCED UNDER section 140(1) of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended

Appellant: Nagata Auto Parts Canada Co., Ltd.
(ERT Case No. 11-125)

Appellant: Nortel Networks Limited/Corporation Nortel
Networks Limitee (ERT Case No. 11-126)

Respondent: Director, Ministry of the Environment and Climate
Change

Subject of appeal: Order regarding the maintenance and operation
of a groundwater extraction and treatment
system, the name of a qualified Consultant to
carry out the work of a clean-up plan and the
discharge of volatile organic compounds,
trichloroethylene and its breakdown products
from operations impacting groundwater
3250-8J4J3G

Reference No.: 3250-8J4J3G

Property Address/Description: Site 1) Concession 3, PT Lot 15 RP 33R13850
Parts 3 to 5
Site 2) Concession 3, PT Lots 14 & 15 RP
33R12879 Parts 1 & 2
Site 3) Concession 3, PT Lots 14 & 15 RP
33R12879 Parts 3 to 9, and
Site 4) Concession 3, PT Lot 15 RP EER13850
Parts 6 to 8

Municipality: County of Middlesex

ERT Case No.: 11-125

ERT Case Name: Nagata Auto Parts Canada Co., Ltd. v. Ontario
(Environment and Climate Change)

Heard:

March 8, 2018 by telephone conference call

APPEARANCES:

<u>Parties</u>	<u>Counsel</u>
Nagata Auto Parts Canada Co., Ltd.	Laird French
Director, Ministry of the Environment and Climate Change	Justin Jacob and Hayley Valteau (student-at-law)
The Corporation of the City of London	Lynn Marshall

DECISION DELIVERED BY HUGH S. WILKINS

REASONS

[1] This Decision addresses the remaining appeal arising from a Director's Order of the Ministry of the Environment (now the Ministry of the Environment and Climate Change ("MOECC")) requiring work to be done at contaminated sites in Middlesex County ("County"). The proceeding initially consisted of two appeals. One was brought by Nagata Auto Parts Canada Co., Ltd. ("Nagata"). It is the subject matter of the present Decision. The other was brought by Nortel Networks Limited/Corporation Nortel Networks Limitee (together with its relevant successor companies referred to as "Nortel"). It was filed as Tribunal Case No. 11-126. That appeal was dismissed by way of an Order of the Tribunal, dated February 15, 2018 ("February 2018 Order") (see: *Nagata Auto Parts Canada Co., Ltd. v Ontario (Environment and Climate Change)*, 2018 CanLII 6906).

[2] Nagata now seeks to withdraw its appeal and have the proceeding dismissed. The Tribunal held a telephone conference call ("TCC") on March 8, 2018 to hear evidence and submissions on the proposed withdrawal and dismissal. For the reasons that follow, the Tribunal accepts the proposed withdrawal and dismisses the proceeding.

Background

[3] As summarized in the February 2018 Order, Nortel carried on business at the property in question until 1994. In 1997, the property was subdivided into four sites:

- Site 1 was retained by Nortel (Concession 3, PT Lot 15 RP 33R13850 Parts 3 to 5);
- Site 2 was acquired by Nagata and is now occupied by London Automotive and Manufacturing (Concession 3, PT Lots 14 and 15 RP 33R12879 Parts 1 and 2);
- Site 3 was acquired by the Corporation of the City of London ("City") (Concession 3, PT Lots 14 and 15 RP 33R12879 Parts 3 to 9); and
- Site 4 was acquired by Freightliner Properties Ltd. ("Freightliner") (Concession 3, PT Lot 15 RP EER13850 Parts 6 to 8).

Collectively, Sites 1, 2, 3 and 4 are referred to as the "Sites" in this Decision.

[4] In 1999, Nortel paid for the installation of a groundwater extraction and treatment system to address groundwater contamination on Sites 1 and 2. The system operated under Certificate of Approval No. 5590-5J9TE4. A consultant was retained to manage the system and to provide annual monitoring program reports to the MOECC.

[5] When reviewing annual reports in June 2009, technical staff at the MOECC questioned the effectiveness of the system and its ability to keep contamination from migrating from Sites 1 and 2. On October 7, 2009, Provincial Officer Don Hayes issued Provincial Officer's Order Number 6548-7WJKV4 ("2009 Provincial Officer's Order") to Nortel, Nagata, the City and Freightliner concerning the impacts of contamination from volatile organic compounds ("VOC") and trichloroethylene ("TCE") and its breakdown products at various locations on the Sites. It required Nortel to retain a consultant to prepare a plan containing an assessment of the system's effectiveness, an evaluation of potential offsite contaminant migration, a delineation of the area, location and extent of

contamination, and an assessment of groundwater quality down gradient of the areas of contamination.

[6] On October 26, 2009, Nortel requested a review of the Provincial Officer's Order by the Director. On October 29, 2009, Director's Order No. DO-6548-7WJKV4 ("2009 Director's Order") was issued to Nortel confirming the 2009 Provincial Officer's Order in its entirety. On November 17, 2009, Nortel filed a Notice of Appeal with the Tribunal.

[7] On July 26, 2011, the Director informed the Tribunal that she intended to revoke her Order and that she had issued a new Order on July 20, 2011 to replace it. This new Order was Director's Order No. 3250-8J4J3G ("2011 Director's Order"). On July 29, 2011, Nagata appealed the 2011 Director's Order, as did Nortel.

[8] While the 2011 Director's Order is substantially similar to the 2009 Director's Order, it addresses additional concerns about the Sites. Among other things, the 2011 Director's Order requires that Nagata and Nortel prepare and obtain MOECC approval of a work plan for specified locations of groundwater impacts at the Sites in order to prevent or reduce the risk of discharge of contaminated groundwater into the natural environment and to prevent, decrease or eliminate any adverse effects that might result from such a discharge in, on or under the Sites.

[9] During the course of the above-noted events, Nortel obtained protection under the *Companies' Creditors Arrangement Act* ("CCAA"). The Parties updated the Tribunal as the matter proceeded through the courts under the CCAA. Over this time period, the Tribunal convened numerous TCCs at which it was informed of the Parties' efforts to resolve the matters and at which procedural issues were addressed. Orders staying the 2011 Director's Order were issued and the Tribunal granted party status to the City and Freightliner.

[10] On December 18, 2017, a TCC was held at which the Director and Nortel informed the Tribunal that they had reached a settlement with respect to the Nortel

appeal (Tribunal File No. 11-126). On January 19, 2018, the Tribunal convened a settlement TCC at which it accepted Nortel's withdrawal of its appeal, revoked the 2011 Director's Order as against Nortel, and dismissed Nortel's appeal. At the TCC, Freightliner withdrew as a party. The Tribunal's reasons are set out in the February 2018 Order.

[11] On March 7, 2018, Nagata informed the Tribunal that Nagata and the Director had reached a settlement of the Nagata appeal. As noted above, on March 8, 2018, the Tribunal convened a settlement TCC at which it heard evidence and submissions on the proposed withdrawal and dismissal.

Relevant Legislation and Rules

[12] The following are the relevant provisions of the *Environmental Protection Act* ("EPA") and the Tribunal's *Rules of Practice* ("Rules"):

Environmental Protection Act

Purpose of the Act

3.(1) The purpose of this Act is to provide for the protection and conservation of the natural environment.

Tribunal's Rules

Termination of Proceedings

198. A Proponent or Applicant who proposes to withdraw an application, an Appellant who proposes to withdraw an appeal, or a Director, Risk Management Inspector or Official, Authority or municipality who proposes to revoke a decision that is the subject of the appeal shall notify the Tribunal, other Parties, Participants and Presenters by letter. Any Party, Participant or Presenter who objects to the proposed withdrawal of an appeal or revocation, with the exception of the revocation of an order made under section 74 of the *Ontario Water Resources Act*, shall notify the Tribunal and the other Parties, Participants and Presenters within ten days of the date of the letter.

...

200. Where there has been a proposed withdrawal of an appeal not agreed to by all Parties, the Tribunal shall consider whether the agreement is consistent with the purpose and provisions of the relevant legislation and whether the proposed withdrawal is in the public interest. The Tribunal shall also consider the interests of Participants and Presenters. After consideration of the above factors, the Tribunal may decide to continue with the Hearing or issue a decision dismissing the proceeding.

Issues

[13] The issues to be addressed are whether the Tribunal should accept the proposed withdrawal of Nagata's appeal and dismiss the corresponding proceeding under Rule 200.

Discussion, Analysis and Findings

[14] Rule 198 of the Tribunal's *Rules* requires that an appellant who proposes to withdraw its appeal must provide 10 days' notice of its intentions by letter to the Tribunal, other parties, participants and presenters. In the present case, Nagata provided notice of its intention to withdraw its appeal on March 7, 2018. Although evidence and submissions regarding the proposed withdrawal were heard the next day by TCC, the Tribunal withheld its decision until the 10-day time period set out in Rule 198 had expired, providing parties, participants and presenters time to object. No objections were made.

[15] Although the City does not object to the proposed withdrawal, it also does not consent to it. Where there has been a proposed withdrawal of an appeal not agreed to by all Parties, the Tribunal must consider under Rule 200 whether the proposed withdrawal is consistent with the purpose and provisions of the *EPA* and whether it is in the public interest. In these regards, the Tribunal must also consider the interests of parties, participants and presenters. The Tribunal has the discretion either to continue with a proceeding or to dismiss it.

[16] The Director filed an affidavit sworn by Todd Fleet, dated January 17, 2018. Mr. Fleet is the District Engineer in the MOECC's London District Office. The affidavit states that Mr. Fleet reviewed environmental risk assessments that were conducted at the Sites by Golder Associates Ltd. ("Golder Associates") on behalf of Nortel and that he is satisfied that they provide acceptable approaches to protecting the environment and human health in respect of the Sites. Mr. Fleet states that he is of the opinion that Nortel's site investigations, assessments and reports "substantially satisfy" the environmental requirements of the 2011 Director's Order.

[17] At the March 8, 2018 TCC, Mr. Fleet was qualified as a professional engineer and provided opinion evidence on the proposed settlement. He stated that earlier that day (on March 8, 2018) he issued Provincial Officer's Order No. 6277-AWLJL6 to Nagata ("March 2018 Provincial Officer's Order") requiring it to implement risk management and monitoring measures identified in Golder Associates' risk assessments. The measures set out in the March 2018 Provincial Officer's Order include:

- risk management measures in the event of building construction on the Sites;
- a health and safety plan for the Sites;
- site monitoring and maintenance, including annual groundwater sampling and analysis; and
- the development of contingencies for groundwater, soil vapour and indoor air monitoring at the Sites.

[18] Mr. Fleet stated that the work required under the 2011 Director's Order had been substantially completed and that the March 2018 Provincial Officer's Order will ensure that the remaining contamination that is the subject of the 2011 Director's Order will be managed and/or remediated. Some of the funds provided by Nortel pursuant to the settlement of its appeal will be used for this work.

[19] The Director submits that the proposed withdrawal of the appeal supports the MOECC's mandate to protect the environment and human health, is consistent with the purpose and provisions of the *EPA* and is in the public interest.

[20] Nagata submits that Golder Associates' risk assessments provide for acceptable approaches to protecting human health and the environment at the Sites and that the March 2018 Provincial Officer's Order provides for a method and process of implementing the risk assessments' recommendations.

[21] The City does not oppose the proposed withdrawal of Nagata's appeal. There are no participants or presenters in this proceeding.

[22] Taking into account the provisions of the 2011 Director's Order, the work that has already been completed by Nortel and the issuance of the March 2018 Provincial Officer's Order requiring further work to be undertaken at the Sites in line with the recommendations in Golder Associates' risk assessments, the Tribunal finds that the proposed withdrawal of the Nagata appeal is consistent with the purpose and provisions of the *EPA*. The Tribunal also finds that it is in the public interest.

[23] The Tribunal accepts Nagata's withdrawal of its appeal and dismisses the proceeding in Tribunal Case No. 11-125 pursuant to Rule 200. This dismissal concludes the proceeding.

DECISION

[24] The withdrawal of Nagata's appeal is accepted. The appeal in Tribunal Case No. 11-125 is dismissed.

*Appeal 11-125 Withdrawn
Appeal 11-125 Dismissed*

"Hugh S. Wilkins"

HUGH S. WILKINS
MEMBER

If there is an attachment referred to in this document,
please visit www.elto.gov.on.ca to view the attachment in PDF format.

Environmental Review Tribunal

A constituent tribunal of Environment and Land Tribunals Ontario
Website: www.elto.gov.on.ca Telephone: 416-212-6349 Toll Free: 1-866-448-2248

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 17, 2018
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER
SUBJECT:	60% WASTE DIVERSION ACTION PLAN

RECOMMENDATION

That on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer, the following actions be taken:

- a) The Report **BE RECEIVED** for information;
- b) The action plan containing programs and initiatives to be phased in between 2019 and 2022 to achieve 60% waste diversion **BE APPROVED IN PRINCIPLE**;
- c) The 60% Waste Diversion Action Plan **BE RELEASED** for review and comment by the general public and stakeholders from July 25, 2017 to September 10, 2018 noting that minor changes/revisions to the report may be made prior to release to improve readability and/or layout of the report;
- d) The Civic Administration **BE DIRECTED** to consider the feedback from the consultation noted in part c), above, and submit a report to the Civic Works Committee on September 27, 2018; and,
- e) That a public participation meeting on the 60% Waste Diversion Action Plan **BE HELD** at the September 27, 2018 meeting of the Civic Works Committee.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
--

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

- Update and Next Steps – Resource Recovery Strategy and Residual Waste Disposal Strategy as part of the Environmental Assessment Process (February 7, 2017 meeting of the Civic Works Committee (CWC), Item #10)

Relevant reports that can be found at www.london.ca under City Hall (Meetings – Advisory and other Committees) include:

- Background Report #3 - Development of 60% Waste Diversion Action Plan (March 8, 2018 meeting of the Waste Management Working Group (WMWG), Item #3.3)
- Update Report #8 - Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies (January 18, 2018 meeting of the WMWG, Item #8)
- Update Report #5 - Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies (September 28, 2017 meeting of the WMWG, Item #7)
- Update Report #2 - Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies (June 14, 2017 meeting of the WMWG, Item #8)
- Update Report #1 - Resource Recovery Update (January 19, 2017 meeting of the WMWG, Item #7)

COUNCIL'S 2015-2019 STRATEGIC PLAN

Municipal Council has recognized the importance of solid waste management in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)) as follows:

Building a Sustainable City

- Strong and healthy environment
- Robust infrastructure

Growing our Economy

- Local, regional, and global innovation
- Strategic, collaborative partnerships

Leading in Public Service

- Proactive financial management
- Innovative & supportive organizational practices
- Collaborative, engaged leadership
- Excellent service delivery

BACKGROUND

PURPOSE

This report provides the Waste Management Working Group with an overview of the 60% Waste Diversion Action Plan (Action Plan) and seeks support for releasing the report for review and comment by the general public and other stakeholders.

CONTEXT

In London, more than one tonne of waste is produced annually per person. This includes waste generated at home as well as waste generated by the industrial, commercial and institutional (IC&I) sectors. About a third of this waste is diverted through numerous waste reduction, reuse, recycling and composting programs. The overall waste diversion rate for London is between 30% and 35%. The residential (household) diversion rate is 45%.

To plan for the future, the City is developing a long term Resource Recovery Strategy. The Resource Recovery Strategy involves the development of a plan to maximize waste reduction, reuse, recycling and resource recovery in an economically viable and environmentally responsible manner. The Resource Recovery Strategy includes a commitment by City council to increase the residential waste diversion rate to 60% by 2022. This commitment was made at the October 30, 2017 City Council meeting by passing the following resolution:

“The W12A Landfill expansion be sized assuming the residential waste diversion rate is 60% by 2022 noting this does not prevent increasing London’s residential waste diversion rate above 60% between 2022 and 2050.”

This 60% waste diversion goal will be included in the environmental assessment as part of the commitments made by the City. It will be a key consideration in the Ministry of the Environment, Conservation and Parks (MOECP formerly called the Ministry of the Environment and Climate Change - MOECC) approval of the environmental assessment for expansion of the W12A Landfill.

Other key documents (Appendix A) that highlight waste diversion and resource recovery and provide further context for the 60% Waste Diversion Action Plan include:

- Strategic Plan for the City of London (2015-2019)
- The London Plan (December 28, 2016)
- Provincial Government A Strategy for Waste-Free Ontario – Building a Circular Economy (February 2017)
- Provincial Government Food and Organic Waste Framework (April 2018)

Key considerations in the development of the 60% waste diversion goal were:

- A 60% diversion rate being a practical limit in Ontario at this time based on the following: many municipalities with a Green Bin program divert between 50% and

55%; about three municipalities have diversion rates around 60% (Simcoe County, Dufferin County, City of Kingston); and only the Region of York (including the City of Markham) have pushed to higher levels;

- Feedback received from residents; and
- Increasing from the current 45% diversion to 60% diversion represents a 33% improvement which is a significant undertaking.

The overall Resource Recovery Strategy will look at the longer term steps the City could take to move beyond 60% waste diversion.

DISCUSSION

60% Waste Diversion Action Plan – Proposed Actions

The 60% Waste Diversion Action Plan proposes a set of actions to achieve 60% diversion of residential waste in 2022. These actions are summarized in Table 1.

Table 1 - Proposed Actions to Achieve 60% Residential Waste Diversion

Blue Box (Blue Cart) Programs
1. Increase capture of recyclables from 63% to 75% (less placed in garbage)
New (or Expanded) Recycling Programs and Initiatives
2. Bulky Plastics <ul style="list-style-type: none"> a) Continue with existing pilot project b) Consider implementation of an expanded program once long-term, stable markets have developed
3. Carpets <ul style="list-style-type: none"> a) Wait to see if the Province develops a provincial program for carpets under the Waste-Free Ontario Act as there are limited markets for recycling carpets in the province b) If no provincial program exists by 2021, implement a pilot project
4. Ceramics <ul style="list-style-type: none"> a) Provide a drop-off location for ceramics at no cost at the City's EnviroDepots b) Ban collection of toilets at the curb
5. Clothing and Textiles <ul style="list-style-type: none"> a) Develop a textile awareness strategy to promote existing reuse opportunities for all Londoners b) Pilot depot collection at select multi-residential buildings
6. Small Metal (Small Appliances/Electrical Tools/Scrap Metal) <ul style="list-style-type: none"> a) Implement semi-annual curbside collection of small metal items b) Pilot depot collection at select multi-residential buildings
7. Furniture <ul style="list-style-type: none"> a) Begin semi-annual collection of wooden furniture b) Provide a drop-off location at W12A EnviroDepot for wooden furniture c) Ban wooden furniture from curbside garbage collection
8. Mattresses <ul style="list-style-type: none"> a) Wait to see if the Province develops a provincial program for mattresses under the Waste-Free Ontario Act as there are limited markets for recycling mattresses in the province b) If no provincial program exists by 2021, implement a pilot project
<i>(table continued)</i>

Table 1 - Proposed Actions to Achieve 60% Residential Waste Diversion

Curbside Organics Management Program
9. Implement a curbside (residential) Green Bin program 10. Implement bi-weekly (same day) garbage collection
Multi-Residential Organics Management Program
11. Implement a mixed waste processing pilot (to recover organics and other materials) on a portion of the waste from multi-residential homes
Other Organics Management Programs
12. Develop and implement a food waste avoidance strategy 13. Reduce the cost of composters at the EnviroDepots and undertake additional sale events at select community locations 14. Provide financial support to community groups or environmental organizations that want to set up a community composting program
Waste Reduction and Reuse Initiatives and Policies
15. Create a Waste Reduction and Reuse Coordinator position within the Solid Waste Management Division 16. Provide financial support for community waste reduction and reuse initiatives 17. Reduce the container limit to two or three containers per collection when the Green Bin program with bi-weekly garbage collection is operational 18. Further explore the use of clear bags for garbage collection if London does not move to a roll-out cart based garbage collection system 19. Further explore a full user pay garbage system if London moves to a roll-out cart based garbage collection system 20. Further examine other incentive and disincentive initiatives (best practices) from other municipalities (e.g., mandatory recycling by-law, reward systems, user fees, etc.) 21. Provide additional feedback approaches to residents (including how waste reduction and waste diversion are calculated when providing waste management progress reports)

List of Benefits and Costs of 60% Waste Diversion

By taking the steps outlined in this Action Plan, a number of environmental, social and financial benefits will be achieved including:

- increased waste diversion (33% more diversion),
- creation of jobs (between 125 and 170 direct and indirect; within and outside London),
- reduced greenhouse gas (GHG) emissions (about 17,000 to 27,000 tonnes per year, equivalent of removing 4,200 to 6,800 cars from the road),
- reduced landfill impacts (less odourous materials being landfilled, less traffic, etc.),
- better use of materials and resources,
- residents will feel satisfaction/pride living in an environmentally progressive community, and
- short-term landfill cost savings.

It is expected that approval of any expansion of the landfill by the MOECP would be unlikely unless the City has programs in place to achieve 60% waste diversion. If the City does not receive approval to expand the landfill, the increase in disposal costs will be significant as the City would have to export its waste to a private landfill elsewhere in Ontario. The increase in disposal costs for the City to export its waste is estimated to be approximately \$5 to \$7 million per year.

Waste Diversion Rates, Estimated Operating Costs and Schedule

The approximate cost, expected diversion rate and timeline for implementation for the proposed actions are summarized on Table 2.

Table 2 - Summary of Diversion, Estimated Operating Costs and Schedule

Program Category	Diversion Rate		Annual Estimated Operating Cost			Schedule
	Range	Likely	Range	Likely	\$/Hhld ^a	
Blue Box Recycling Improvements	1% - 3%	2%	\$0	\$0	\$0	Likely not under City control ^b in the future
New Recycling Programs and Initiatives	0.4% - 0.8%	0.6%	\$350,000 - \$550,000	\$450,000	\$2.00 - \$3.00	2019 ^c – 2021
Curbside Organics Management Program	8% - 12%	10%	\$3,900,000 - \$5,500,000	\$5,000,000	\$21.75 - \$30.50	2020 – 2022
Multi-Residential Organics Management Pilot Program	0.5% - 0.7%	0.6%	\$400,000 - \$700,000	\$500,000	\$2.25 – 4.00	2020
Other Organic Management Programs	0.3%-0.6%	0.4%	\$250,000 - \$350,000	\$300,000	\$1.50 – \$2.00	2019 ^c – 2021
Waste Reduction, Reuse Initiatives and Policies	1% – 4%	1.4%	\$150,000 - \$350,000	\$250,000	\$1.00 - \$2.00	2019 ^c – 2021
Total^d	11% - 21%	15%	\$5,050,000 - \$7,450,000	\$6,500,000 (\$36.00)	\$28.00 - \$41.50	2019^c – 2022

Notes:

a) Based on 180,000 households.

b) The provincial Waste-Free Ontario Strategy calls for a transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full extended producer responsibility (EPR) and/or individual responsibility (IPR) program by 2023. The EPR program will require producers to take full financial and operational responsibility for all Ontario municipal Blue Box programs.

c) 2019 Multi-year budget has \$140,000 assigned to new waste diversion initiatives.

d) Totals may not add due to rounding.

Green Bin Collection & Processing versus Mixed Waste Collection & Processing

A comparison of a Green Bin program versus a mixed waste processing program for managing curbside organics is presented in Table 3.

A curbside Green Bin program is recommended because more evidence is required on mixed waste processing in Ontario before the uncertainty around the technical and regulatory risks can be removed. For all the recent progress made in the field of mixed waste processing, there are as many if not more examples that highlight the challenges of this approach. For these reasons, City staff is recommending to proceed with a pilot project in the multi-residential sector and continued monitoring of mixed waste processing work undertaken in a few Ontario municipalities (e.g., Region of Peel, City of Toronto, Region of Durham, County of Oxford).

Table 3 – Comparison of Green Bin and Mixed Waste Processing Programs

Factor	Comment
Environmental	<ul style="list-style-type: none"> A mixed waste processing program potentially captures 25% to 80% more organics, reduces greenhouse gases (GHG) by a corresponding amount and opens up the possibility of producing solid recovered fuel.
Financial	<ul style="list-style-type: none"> A Green Bin program costs approximately \$30 to \$45 per year to service a curbside household (about 125,000 households; not all 180,000 households as in Table 2) compared to \$70 to \$115 per year to undertake mixed waste processing for the same households.
Social	<ul style="list-style-type: none"> Mixed waste processing program offers more convenience to residents (no change to how they manage waste).
Technical	<ul style="list-style-type: none"> The rules and regulations around mixed waste processing are evolving as current regulations do not explicitly address mixed waste processing. There is limited experience with mixed waste processing in Canada. Past experience has not been positive in Canada and parts of North America. Facilities have either been closed (e.g., Three County (Total Recycling) System, Aylmer, Ontario; Plasco Energy Group, Ottawa, Ontario; SUBBOR, Guelph, Ontario; Dongara Pellet Plant, Vaughan, Ontario; Conporec Integrated Waste Management & Composting, Sorel-Tracy, Quebec; and several facilities in the United States) or retooled away from partially mixed waste processing or similar systems to source separated systems (e.g., City of Guelph wet/dry recycling; City of Moncton wet/dry recycling). This includes a recent decision in the City of Edmonton (March 2018) not to re-open its mixed waste processing facility in favour of progressing with a source separated organics collection program. Modern mixed waste processing systems in Europe appear to have addressed many of the earlier challenges; however, the track record in North America is very limited at this time. This is expected to change in the next two to five years. Green Bin is the preferred method in the provincial Food and Organic Waste Framework and Policy Statement.

The current estimated capital cost of a Green Bin program is \$12 million with an estimated annual operating cost range from \$3.5 to \$5.0 million depending on type of Green Bin program implemented (e.g., how will pet waste, diapers, be handled, etc.) and processing costs. Previous cost estimates for a Green Bin program include: initial capital of \$12,000,000 and on-going annual operating costs of \$3,900,000. These estimates were based on a weekly collection of organics comprised of food waste and tissues/paper toweling (diapers/sanitary products would not be included) and a bi-weekly collection of garbage.

It is expected that the cost of mixed waste processing may decrease in the future because of improved technology and potential revenues from producing renewable natural gas from the organics.

In the future, a mixed waste processing program may be preferred if the technical and regulatory risks are addressed. For this reason, it is recommended that the City's Green Bin program be designed to offer the flexibility to transition to a mixed waste processing program in the future. Flexibility can be achieved by the City:

- Not building its own processing facility for the organics from the Green Bin Program or entering into a long term contract (e.g., eight or more years) for processing capacity; and,

- Having the processing contract(s) match the expected service life of the trucks (about seven years).

Financial Considerations – Funding 60% Waste Diversion

Partially Offsetting Operating Costs

As shown in Table 2, annual operating costs for the 60% Waste Diversion Action Plan will range from \$5.05 million to \$7.45 million and will depend on final program design, market competition, etc. The most likely annual operating cost is estimated to be \$6.5 million.

City staff continue to examine a number of financing approaches. The change in government in Ontario has created additional uncertainty as a number of potential revenue sources for waste diversion are on hold. Besides taxes, potential sources of revenue currently include:

- Additional recycling program costs paid by industry - potential cost savings from expected transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full EPR program paid 100% by industry by 2023. This is expected to reduce the City's current waste diversion program costs by \$1.5 to \$1.8 million. In addition there is the potential of one time capital funding for recycling infrastructure. It is not clear when full funding would be paid to the City.
- Other extended producer responsibility revenues - for items such as branded organics (e.g., diapers, soiled paper, tissues/toweling) carpets, textiles, furniture and other consumer goods. These sources could range between \$50,000 and \$150,000 per year.
- W12A Landfill levy to support diversion - a specific amount charged per tonne of garbage disposed of at the landfill that is placed in a dedicated fund for waste reduction and diversion. The amount that could be collected is based on many factors (e.g., which garbage is it applied to, what fee, etc.). Levies between \$2 and \$20 per tonne are in place in some jurisdictions. Revenue from this source could range between \$250,000 and \$1 million per year.
- Greenhouse gas offset credits associated with organics diversion – the Government of Ontario was working on introducing an emissions offset protocol for aerobic composting into Ontario's Cap & Trade program, based on an existing protocol used in Alberta (e.g., five composting projects currently listed on the Alberta Emissions Offset Registry). The value of these offsets would have been between \$100,000 and \$500,000 per year based on an assumed value of around \$20 per tonne of GHG emissions offset (and increasing over time). It is unclear at this time how/if this funding opportunity will be replaced by the current provincial government.

A summary of estimated operating costs and potential annual funding is identified on Table 4.

Table 4 – Summary of Estimated Costs and Potential Funding

	Low	High	Likely (Anticipated)
Costs (Table 2)	\$5,050,000	\$7,450,000	\$6,500,000
Revenues	\$1,800,000	\$2,950,000	\$2,000,000
Total Estimated Costs			\$4,500,000

Capital

Capital costs for the 60% Waste Diversion Action Plan will depend on program design, technology considerations, etc. The largest capital expenditure will be for the Green Bin Program. A capital cost of \$12 million for the Green Bin program had previously been estimated (January 2016, Multi-year Budget deliberations). Other waste diversion initiatives listed in the Action Plan may require new investment in the order of \$500,000 to \$3 million for a total of \$12.5 to \$15 million in capital expenditures.

It is expected that capital costs for the 60% Waste Diversion Action Plan will be funded from the existing capital budget. The current ten-year capital program includes \$35 million in 2020 for new solid waste diversion technologies to increase diversion. The funding sources for the \$35 million include Federal Gas Tax (\$16.8 million), Sanitary Landfill Reserve Fund (\$12.2 million) and debenture, if required (\$6 million). City staff will seek additional funding opportunities for capital items at the provincial and federal government level (e.g., Federation of Canadian Municipalities Green Municipal Fund).

After allocating up to \$15 million for the Action Plan, there would be \$20 million left for advanced waste diversion and/or resource recovery technologies.

Community Feedback – To the end of June 2018

The approaches used to engage the public and other stakeholders in the development of the 60% Waste Diversion Action Plan included open houses, booths at community events, interactions with City of London Advisory Committees, the WhyWaste Resource Recovery Strategy website, creation of the Waste Management Community Liaison Committee and newspaper and social media advertisements. The engagement started in April 2017.

One of the most recent engagement items was a waste diversion survey undertaken by Ipsos Public Affairs. In total, 301 London residents participated in this survey between May 31 and June 4, 2018. The precision of Ipsos online surveys is calculated via a credibility interval. In this case, the sample is considered accurate within +/- 6.4 percentage points, 19 times out of 20, had all London residents been surveyed.

Under Key Findings, Ipsos notes that “Overall, residents are supportive of the City of London’s efforts to increase its waste diversion from 45 percent to 60 percent, and are willing to pay for it and change their behaviour to assist in these efforts.” Other key findings are found in Appendix B with the complete report included in the separate 60% Waste Diversion Action Plan.

Community Engagement – An Approach for Final Feedback

The following community engagement activities are proposed for the 60% Waste Diversion Action Plan (Table 5).

Table 5 – Community Engagement for Draft 60% Waste Diversion Action Plan

Date	Event	Comments
July 17	CWC Meeting	<ul style="list-style-type: none"> • Approve in Principle Draft Action Plan to achieve 60% waste diversion by 2022 • Approve to circulate and receive feedback on the 60% Waste Diversion Action Plan
July 24	Council	
July 25 to September 10	Provide feedback opportunities on WhyWaste Resource Recovery Strategy website	<ul style="list-style-type: none"> • Advertise in the London Free Press, The Londoner and on social media
	Circulate to Community Stakeholder Groups	<ul style="list-style-type: none"> • Circulate and ask for feedback from Waste Management Community Liaison, Committee (WMCLC), W12A Landfill Public Liaison Committee, Urban League and Advisory Committee on the Environment (ACE)
	Circulate to Waste Management/ Recycling Companies	<ul style="list-style-type: none"> • Circulate and ask for feedback from local companies including Emterra, Green Valley Recycling, Miller Waste, Orgaworld, StormFisher, Try Recycling, Waste Connections and Waste Management

(table continued)

Table 5 – Community Engagement for Draft 60% Waste Diversion Action Plan

Date	Event	Comments
	Festival	<ul style="list-style-type: none"> Attend Gathering on the Green II, Sunday August 19, 2018
	Presentations	<ul style="list-style-type: none"> Present to WMCLC in early August (TBD) Present to ACE on September 5, 2018
September 27	Public Participation Meeting	<ul style="list-style-type: none"> CWC receives comments from the public and other stakeholders
January/ February 2019	CWC Meeting	<ul style="list-style-type: none"> Approval of 60% Waste Diversion Action Plan Implementation details and final cost estimates to be provided at this time
	Council	

ACKNOWLEDGEMENTS

This report was prepared with assistance from Anne Boyd, Manager, Waste Diversion Programs; Jane Kittmer, Solid Waste Planning Coordinator; and Jessica Favalaro, Water Demand Technologist.

PREPARED BY:	PREPARED BY:
WESLEY ABBOTT, P. ENG. PROJECT MANAGER SOLID WASTE MANAGEMENT	MICHAEL LOSEE, B.SC. DIVISION MANAGER SOLID WASTE MANAGEMENT
PREPARED AND SUBMITTED BY:	RECOMMENDED BY:
JAY STANFORD, M.A., M.P.A. DIRECTOR, ENVIRONMENT, FLEET & SOLID WASTE	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER

\\cfile1\esps\$\shared\administration\committee reports\cwc 2018 07 60% waste diversion action plan.docx

Appendix A Key Documents that Provide Context for the 60% Waste Diversion Action Plan

Appendix B Ipsos Public Affairs - Summary - City of London Waste Diversion survey

Attachment (full report under separate cover) 60% Waste Diversion Action Plan

APPENDIX A

Key Documents that Provide Context for the 60% Waste Diversion Action Plan

Key Documents	Extract from Document (all details in italics are verbatim – word-for-word)
Strategic Plan for the City of London (2015-2019)	<p><i>Building a Sustainable City</i></p> <p><i>1. Robust Infrastructure</i></p> <p><i>What are we doing?</i></p> <p><i>Increase efforts on more resource recovery, long-term disposal capacity, and reducing community impacts of waste management.</i></p> <p><i>How are we doing it?</i></p> <p><i>Long-Term Waste Management Plan</i></p> <p><i>Growing our Economy</i></p> <p><i>3. Local, regional, and global innovation</i></p> <p><i>What are we doing?</i></p> <p><i>Lead the development of new ways to resource recovery, energy recovery, and utility and resource optimization with our local and regional partners to keep our operating costs low and assist businesses with commercialization to help grow London’s economy.</i></p> <p><i>How are we doing it?</i></p> <p><i>London Waste to Resources Innovation Centre</i></p>
The London Plan (December 28, 2016)	<p><i>London 2035: Exciting Exceptional, Connected</i></p> <p><i>Key Directions</i></p> <p><i>Direction #4</i> <i>Become one of the greenest cities in Canada</i></p> <p>#12 <i>Minimize waste generation, maximize resource recovery, and responsibly dispose of residual waste.</i></p> <p><i>Solid Waste Management</i></p> <p><i>479_ The following policies are separated into two primary areas: Diversion and Disposal.</i></p> <p><i>>>DIVERSION - REDUCING, REUSING, RECYCLING, COMPOSTING AND RECOVERY</i></p> <p><i>480_ The City will promote the reduction, re-use, recycling, composting, and recovery of materials from solid waste, wherever possible, through the use of innovative means, new technology, conservation measures, and public education and community engagement programs.</i></p> <p><i>481_ The City will support the reduction, re-use, recycling, composting and recovery of materials by:</i></p> <ol style="list-style-type: none"> <i>1. Initiating, participating and collaborating in public education, awareness, and community engagement programs with residents, Londoners, businesses and other agencies and organizations.</i> <i>2. Collaborating with other municipalities to develop long-term strategies to reduce, reuse, recycle, and recover materials from the waste stream.</i> <i>3. Encouraging development proposals to provide adequate recycling and composting facilities, and support innovative waste collection and diversion programs.</i> <i>4. Increasing waste diversion through existing technologies and new, emerging and next-generation technologies as they become available, practical, and financially feasible for London.</i> <i>5. Exploring energy from waste opportunities.</i>

Key Documents	Extract from Document (all details in italics are verbatim – word-for-word)										
	<p>482_ <i>In addition to municipal waste management facilities within the Waste Management Resource Recovery Area Place Type, City Council will support the adequate provision of lands for solid waste diversion and resource recovery within the Heavy Industrial Place Type or on lands with specific policies.</i></p>										
<p>Provincial Government A Strategy for Waste-Free Ontario – Building a Circular Economy (February 2017)</p>	<p>Our strategy to achieve a circular economy <i>For Ontario to thrive, it must take advantage of resource recovery and waste reduction as economic drivers and factors in environmental protection. Building on our new foundation, the following outlines Ontario’s strategy to achieve its transformation to a circular economy.</i></p> <p>Vision <i>The vision for Ontario is one where waste is seen as a resource that can be recovered, reused and reintegrated to achieve a circular economy.</i></p> <p>Goals <i>The goals are to achieve a zero waste Ontario and zero greenhouse gas emissions from the waste sector.</i></p> <p><i>Zero waste Ontario is a visionary goal that provides the guiding principles needed to work toward the elimination of waste. It is a new approach that focuses on preventing waste in the first place rather than relying on traditional end-of-life waste management solutions.</i></p> <p><i>The visionary goal of eliminating greenhouse gases from the waste sector will guide our priorities for resource recovery and waste reduction. It will help the province meet its climate change commitments and build a low-carbon economy while protecting Ontario’s natural environment.</i></p> <p>Interim Diversion Goals [for combined residential, business and institutional waste streams]</p> <ul style="list-style-type: none"> <i>sets a vision and goals including interim waste diversion goals for 2020 (30%), 2030 (50%) and 2050 (80%);</i> <p><i>Municipalities will need to deliver at least 60% waste diversion.</i></p>										
<p>Provincial Government Food and Organic Waste Framework (April 2018)</p>	<p>Targets - <i>Sector-specific waste reduction and resource recovery targets are included in the table below. The persons or entities set out in column 1 must meet the targets in column 2 by the dates set out in column 2.</i></p> <table border="1"> <thead> <tr> <th>Person or entity</th> <th>Target</th> </tr> </thead> <tbody> <tr> <td><i>b) Municipalities in Southern Ontario subject to policy 4.2i</i></td> <td><i>70% waste reduction and resource recovery of food and organic waste generated by single-family dwellings by 2025</i></td> </tr> <tr> <td><i>e) Multi-unit residential buildings subject to policy 4.10</i></td> <td><i>50% waste reduction and resource recovery of food and organic waste generated at the building by 2025</i></td> </tr> <tr> <td><i>f) Industrial and commercial facilities subject to policy 4.14</i></td> <td><i>70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025</i></td> </tr> <tr> <td><i>h) Educational institutions and hospitals subject to policy 4.18</i></td> <td><i>70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025</i></td> </tr> </tbody> </table> <p>Province to ban food and organic waste from ending up in disposal sites (starting in 2022) - <i>The province will develop, consult on, and implement a food and organic waste disposal ban regulation under the Environmental Protection Act.</i></p>	Person or entity	Target	<i>b) Municipalities in Southern Ontario subject to policy 4.2i</i>	<i>70% waste reduction and resource recovery of food and organic waste generated by single-family dwellings by 2025</i>	<i>e) Multi-unit residential buildings subject to policy 4.10</i>	<i>50% waste reduction and resource recovery of food and organic waste generated at the building by 2025</i>	<i>f) Industrial and commercial facilities subject to policy 4.14</i>	<i>70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025</i>	<i>h) Educational institutions and hospitals subject to policy 4.18</i>	<i>70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025</i>
Person or entity	Target										
<i>b) Municipalities in Southern Ontario subject to policy 4.2i</i>	<i>70% waste reduction and resource recovery of food and organic waste generated by single-family dwellings by 2025</i>										
<i>e) Multi-unit residential buildings subject to policy 4.10</i>	<i>50% waste reduction and resource recovery of food and organic waste generated at the building by 2025</i>										
<i>f) Industrial and commercial facilities subject to policy 4.14</i>	<i>70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025</i>										
<i>h) Educational institutions and hospitals subject to policy 4.18</i>	<i>70% waste reduction and resource recovery of food and organic waste generated in the facility by 2025</i>										

APPENDIX B

Ipsos Public Affairs - Summary - City of London Waste Diversion Survey

Methodology

- This report presents the findings from a survey of City of London residents about their attitudes and behaviours towards waste diversion.
- In total, n=301 London residents participated in this survey between May 31 and June 4, 2018. The precision of Ipsos online surveys is calculated via a credibility interval. In this case, the sample is considered accurate within +/- 6.4 percentage points, 19 times out of 20, had all London residents been surveyed.

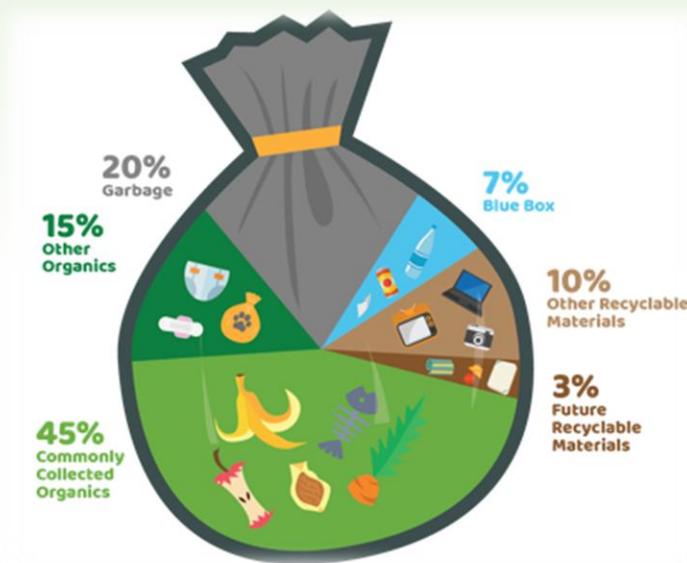
Key Findings

Overall, residents are supportive of the City of London's efforts to increase its waste diversion from 45 percent to 60 percent, and are willing to pay for it and change their behaviour to assist in these efforts.

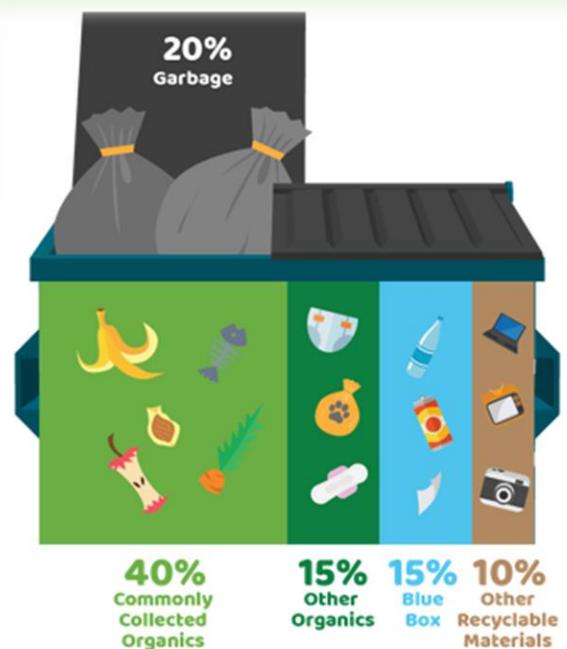
- There is an almost universal view (93%) among City of London residents that waste diversion is important to them, including more than half (53%) who say this is *very important*.
- When residents were informed that increasing the proportion of waste diversion will require additional financial investments, three-quarters (76%) say that they would be willing to pay more for increased waste diversion, with the highest proportion (47%) being prepared to pay between \$1 to \$25 per household per year.
- Residents were presented with different initiatives to help in waste diversion efforts:
 - About six in ten (57%) prefer investing significant resources on food waste avoidance initiatives, while three in ten (31%) choose a moderate program, and one in ten (12%) prefer no change.
 - When presented with options for a City-wide Organics Curbside Program, more than four in ten (43%) prefer a Curbside Green Bin Program, while one-third (32%) choose a Mixed Waste Program, and one-quarter (24%) prefer no change.
 - When presented with options for a City-wide Organics Multi-residential Program, opinion is divided with four in ten (40%) who prefer a Multi-residential Green Bin Program and a similar number (41%) choose a Mixed Waste Program. Two in ten (19%) do not want change to the current program.
 - When residents were informed that items such as electronics, scrap metal, Christmas trees and tires are no longer picked up curbside and have to be dropped off at a depot, two-thirds (65%) indicate that they are prepared to deliver more materials to drop-off depots.
 - Six in ten (60%) residents support banning additional materials from garbage pickup, such as old furniture, carpet, small appliances, mattresses, etc., if they could drop them off at a depot for recycling.

60% Waste Diversion Action Plan

What's in the garbage?



Single Family Homes



Apartments

Waste Management Working Group: July 13, 2018

Civic Works Committee: July 17, 2018

Municipal Council: July 24, 2018

Community Engagement: July 25 – September 27, 2018



getinvolved.london.ca



Table of Contents

EXECUTIVE SUMMARY	1
1) INTRODUCTION	1
1.1 Background.....	1
1.2 Council Direction.....	5
1.3 Provincial Direction.....	7
1.4 Guiding Principles.....	9
1.5 How this Report was Prepared.....	10
2) COMMUNITY ENGAGEMENT	15
2.1 OVERVIEW.....	15
2.2 Activities and Feedback to Draft 60% Waste Diversion Action plan.....	15
2.3 Public Opinion Survey.....	20
2.4 Community Engagement on the 60% Waste Diversion Action Plan.....	22
3) RESIDENTIAL GARBAGE COMPOSITION	23
3.1 Overview.....	23
3.2 Current Garbage Composition.....	23
3.3 Future Garbage Composition.....	26
4) ANALYSIS AND PROPOSED ACTIONS	27
4.1 Blue Box (Blue Cart) Program.....	27
4.2 New (or expanded) Recycling Programs and Initiatives.....	29
4.3 Curbside Organics Management Program.....	39
4.4 Multi-Residential Organics Management Program.....	48
4.5 Other New Organics Management Programs.....	50
4.6 Waste Reduction and Reuse Initiatives and Policies.....	53
4.7 Environmental, Social and Cost Summary.....	57
5) RESOURCE RECOVERY STRATEGY	65
5.1 Definitions and Terminology.....	66
5.2 Overview of Steps to Develop a Resource Recovery Strategy.....	71
5.3 Current Timetable & Proposed Direction for Resource Recovery Strategy.....	74
6) SUMMARY OF KEY IMPLEMENTATION REQUIREMENTS	75

List of Tables

Table 1 - Key Waste Diversion Programs and Initiatives.....	4
Table 2 - Guiding Principles	11
Table 3 - Community Engagement Activities.....	15
Table 4 - Feedback on First Round of Questions	17
Table 5 - Feedback on Key Second Round of Questions.....	18
Table 6 - Popular Comments and Suggestions from the Community.....	19
Table 7 - Results of Ipsos Public Affairs Survey	20
Table 8 - Community Engagement for 60% Waste Diversion Action Plan	22
Table 9 – Summary of Proposed Recycling Programs and Initiatives	29
Table 10 - Status of Potential Materials to Recycle	31
Table 11 - Summary of Mixed Waste Processing Pilot.....	42
Table 12 - Comparison of Green Bin and Mixed Waste Processing Programs	43
Table 13 - Garbage Collection Frequency for Large Municipalities with Green Bin	47
Table 14 - Green Bin Operational Decisions	47
Table 15 - Draft Green Bin Implementation Schedule	48
Table 16 - Comparison of Typical Curbside & Multi-Residential Green Bin Programs ..	49
Table 17 - Proposed Actions to Achieve 60% Residential Waste Diversion.....	58
Table 18 - Summary of Diversion, Estimated Operating Costs and Schedule	61
Table 19 - 2016 Municipal Waste Management Costs	62
Table 20 - Summary of Estimated Costs and Potential Funding	64
Table 21 - Proposed Activities & Timetable to Complete Resource Recovery Strategy	74

List of Figures

Figure 1 – Diversion Rate.....	5
Figure 2 - What Are We Throwing Away? (single family homes)	24
Figure 3 - What Are We Throwing Away? (multi-residential homes)	25
Figure 4 - Recycling Volume and Quantities	26
Figure 5 – Organics Breakdown	39

List of Appendices

Appendix A – Residential Waste Diversion Programs
Appendix B – Community Engagement Activities
Appendix C – Community Engagement Feedback
Appendix D – Ipsos Survey Report
Appendix E – Residential Waste Composition
Appendix F – Overview of Key Environmental, Social, Financial and Technical Considerations for Various Diversion Programs/Initiatives
Appendix G – Summary of Ontario Green Bin Programs
Appendix H – Mixed Waste Processing Pilot

EXECUTIVE SUMMARY

Background

In London more than one tonne of waste is produced annually per person. This includes waste generated at home as well as waste generated by businesses. About a third of this waste is diverted through numerous waste reduction, reuse, recycling and composting programs. The overall waste diversion rate for London is between 30% and 35%. The residential (household) diversion rate is 45%.

To plan for the future, the City is developing a long term Resource Recovery Strategy. The Strategy involves the development of a plan to maximize waste reduction, reuse, recycling and resource recovery in an economical viable and environmentally responsible manner. The Resource Recovery Strategy includes a commitment by City council to increase the household waste diversion rate from 45% to 60% by the end of 2022. This report, 60% Waste Diversion Action Plan, details the actions required to meet this commitment. Work on the broader Resource Recovery Strategy continues with a focus on how to go beyond 60% diversion. Both projects also address the Strategic Plan for the City of London (2015-2019) and The London Plan (2016-2035).

Development of the Action Plan draws on a variety of sources of information, experience and insight from other waste management and environmental professionals. This included a review of other Ontario and other municipalities in Canada and the United States; consideration of regional resource recovery opportunities; engagement and feedback from the public; consideration and alignment with provincial strategies, direction and legislation; updating local waste composition data for curbside and multi-residential homes; and gathering information from the waste management and resource recovery industry.

Waste Composition

Single families make up about 70% of London's households and generate about 61,000 tonnes of the residential garbage each year that is collected and landfilled. A large percentage of this waste could be composted or recycled. About 7% is material that should have been placed in the Blue Box. A further 13% of the garbage, including textiles, scrap metal, electronics, renovation materials and plastic bags, which could have been dropped off at a depot, taken to a store for recycling or are materials that have been identified in the province's Strategy for a Waste-Free Ontario for future diversion programs.

About 60% of landfill garbage is primarily organic matter and is compostable/digestible. The organics are made up of food scraps (36% of all waste), non-recyclable paper like paper towel & paper napkins, yard waste, pet waste and sanitary products (e.g., diapers). About 30% of London's households live in multi-residential (apartment/condominium) buildings and generate approximately 23,000 tonnes of garbage per year. The garbage composition from multi-residential buildings is similar to the garbage from single family households with some key differences (e.g., more recyclables, less food and organic waste).

Action Plan

This report proposes the following set of actions to achieve this goal (Table ES-1):

Table ES-1 Proposed Actions to Achieve 60% Residential Waste Diversion

Blue Box (Blue Cart) Programs
1. Increase capture of recyclables from 63% to 75% (less placed in the garbage)
New (or Expanded) Recycling Programs and Initiatives
2. Bulky Plastics <ul style="list-style-type: none"> a) Continue with existing pilot project b) Consider implementation of an expanded program once long term stable markets have developed
3. Carpets <ul style="list-style-type: none"> a) Wait to see if the Province develops a provincial program for carpets under the <i>Waste-Free Ontario Act</i> as there are limited markets for recycling carpets in the province b) If no provincial program exists by 2021, implement a pilot project
4. Ceramics <ul style="list-style-type: none"> a) Provide a drop-off location for ceramics at no cost at the City's EnviroDepots b) Ban toilets from curbside garbage collection
5. Clothing and Textiles <ul style="list-style-type: none"> a) develop a textile awareness strategy to promote existing reuse opportunities b) pilot depot collection at select multi-residential buildings
6. Small Metal (Small Appliances/Electrical Tools/Scrap Metal) <ul style="list-style-type: none"> a) implement semi-annual curbside collection of small metal items b) pilot depot collection at select multi-residential buildings
7. Furniture <ul style="list-style-type: none"> a) Begin semi-annual collection of wooden furniture b) Provide a drop-off location at W12A EnviroDepot for wooden furniture c) Ban wooden furniture from curbside garbage collection
8. Mattresses <ul style="list-style-type: none"> a) Wait to see if the Province develops a provincial program for mattresses under the <i>Waste-Free Ontario Act</i> as there are limited markets for recycling mattresses in the province b) If no provincial program exists by 2021, implement a pilot project
Curbside Organics Management Program
9. Implement a curbside Green Bin program
10. Implement bi-weekly garbage collection
Multi-Residential Organics Management Program
11. Implement a mixed waste processing pilot (to recover organics and other materials) on a portion of the waste from multi-residential homes

Table continues

Table ES-1 Proposed Actions to Achieve 60% Residential Waste Diversion

Other New Organics Management Programs
<ul style="list-style-type: none"> 12. Develop and implement a food waste avoidance strategy 13. Reduce the cost of composters at the EnviroDepots and undertake additional sale events at select community locations 14. Provide financial support to community groups or environmental organizations that want to set up a community composting program
Waste Reduction and Reuse Initiatives and Policies
<ul style="list-style-type: none"> 15. Create a Waste Reduction and Reuse Coordinator position within the Solid Waste Management Division 16. Provide financial support for community waste reduction and reuse initiatives 17. Reduce the container limit to two or three containers per collection when the Green Bin program with bi-weekly garbage collection is operational 18. Further explore the use of clear bags for garbage collection if London does not move to a roll-out cart based garbage collection system 19. Further explore a full user pay garbage system if London moves to a roll-out cart based garbage collection system 20. Further examine other incentive and disincentive initiatives (best practices) from other municipalities (e.g., mandatory recycling by-law, reward systems, user fees, etc.) 21. Provide additional feedback approaches to residents (including how waste reduction and waste diversion are calculated when providing waste management progress reports)

Benefits and Costs

By taking the steps outlined in this Action Plan, a number of environmental, social and financial benefits will be achieved. These include increased waste diversion (33% more diversion); creation of jobs (between 125 and 170 direct and indirect; within and outside London); reduced greenhouse gas emissions (equivalent of removing 4,200 to 6,800 cars from the road); reduced landfill impacts; better use of material and resources; residents will feel satisfaction or pride of living in an environmentally progressive community; and short-term landfill cost savings.

It is expected that approval of any expansion of the landfill by the Ministry of Environment, Conservation and Parks (MOECP) would be unlikely unless the City has programs in place to achieve 60% waste diversion. The increase in waste disposal costs will be significant if the City must export its waste to a private landfill elsewhere in Ontario. The increase in disposal costs for the City to export its waste is estimated to be approximately \$5 to \$7 million per year.

The approximate cost, expected diversion and timeline for implementation for the actions listed above are summarized in Table ES-2.

Table ES-2 - Summary of Diversion, Estimated Operating Costs and Schedule

Program Category	Diversion Rate		Annual Estimated Operating Cost			Schedule
	Range	Likely	Range	Likely	\$/Hhd ^a	
Blue Box Recycling Improvements	1% - 3%	2%	\$0	\$0	\$0	Likely not under City control ^b in the future
New Recycling Programs and Initiatives	0.4% - 0.8%	0.6%	\$350,000 - \$550,000	\$450,000	\$2.00 - \$3.00	2019 ^c - 2021
Curbside Organics Management Program	8% - 12%	10%	\$3,900,000 - \$5,500,000	\$5,000,000	\$21.75 - \$30.50	2020 - 2022
Multi-Residential Organics Management Pilot Program	0.5% - 0.7%	0.6%	\$400,000 - \$700,000	\$500,000	\$2.25 - 4.00	2020
Other Organic Management Programs	0.3% - 0.6%	0.4%	\$250,000 - \$350,000	\$300,000	\$1.50 - \$2.00	2019 ^c - 2021
Waste Reduction, Reuse Initiatives and Policies	1% - 4%	1.4%	\$150,000 - \$350,000	\$250,000	\$0.50 - \$2.00	2019 ^c - 2021
Total^d	11% - 21%	15%	\$5,050,000 - \$7,450,000	\$6,500,000 (\$36.00)	\$28.00 - \$41.50	2019^c - 2022

Notes:

a) Based on 180,000 households.

b) The provincial Waste-Free Ontario Strategy calls for a transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full extended producer responsibility (EPR) and/or individual responsibility (IPR) program by 2023. The EPR program will require producers to take full financial and operational responsibility for all Ontario municipal Blue Box programs.

c) 2019 Multi-year budget has \$140,000 assigned to new waste diversion initiatives.

d) Totals may not add due to rounding.

Financial Considerations – Funding 60% Waste Diversion

Potential funding sources to lower the annual cost of \$5.05 - \$7.45 million by \$1.8 to \$3 million per year are highlighted below.

Operating Costs

As shown in Table ES-2, annual operating costs for the 60% Waste Diversion Action Plan will range from \$5.05 million to \$7.45 million and will depend on final program design, market competition, etc. The most likely annual operating cost is estimated to be \$6.5 million.

City staff continue to examine a number of financing approaches. The change in government in Ontario has created additional uncertainty as a number of potential revenue sources for waste diversion are on hold. Besides taxes, potential sources of revenue currently include:

- Additional recycling program costs paid by industry - potential cost savings from expected transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full EPR program paid 100% by industry by 2023. This is expected to reduce the City's current waste diversion program costs by \$1.5 to \$1.8 million. In addition there is the potential of one time capital funding for recycling infrastructure. It is not clear when full funding would be paid to the City.
- Other extended producer responsibility revenues - for items such as branded organics (e.g., diapers, soiled paper, tissues/toweling) carpets, textiles, furniture and other consumer goods. These sources could range between \$50,000 and \$150,000 per year.
- W12A Landfill levy to support diversion - a specific amount charged per tonne of garbage disposed of at the landfill that is placed in a dedicated fund for waste reduction and diversion. The amount that could be collected is based on many factors (e.g., which garbage is it applied to, what fee, etc.). Levies between \$2 and \$20 per tonne are in place in some jurisdictions. Revenue from this source could range between \$250,000 and \$1 million per year.
- Greenhouse gas offset credits associated with organics diversion – the Government of Ontario was working on introducing an emissions offset protocol for aerobic composting into Ontario's Cap & Trade program, based on an existing protocol used in Alberta (e.g., five composting projects currently listed on the Alberta Emissions Offset Registry). The value of these offsets would have been between \$100,000 and \$500,000 per year based on an assumed value of around \$20 per tonne of GHG emissions offset (and increasing over time). It is unclear at this time how/if this funding opportunity will be replaced by the current provincial government.

A summary of estimated operating costs and potential annual funding is identified on Table ES-3.

Table ES-3 – Summary of Estimated Costs and Potential Funding

	Low	High	Likely (Anticipated)
Costs (Table ES-2)	\$5,050,000	\$7,450,000	\$6,500,000
Revenues	\$1,800,000	\$2,950,000	\$2,000,000
Total Estimated Costs			\$4,500,000

Capital

Capital costs for the 60% Waste Diversion Action Plan will depend on program design, technology considerations, etc. The largest capital expenditure will be for the Green Bin Program. A capital cost of \$12 million for the Green Bin program had previously been estimated (January 2016, Multi-year Budget deliberations). Other waste diversion initiatives listed in the Action Plan may require new investment in the order of \$500,000 to \$3 million for a total of \$12.5 to \$15 million in capital expenditures.

It is expected that capital costs for the 60% Waste Diversion Action Plan will be able to be funded from the existing capital budget. The current ten-year capital program includes \$35 million in 2020 for new solid waste diversion technologies to increase diversion. After allocating up to \$15 million for the Action Plan, there would be \$20 million left for advanced waste diversion and/or resource recovery technologies.

Additional Community Engagement

The community engagement proposed for the 60% Waste Diversion Action Plan is presented in Table ES-4.

Table ES-4 – Community Engagement for 60% Waste Diversion Action Plan

Date	Event	Comments
July 17, 2018	CWC Meeting	<ul style="list-style-type: none"> • Approve in Principle Draft Action Plan to achieve 60% waste diversion by 2022 • Approve to circulate and receive feedback on the 60% Waste Diversion Action Plan
July 24	Council	
July 25 to September 10	Provide feedback opportunities on WhyWaste Resource Recovery Strategy website	<ul style="list-style-type: none"> • Advertise in the London Free Press, The Londoner and on social media
	Circulate to Community Stakeholder Groups	<ul style="list-style-type: none"> • Circulate and ask for feedback from Waste Management Community Liaison, Committee (WMCLC), W12A Landfill Public Liaison Committee, Urban League and Advisory Committee on the Environment (ACE)

Table ES-4 – Community Engagement for 60% Waste Diversion Action Plan

Date	Event	Comments
	Circulate to Waste Management/ Recycling Companies	<ul style="list-style-type: none"> • Circulate and ask for feedback from local companies including Emterra, Green Valley Recycling, Miller Waste, Orgaworld, StormFisher, Try Recycling, Waste Connections and Waste Management
	Community Festival	<ul style="list-style-type: none"> • Attend Gathering on the Green II, Sunday August 19, 2018
	Presentations	<ul style="list-style-type: none"> • Present to WMCLC in early August (TBD) • Present to ACE on September 5, 2018
September 27	Public Participation Meeting	<ul style="list-style-type: none"> • CWC receives comments from the public and other stakeholders
January/ February 2019	CWC Meeting	<ul style="list-style-type: none"> • Approval of 60% Waste Diversion Action Plan • Implementation details and final cost estimates to be provided at this time

This page has intentionally been left blank

1) INTRODUCTION

1.1 BACKGROUND

General

In London more than one tonne of waste is produced annually per person. This includes waste generated at home as well as waste generated by businesses. About a third of this waste is diverted through numerous waste reduction, reuse, recycling and composting programs. The overall waste diversion rate for London is between 30% and 35%. The residential (household) diversion rate is 45%.

To plan for the future, the City is developing a long term Resource Recovery Strategy. The Resource Recovery Strategy involves the development of a plan to maximize waste reduction, reuse, recycling and resource recovery in an economically viable and environmentally responsible manner.

The Resource Recovery Strategy will identify:

- areas of continuous improvement to maximize waste diversion and resource recovery including increasing the current London household waste diversion rate to 60% by the end of 2022 from the current rate of 45%;
- opportunities for advanced resource recovery and increased waste diversion through new, emerging and next generation technologies and where these technologies may play a role in London and area;
- areas to reduce or maintain current costs of City programs;
- ways in which to support local job creation efforts;
- ways in which to maximize program convenience to Londoners; and,
- methods to align with Provincial direction and the *Waste Free Ontario Act, 2016*.

This report addresses the portion of the Resource Recovery Strategy dealing with increasing London's household waste diversion rate to 60% by the end of 2022.

60% Waste Diversion Goal for Household Waste

- Was approved by City Council in the Fall 2017
- Consistent with Waste-Free Ontario Strategy
- Considered practical limit for a large Ontario municipality
- Average diversion rate for large municipalities in Ontario with a Green Bin was 53% in 2016 (Resource Productivity & Recovery Authority)
- Three municipalities have a diversion rate of about 60% (Simcoe County, Dufferin County, City of Kingston) and only the Region of York (including Markham at 71%) has exceeded 60%

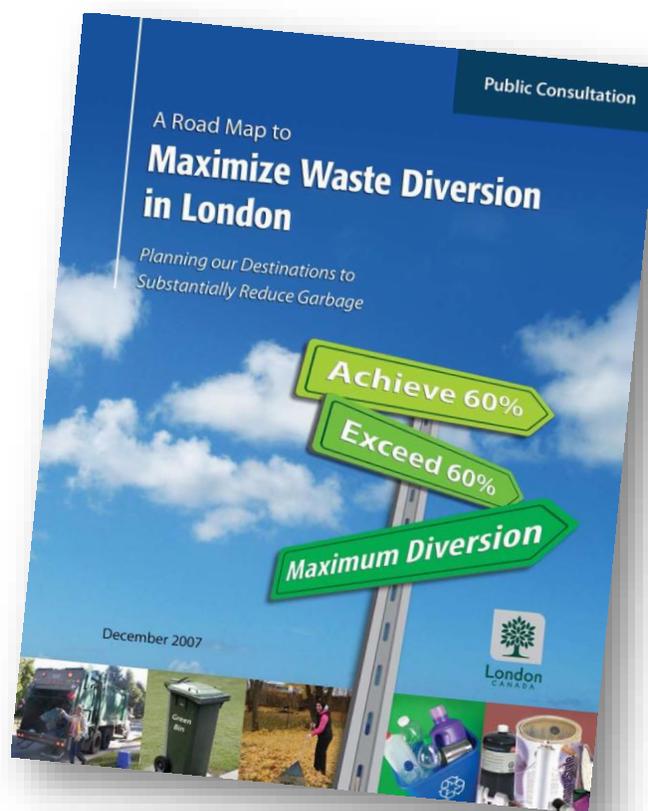
Increasing waste diversion is consistent with the *Strategic Plan for the City of London (2015 - 2019)* goals of “Building a Sustainable City” and Growing our Economy and *The London Plan (December 28, 2016)* direction to “Become one of the greenest cities in Canada” which includes “Minimize waste generation, maximize resource recovery, and responsibly dispose of residual waste”.

Previous Planning Exercises

Since the mid-1990s, the City’s Waste Management System has been based on a Continuous Improvement Strategy (management philosophy) and Sustainable Waste Management. This strategy, which was approved by Municipal Council in 1997, has been the foundation for going forward. It uses an active framework that recognizes integrated waste management as an important environmental service in the community. By effectively allocating financial and human resources, this environmental service contributes to the protection of human health and the environment. By supporting an integrated system of waste reduction (i.e., not producing waste in the first place), recovery of materials that can be recycled and composted, and ensuring that what remains is handled in an environmentally responsible manner, this strategy provides the mechanism for continuous improvement of the waste management system. Since this strategy was approved over twenty years ago, London has steadily increased its performance to the current level of 45% waste diversion while having one of the lowest total waste management costs in Ontario for urban centres (based on statistics compiled by the Municipal Benchmarking Network Canada).

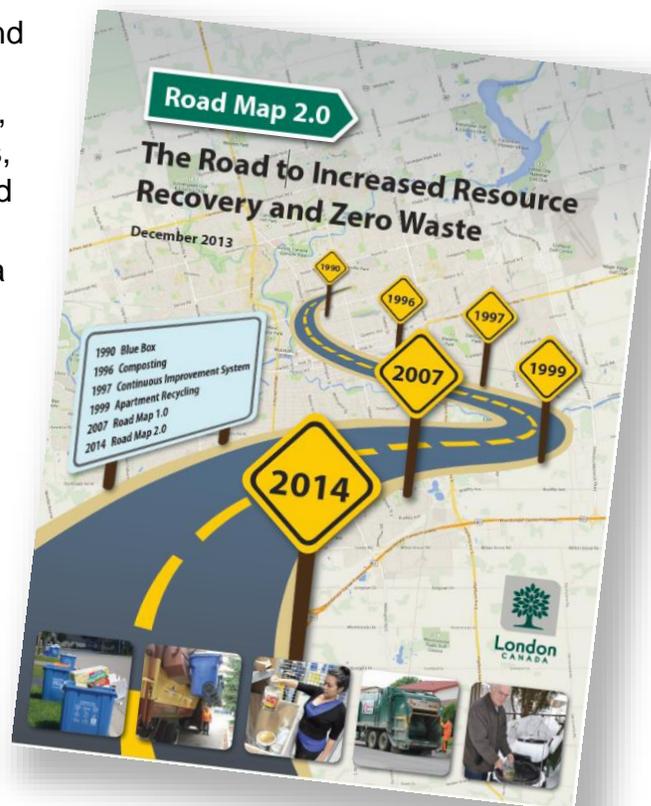
The 60% Waste Diversion Action Plan builds on previous waste diversion planning documents; *A Road Map to Maximize Waste Diversion in London (2007)* and *Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste (2013)*.

A Road Map to Maximize Waste Diversion in London (2007) outlined a number of options to achieve higher diversion rates and asked for feedback from the public. Diversion measures implemented as a result of this process included new materials added to the Blue Box program (e.g., milk and juice cartons, drinking boxes, mixed plastics, steel paint cans, aerosol cans and cardboard cans), new materials



added to the EnviroDepots (e.g., tires, appliances, fluorescent tubes and bulbs), second Blue Box provided to single family homes, reusable blue bags provided to apartment units, more blue carts supplied to apartment buildings, expansion of the Oxford EnviroDepot, increased days open at the Household Special Waste depot from one to five days and completion of a Green Bin pilot study.

Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste (2013) also outlined a number of options to achieve higher diversion rates and asked for feedback from the public. Diversion measures implemented as a result of this process included the reduction in the garbage container limit from 4 to 3 containers per collection, construction of a fourth EnviroDepot to serve the north end of the city, new materials added to the Blue Box program (mixed polycoat), completed community composting pilot projects, completed food reduction awareness pilot projects and instituted the curbside collection and composting of Christmas trees.



Current Diversion

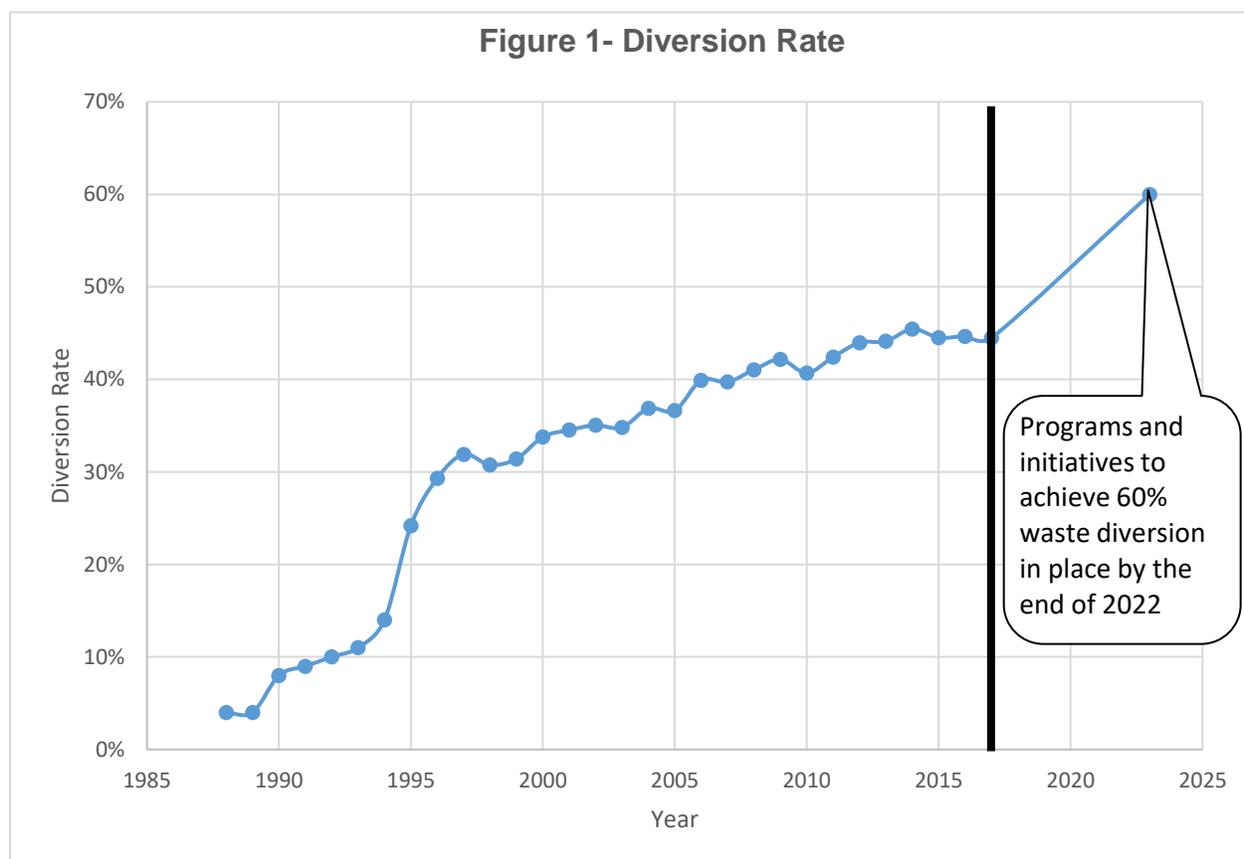
Since 1990 with the introduction of the curbside Blue Box program, the City has continuously implemented new programs and initiatives and improved existing programs to help residents divert waste away from disposal. Key changes are listed in Table 1 and their effect on waste diversion is shown in Figure 1.

As shown in Figure 1, London's average household diversion rate was 45% in 2017. This was achieved by diverting approximately 72,000 tonnes of materials through various existing recycling, reuse, reduction and composting programs. Approximately 67,000 tonnes were diverted from single family (curbside) homes for a waste diversion rate of 50% while approximately 5,000 tonnes were diverted from multi-residential (apartment) homes for a waste diversion rate of 20%.

In 2017, 23,000 tonnes (15% of all waste) of Blue Box recyclables, 36,000 tonnes (22% of all waste) of yard waste organics and 13,000 (8% of all waste) from other diversion programs (e.g., electronics recycling, tire recycling, etc.) were diverted from disposal. A detailed breakdown of the amount diverted and a description of these programs is presented in Appendix A.

Table 1 - Key Waste Diversion Programs and Initiatives

Year	Program/Initiatives
1990	<ul style="list-style-type: none"> • Curbside Blue Box pickup introduced city-wide
1994	<ul style="list-style-type: none"> • Appliances banned from garbage collection
1995	<ul style="list-style-type: none"> • Added new items to Blue Box • Grass clippings banned from garbage collection
1996	<ul style="list-style-type: none"> • Curbside pickup of yard materials (waste)
2000	<ul style="list-style-type: none"> • Multi-Residential Building Recycling Program started
2002	<ul style="list-style-type: none"> • Electronics Recycling introduced at the EnviroDepots
2003	<ul style="list-style-type: none"> • Public Space Recycling started
2005	<ul style="list-style-type: none"> • Renovation Material accepted for recycling at the EnviroDepots
2006	<ul style="list-style-type: none"> • 4 Container Limit for Garbage introduced for curbside collection
2009	<ul style="list-style-type: none"> • Added more items to Blue Box Program • Tires, propane tanks and batteries accepted for recycling at the EnviroDepots
2010	<ul style="list-style-type: none"> • Fluorescent tubes and bulbs accepted for recycling at the EnviroDepots
2011	<ul style="list-style-type: none"> • Added more items to Blue Box Program • Provided residents with a second larger Blue Box • Completed construction and started operations of London Regional Materials Recovery Facility (MRF), increasing scale, efficiency and recovery of collected Blue Box Materials • Started signing agreements with a number of neighbouring municipalities to send recyclables to the MRF
2014	<ul style="list-style-type: none"> • Added more items to the Blue Box Program
2016	<ul style="list-style-type: none"> • 3 Container Limit for Garbage introduced for curbside collection
2017	<ul style="list-style-type: none"> • Curbside Christmas Tree collection for composting started



1.2 COUNCIL DIRECTION

The Resource Recovery Strategy includes a commitment by City council to increase the residential waste diversion rate to 60% by 2022. This commitment was made at the October 30, 2017 City Council meeting by passing the following resolution:

“The W12A Landfill expansion be sized assuming the residential waste diversion rate is 60% by 2022 noting this does not prevent increasing London’s residential waste diversion rate above 60% between 2022 and 2050.”

Other key documents that highlight waste diversion and resource recovery and provide further context for the 60% Waste Diversion Action Plan include:

- Strategic Plan for the City of London (2015-2019) – next page
- The London Plan (December 28, 2016) – next page

The 60% waste diversion goal will be included in the environmental assessment as part of the commitments made by the City. It will be a key consideration in the Ministry of the Environment, Conservation and Parks (MOECP formerly called the Ministry of the Environment and Climate Change - MOECC) approval of the environmental assessment for expansion of the W12A Landfill.

City Council – Strategic Plan (2015-2019) and The London Plan

[Extracts from]

Strategic Plan for the City of London (2015-2019)

Building a Sustainable City

1. Robust Infrastructure

What are we doing?

Increase efforts on more resource recovery, long-term disposal capacity, and reducing community impacts of waste management.

How are we doing it?

Long-Term Waste Management Plan

Growing our Economy

3. Local, regional, and global innovation

What are we doing?

Lead the development of new ways to resource recovery, energy recovery, and utility and resource optimization with our local and regional partners to keep our operating costs low and assist businesses with commercialization to help grow London's economy.

How are we doing it?

London Waste to Resources Innovation Centre

[Extracts from]

The London Plan

London 2035: Exciting Exceptional, Connected

Key Directions

Direction #4 *Become one of the greenest cities in Canada*

#12 *Minimize waste generation, maximize resource recovery, and responsibly dispose of residual waste.*

Solid Waste Management

479_ The following policies are separated into two primary areas: Diversion and Disposal.

>>DIVERSION - REDUCING, REUSING, RECYCLING, COMPOSTING AND RECOVERY

480_ The City will promote the reduction, re-use, recycling, composting, and recovery of materials from solid waste, wherever possible, through the use of innovative means, new technology, conservation measures, and public education and community engagement programs.

continued

City Council – Strategic Plan (2015-2019) and The London Plan

481_ The City will support the reduction, re-use, recycling, composting and recovery of materials by:

- 1. Initiating, participating and collaborating in public education, awareness, and community engagement programs with residents, Londoners, businesses and other agencies and organizations.*
- 2. Collaborating with other municipalities to develop long-term strategies to reduce, reuse, recycle, and recover materials from the waste stream.*
- 3. Encouraging development proposals to provide adequate recycling and composting facilities, and support innovative waste collection and diversion programs.*
- 4. Increasing waste diversion through existing technologies and new, emerging and next-generation technologies as they become available, practical, and financially feasible for London.*
- 5. Exploring energy from waste opportunities.*

482_ In addition to municipal waste management facilities within the Waste Management Resource Recovery Area Place Type, City Council will support the adequate provision of lands for solid waste diversion and resource recovery within the Heavy Industrial Place Type or on lands with specific policies.

1.3 PROVINCIAL DIRECTION

Waste-Free Ontario Strategy

The Province approved a road map for resource recovery and waste reduction known as the *Strategy for a Waste-Free Ontario: Building the Circular Economy* in February 2017. The Strategy:

- has a long term goal of zero waste and zero greenhouse gas emissions from the waste sector,
- sets interim waste diversion goals for 2020 (30%), 2030 (50%) and 2050 (80%) for combined waste streams; and,
- lists a number of objectives and actions to achieve long term and interim goals.

One of the key proposed actions was to make companies that produce or import products responsible for managing their end-of-life requirements. This is called full Extended Producer Responsibility (EPR). Initially EPR will be applied to products and packages that have existing mandated recycling programs such as tires, municipal hazardous and

special waste, electronics and Blue Box materials. Other materials such as carpets, mattresses and furniture will be considered in the future. A second key proposed action was the development of a *Food and Organic Waste Action Plan* by the Province which will contain actions directed at reducing and diverting food and organic waste away from disposal facilities. The complete Waste-Free Ontario Strategy can be found at: www.ontario.ca/page/strategy-waste-free-ontario-building-circular-economy.

Full EPR and the Blue Box Program

The Waste-Free Ontario Strategy calls for a transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full EPR program by 2023. The EPR program will require producers to take full financial and operational responsibility for all Ontario municipal Blue Box programs.

Current Blue Box Funding

- ✓ Net cost of the Blue Box program split approximately 50/50 between municipalities and industry.
- ✓ In 2017 London received \$3.1 million from industry funding to cover operating and long term capital costs of \$6.2 million.

Industry and municipalities have been working on a transition plan (known as the amended Blue Box Program Plan) to gradually shift the full financial and operational responsibility of the Blue Box Program to industry. This transition plan, prepared by Stewardship Ontario (i.e., businesses responsible for items collected in the Blue Box) is expected to establish goals and targets aimed at improving environmental performance and program experience for Ontario residents by:

- Including new materials;
- Setting a general provincial capture rate of 75% of Blue Box materials (currently 63% of Blue Box materials are captured province wide);
- Looking at how to develop end-markets and collection systems for difficult to recycle materials (e.g., chip bags); and
- Standardizing the program across the province to attempt to achieve a consistent experience for all Ontario residents.

Details of the proposed plan can be found at rpra.ca/amended-blue-box-program. The transition plan is currently on hold until further details are provided by Stewardship Ontario, Resource Productivity & Recovery Authority (RPRA), and the Ministry of the Environment, Conservation and Parks (MOECP) (formerly the Ministry of the Environment and Climate Change).

Food and Organic Waste Action Plan

The Strategy for a Waste-Free Ontario called for implementation of an action plan to reduce the volume of food and organic wastes going to landfill. This resulted in development of the Food and Organic Waste Framework which was released on April 30, 2018.

Highlights of the Framework include:

- Ontario Food Recovery Hierarchy that consists of the following steps in order of importance:
 1. Reduce: prevent or reduce food and organic waste at the source.
 2. Feed People: safely rescue and redirect surplus food before it becomes waste.
 3. Recover Resources: recover food and organic waste to develop end-products for a beneficial use.
- Organizations (entities) identified must meet the targets assigned to them.
- A 70% target for waste reduction and resource recovery of food and organic waste for municipalities (like London), educational institutions and hospitals by 2025.
- A 50% target for waste reduction and resource recovery of food and organic waste for multi-residential buildings by 2025.
- Larger retail shopping establishments, office buildings, restaurants, hotels and manufacturing establishments are responsible for having source separated food and organic waste programs by 2025.

Food and Organics Waste Framework

The Framework consists of two complementary components:

- ✓ *Food and Organic Waste Action Plan*, which outlines strategic commitments to be taken by the province to address food and organic waste.
- ✓ *Food and Organic Waste Policy Statement*, which provides direction to the province, municipalities, producers, businesses and others to further the provincial interest in waste reduction and resource recovery as it relates to food and organic waste.

The complete Food and Organic Waste Framework can be found at:

www.ontario.ca/page/food-and-organic-waste-framework

1.4 GUIDING PRINCIPLES

Guiding principles have been developed by the City and approved by City Council to direct the development of the Resource Recovery Strategy and the 60% Waste Diversion Action Plan.

Over the last ten years, there have been numerous community engagement activities with respect to solid waste management in London including:

- 2006 to 2009 – W12A Landfill Area Plan and W12A Landfill Site Community Enhancement and Mitigative Measures Program
- 2007 – *A Road Map to Maximize Waste Diversion in London*
- 2013 – *Road Map 2.0: The Road to Increased Resource Recovery and Zero Waste (and the Interim Waste Diversion Plan 2014 – 2015)*
- 2014 – Public Feedback on Different Garbage and Recycling Collection Frequency Schedules
- 2015 to 2016 – Streamlined EA (Environmental Screening) for Waste Disposal regarding service area expansion
- 2016 – Garbage Container Limits

Based on these previous community engagement activities and ongoing input received from City Council, a number of Council Advisory Committees, community and business groups, and the W12A Landfill Public Liaison Committee (PLC), the eleven guiding principles (Table 2) were identified that reflect community values, concerns and priorities at this point in time.

Community and stakeholder input on the guiding principles was completed as part of the community engagement processes. Various community engagement tools (e.g., traditional media, social media, getinvolved.london.ca website, the City's website, open houses, etc.) were used and the final guiding principles were approved in October 2017.

All guiding principles received general support from the public with the following ones receiving the most support:

- Make waste reduction the first priority
- Be socially responsible
- Ensure financial sustainability

1.5 HOW THIS REPORT WAS PREPARED

The 60% Waste Diversion Action Plan outlines the steps that the City and residents of London will need to take in order to reach 60% waste diversion by the end of 2022. The Action Plan is part of a broader Resource Recovery Strategy. Both projects are being led by City staff with most reports prepared internally. Technical expertise has been obtained in areas where City staff have less familiarity and/or additional advice is key.

Both projects draw on a variety of sources of information, experience and insight from others in the activity areas listed below. It is important to note that many of these initiatives are ongoing as the fields of waste diversion, resource recovery and waste management continue to evolve.

Table 2 - Guiding Principles

<p><i>Be Socially Responsible</i> – Develop socially acceptable and fair solutions that minimize social impacts, encourage participating and maximize social benefits for residents and businesses and take into account input from residents and businesses.</p>
<p><i>Ensure Financial Sustainability</i> – Develop financially sustainable solutions that are easy and affordable to maintain by current and future generations and also help to stimulate economic growth within the community.</p>
<p><i>Ensure Responsibility for Waste Management</i> – Waste management is a fundamental service provided by municipal governments. London should manage residential waste and resources generated within its boundaries. London should ensure that local businesses have access to competitive resource recovery and residual waste disposal options.</p>
<p><i>Ensure Impacts of Residual Waste Disposal are Minimized</i> – Waste disposal facilities must meet, and if possible, exceed all applicable regulatory standards. London will make all reasonable efforts to reduce and address negative effects of any future residual waste disposal facility through proper design and operation of the facility, as well as providing appropriate mitigation measures to the surrounding community.</p>
<p><i>Implement more Resource Recovery Solutions</i> – Residual waste needs to be minimized and any waste that is generated needs to be treated as a resource, when practical. Resource recovery includes reuse, recycling, composting, anaerobic digestion and waste conversion to create energy and energy products. Resource recovery will balance environmental, social and financial needs along the road to a waste-free Ontario in the future.</p>
<p><i>Make the Future System Transparent</i> – Future decisions on the implementation of the Resource Recovery Strategy and Residual Waste Disposal Strategy will continue to be open, accessible, based on best practices and facts, and follow the Corporation of the City of London by-laws, policies and practices to find solutions.</p>
<p><i>Make Waste Reduction the First Priority</i> – The City’s first goal is to reduce the amount of material being generated by residents and businesses that requires management (e.g., encourage food waste avoidance, composting at home, local policies to encourage waste reduction, supporting producer responsibility and other provincial and federal programs).</p>
<p><i>Prioritize the Community’s Health and Environment</i> – The health of London’s residents and the environment is a priority in decision-making to minimize negative impacts and to maximize the benefits.</p>
<p><i>Support Development of Business (contractual) Partnerships</i> – Working together with the private sector will ensure that roles, responsibilities and skills are assigned appropriately such that municipal resources are maximized and the best opportunities for London and potential partners are created.</p>
<p><i>Support Development of Community Partnerships</i> – Working together with local community groups and organizations will help London reach its waste diversion goals and maximize resource recovery more effectively and efficiently.</p>
<p><i>Work to Mitigate Climate Change Impacts</i> – To reduce the impact on climate change London will identify, assess and implement solutions that reduce GHG emissions associated with its waste management system.</p>

1. Preliminary Review of Potential Programs, Initiatives and Technologies

Preliminary review of potential programs, initiatives and technologies to develop a long list of waste diversion programs, initiatives and technologies that required further investigation. The Internet contains numerous municipal-led and/or consultant-led waste diversion strategies including background research.

2. (Ongoing) Review of Other Ontario Municipalities

A comprehensive review of waste diversion programs/initiatives in other large Ontario municipalities, other cities in Canada and a few cities in the United States was undertaken. City staff have many direct municipal contacts in Ontario municipalities and other cities in Canada that help to obtain important details. Staff are actively involved in the following associations:

- Regional Public Works Commissioners of Ontario (RPWCO)
- Municipal Resource Recovery & Research Collaborative (M3RC) including representatives from Association of Municipalities of Ontario (AMO), Municipal Waste Association (MWA), City of Toronto and RPWCO
- Ontario Waste Management Association (OWMA)
- Canadian Biogas Association (CBA)

3. (Ongoing) Consideration of Regional Resource Recovery Opportunities

In 2017, the City canvassed nearby municipalities (Elgin County, Huron County, Lambton County, Middlesex County, Oxford County and Perth County) responsible for waste management to determine their interest in using any future resource recovery facility(ies). All municipalities expressed an interest in being included in discussions about any new resource recovery facilities and indicated they would consider using the facility depending on the cost. The potential for a regional facility may make it possible to consider technologies that require larger waste quantities in order to be economically feasible.

4. (Ongoing) Community Feedback

Residents had a number of opportunities to provide feedback on what should be included in the Action Plan (Chapter 2.0). Information and feedback has also been sought from various City advisory committees and the Waste Management Community Liaison Committee.

5. (Ongoing) Alignment with Provincial Strategies and Legislation

Development of the Action Plan aligns with the provincial *Strategy for a Waste-Free Ontario: Building the Circular Economy* as well as new provincial waste management planning initiatives including the *Proposed Food and Organic Waste Framework* and the *Amended Blue Box Program Plan*.

6. Comparative Analysis

A comparative analysis of the potential programs/initiatives was completed looking at environmental (diversion rate, greenhouse gas reduction benefits); social (public support, resident benefits/issues); financial (costs, revenue) and technical (collection/processing issues, stability of end markets, proven technology) considerations.

7. (Ongoing) Consideration of Learnings from the Mixed Waste Processing Working Group Formed in early 2017, the Region of Peel is the coordinator of a Mixed Waste Processing Working Group comprised of eight Ontario municipalities representing about half of Ontario's population. The Working Group shares updates, research results, Committee/Council reports, site visit experience and related operational experiences. Members (and estimated 2017 population) currently include:

City of London (380,000)	Region of Peel (1,400,000)	Region of Waterloo (538,000)
Region of Niagara (450,000)	County Simcoe (306,000)	Region of York (1,112,000)
County of Oxford (111,000)	City of Toronto (2,800,000)	

8. (Ongoing) Consideration of learnings from London Waste to Resources Innovation Centre

Input and advice acquired through the working relationships established as part of the Innovation Centre. The primary goals of the Innovation Centre are to:

- build on the existing foundation of traditional and innovative projects to divert waste from landfill and create value added products from residues and waste;
- create a focal point (location or locations) for the ongoing examination of innovative solutions for waste reduction, resource recovery, energy recovery and/or waste conversion into value-added materials, chemicals, heat and power;
- establish partnerships and collaborations between government, academia and businesses to synergistically build on existing strengths to create opportunities to prevent waste, to create products of value from waste, and to solve existing waste management challenges; and
- be known as an innovative centre of excellence with shared facilities and resources providing leadership, implementing best practices, undertaking leading edge research, providing knowledge and support to industry, while educating and training students, researchers and postdoctoral fellows in the various fields of resource and waste management.

Key research work that has been undertaken includes:

- Food waste avoidance research with Western University, PhD Candidate Paul van der Werf and 2cg Consulting;
- Anaerobic digestion of source separated organics (SSO) and facility separated organics (FSO) to create renewable natural gas (RNG); and
- Literature review, analysis, and site visits for new, emerging and next generation technologies (e.g., gasification, pyrolysis, mixed waste processing)

9. (Ongoing) Peer Review

GHD, an engineering, architecture, environmental and construction services firm, and specializes in waste management technologies, has been retained to conduct a peer review of portions of the Action Plan dealing with any technical analysis and newer resource recovery technologies.

10. Request for Information

The City released a Request for Information (RFI) to obtain information about resource recovery (i.e., waste processing) technologies that might be suitable for the City of London to divert waste away from the City's Landfill. It is expected that the 60% diversion could be achieved by a combination of enhanced waste reduction initiatives, increased capture of Blue Box materials, the introduction of recycling of various bulky items and the introduction of an organics management program.

Data collected as part of this RFI will be used to assist City staff in determining if there are other options for reaching 60% diversion, how likely is it to increase diversion beyond 60% diversion in the near term, and how a transition program to advanced resource recovery can be designed now. Specifically the City is looking for technology providers for Mechanical Biological Treatment (MBT) or Waste Conversion systems. MBT systems refer to systems that separate mixed garbage in two or more waste streams for further processing. Further processing can include anaerobic or aerobic processing of an organics rich stream, capture of low quality recyclables, and production of a solid refuse fuel. Waste Conversion refers to technologies such as gasification, pyrolysis, etc. that typically produce a syngas, biochar and/or other products from garbage.

2) COMMUNITY ENGAGEMENT

2.1 OVERVIEW

Engagement and feedback from the public and other stakeholders is a key component in developing the 60% Waste Diversion Action Plan. It enabled stakeholders to participate in the planning of the programs and initiatives that will be part of the action plan and enhanced the quality of the plan.

2.2 ACTIVITIES AND FEEDBACK TO DRAFT 60% WASTE DIVERSION ACTION PLAN

The approaches used to engage the public and other stakeholders in development of the Action Plan included open houses, booths at community events, interactions with City of London Advisory Committees, the Resource Recovery Strategy website, creation of the Waste Management Community Liaison Committee and newspaper and social media advertisements. These events/initiatives are summarized in Table 3 with full details presented in Appendix B.



Table 3 - Community Engagement Activities

Event	Date/Location	Description/Comments
<i>Open Houses</i>		
Open House 1	May 24 (Horton Street Goodwill, 2 – 4 p.m, 5 – 8 p.m) May 25 (Lambeth Community Centre, 2 – 4 pm, 5 – 8 pm)	Background information provided on existing diversion programs, waste composition and potential new diversion programs. Feedback opportunities provided. City staff were available to answer questions.
Open House 2	November 29 (Horton Street Goodwill, 2 – 4 p.m, 5 – 8 p.m) November 30 (Lambeth Community Centre, 2 – 4 p.m, 5 – 8 p.m)	Updated information on changes to waste management and waste diversion from the Province, potential programs and initiatives to achieve 60% diversion and key technologies to achieve advanced diversion and resource recovery. Feedback opportunities provided. City staff was available to answer questions.

Table 3 - Community Engagement Activities

Event	Date/Location	Description/Comments
<i>Community Events</i>		
Gathering on the Green	June 3, 2017	Simple display promoting the getinvolved.london.ca website, Environmental Assessment (EA) process for expanding the W12A Landfill and waste composition. City staff was available to answer questions.
The Big Leak: Water Brothers	June 5, 2017	
Sesquifest	June 29 to July 2, 2017	
Sunfest	July 6 to July 9, 2017	
Home County Folk Festival	July 15 to July 16, 2017	
Inspiration Fest	July 23, 2017	
Forest Festival	August 19, 2017	
Gathering on the Green 2	August 20, 2017	
Neighbourhood Service Days	August 28 - September 1, 2017 Northwest London Resource Centre, Glen Cairn Community Centre	
London Home Show	January 26 - 28, 2018	Visitors requested to provide feedback on proposed waste diversion activities that could be implemented to achieve 60% waste diversion. A desk-side Blue Box was given to all participants.
<i>City of London Advisory Committees</i>		
Waste Management Community Liaison Committee (CLC)	June 5, 2017 to present	The Waste Management CLC was advised on Resource Recovery changes and initiatives as new information was available. Committee feedback was provided in support of the proposed initiatives.
Advisory Committee on the Environment (ACE)	May 3, 2017 and November 1, 2017	ACE was provided with updates as the project moves forward. Committee feedback was provided in support of the proposed initiatives.

Table 3 - Community Engagement Activities

Event	Date/Location	Description/Comments
Resource Recovery Strategy website		
	Live on April 25, 2017	Information about the Resource Recovery Strategy is available online on the getinvolved.london.ca website. Feedback can be provided. To date, over 3,000 visitors have accessed the website.

Through these community engagement activities, the City was soliciting feedback on specific topics and questions as well as asking for general comments and suggestions. Feedback on the specific topics and questions is presented in Tables 4 and 5. A summary of the popular comments and ideas are listed in Table 6.

Further details on the feedback for the specific topics and questions as well as all the general comments and suggestions provided are presented in Appendix C.

It is key to understand that this is a compilation of feedback. It is not a random sample of Londoners and has no statistical validity. Section 2.3 contains the results of a public opinion poll. However, it is very important to capture comments and feedback in an understandable format.

Table 4 - Feedback on First Round of Questions¹

Question	Response	
Is new organic management program(s) the key to reaching 60% waste diversion by 2022?	Yes	86%
	Maybe	14%
	No	0%
Do you think it is acceptable to allow neighbouring municipalities to use any new waste resource recovery facilities developed by the City of London?	Yes	57%
	Maybe	14%
	No	29%
Do you think that the Resource Recovery Strategy needs to be able to accommodate transition to new technology in the future, if appropriate?	Yes	100%

Notes 1: Questions posed at Open House and online. Seven total responses.

Table 5 - Feedback on Key Second Round of Questions¹

What Level of Investment Are You Willing to Make?		Response	Summary Comment
Greater levels of waste diversion and resource recovery will require additional financial investments. On a household basis, how much more in municipal taxes and fees would you be prepared to pay per year?	\$0	17%	Over 80% of the respondents indicated they are prepared to pay more for waste diversion.
	\$1 - \$25	44%	
	\$26 - \$50	24%	
	\$51 - \$75	7%	
	\$76 - \$100	8%	
How much more in municipal taxes and fees would you be prepared to pay per year for Potential New Programs and Initiatives (including the approximate annual cost per household)		Level of Support	Summary Comment
Food Waste Avoidance	No change: \$0	16%	Almost 85% support for some kind of program.
	Moderate Program: \$1	46%	
	Significant Program: \$7	38%	
Home Composting	No change: \$0	25%	75% support for all proposed options
	Moderate Program: \$0.75	38%	
	Significant Program: \$1.20	37%	
Community Composting	No change: \$0	20%	80% support for all proposed options
	Low Tech, Private: \$0.01	25%	
	Low Tech, Public: \$0.15	28%	
	High Tech, Public: \$0.45	27%	
City Wide Organics – Curbside Program	No Change: \$0	19%	Stronger support for Green Bin. Green Bin also preferred by CLC and ACE.
	Green Bin Program: \$20	62%	
	Mixed Waste Program: \$40	19%	
City Wide Organics – Multi-Residential Program	No Change: \$0	17%	Stronger support for Green Bin
	Green Bin Program: \$7	61%	
	Mixed Waste Program: \$14	22%	

1. Questions posed at Open House 2, online, London Home Show and to the Waste Management Community Liaison Committee. The number of responses varied by question, but ranged from 615 to 956.

Table 6 - Popular Comments and Suggestions from the Community¹

Comment/Suggestion	% of Responses	City Response
Pro green bin/source separated composting program; many comments asked for immediate implementation	39%	Yes, considered in the 60% Waste Diversion Action Plan.
Pro alternative resource recovery method (incineration, mixed waste processing, landfill mining)	6%	Options considered as part of the EA process for the expansion of W12A Landfill and will be discussed in the Resource Recovery Strategy.
Support bans on packaging/manufacturers responsible	5%	In Ontario, this activity has generally occurred at the provincial government level.
Expand recycling program (Blue Box, public space, downtown)	4%	Being considered as part of extended producer responsibility (EPR) discussions.
Implement policies & by-laws (pay per bag, bag limit, clear bag)	4%	Yes, considered in the 60% Waste Diversion Action Plan.
Support home composting	4%	Yes, considered in the 60% Waste Diversion Action Plan.
London should stop taking Toronto's garbage	3%	London doesn't take Toronto's garbage.
Education on waste reduction/diversion is key	3%	Yes, considered in the 60% Waste Diversion Action Plan.
Opposed to green bins	2%	Provincial Statement requires London to implement organics management program.
Encourage reuse	2%	Yes, considered in the 60% Waste Diversion Action Plan.
Implement textile recycling	1%	Yes, considered in the 60% Waste Diversion Action Plan.

1. Written comments or suggestions provided to the City at an open house, on the getinvolved.london.ca website or on the City's Facebook page. The number of comments or suggestions were 233. Some respondents provided more than one comment.

2.3 PUBLIC OPINION SURVEY

To complement the community engagement discussed in Section 2.2, a survey of the opinions of London residents towards waste diversion was undertaken by Ipsos Public Affairs.

The survey was conducted online and the sample was drawn using Ipsos proprietary panel. To qualify for the survey, the respondent had to be a resident of the City of London and 18 years of age or older. The results of the survey are based on a total of n=301 online interviews completed between May 31 and June 4, 2018.

The precision of Ipsos online surveys is calculated via a credibility interval. According to Ipsos, the sample is considered accurate within +/- 6.4 percentage points, 19 times out of 20, had all London residents been surveyed.

Complete details of the survey are presented in Appendix D and summarized below. The survey included eight questions. Most of the questions were similar to questions asked of residents as part of the community engagement process. These questions, the results and how they compare to the feedback received during the community engagement process are presented in Table 7.

Table 7 - Results of Ipsos Public Affairs Survey

How important is waste diversion to you?		Response	Comment
Waste diversion is the process of reducing the quantity of waste landfilled and creating new materials of value. How important is waste diversion to you?	Very important	53%	Over 90% of residents think waste diversion is important.
	Somewhat important	40%	
	Not very important	5%	
	Not important at all	0%	
	Don't know	2%	
What Level of Investment Are You Willing to Make?		Response	Comment
On a per household basis, how much more would you be prepared to pay in municipal taxes and fees per year to pay for increased waste diversion?	\$0	24%	Over 75% of the respondents indicated they are prepared to pay more for waste diversion.
	\$1 - \$25	47%	
	\$26 - \$50	18%	
	\$51 - \$75	4%	
	\$76 - \$100	7%	

Table 7 - Results of Ipsos Public Affairs Survey

Potential New Programs and Initiatives (including the approximate annual cost per household)		Level of Support	Comment
Food Waste Avoidance	No change: \$0	12%	Almost 90% of the respondents are interested in seeing some kind of program implemented.
	Moderate Program: \$1	41%	
	Significant Program: \$7	57%	
City Wide Organics – Curbside Program	No Change: \$0	24%	3 of every 4 respondents want a new program. Green Bin has marginally more support than mixed waste program.
	Green Bin Program: \$20	42%	
	Mixed Waste Program: \$40	32%	
City Wide Organics – Multi-Residential Program	No Change: \$0	19%	4 of every 5 respondents want a new program. Equal support for Green Bin (essentially on-site source separated organics) and Mixed Waste.
	Green Bin Program: \$7	40%	
	Mixed Waste Program: \$14	41%	
Are you prepared to deliver more materials (e.g., old furniture, carpet, small appliances, mattresses, etc.) to drop off-depots?	Yes	65%	2 of every 3 respondents are willing to deliver more materials to the EnviroDepots.
	No	35%	
Would you support banning additional materials from garbage pickup (e.g., old furniture, carpet, small appliances, mattresses, et.) if you could drop them off at a depot for recycling?	Yes	60%	3 of every 5 respondents support banning materials that have a recycling option.
	No	40%	

2.4 COMMUNITY ENGAGEMENT ON THE 60% WASTE DIVERSION ACTION PLAN

The following community engagement is proposed for the 60% Waste Diversion Action Plan.

Table 8 - Community Engagement for 60% Waste Diversion Action Plan

Date	Event	Comments
July 17, 2018	CWC Meeting	<ul style="list-style-type: none"> Approve in principle Draft Action Plan to achieve 60% waste diversion by 2022
July 24	Council	<ul style="list-style-type: none"> Approve to circulate and receive feedback on the 60% Waste Diversion Action Plan
July 25 to September 10	Provide feedback opportunities on WhyWaste Resource Recovery Strategy website	<ul style="list-style-type: none"> Advertise in the London Free Press, The Londoner and on social media
	Circulate to Community Stakeholder Groups	<ul style="list-style-type: none"> Circulate and ask for feedback from Waste Management Community Liaison, Committee (WMCLC), W12A Landfill Public Liaison Committee, Urban League and Advisory Committee on the Environment (ACE)
	Circulate to Waste Management/ Recycling Companies	<ul style="list-style-type: none"> Circulate and ask for feedback from local companies including Emterra, Green Valley Recycling, Miller Waste, Orgaworld, StormFisher, Try Recycling, Waste Connections and Waste Management
	Community Festival	<ul style="list-style-type: none"> Attend Gathering on the Green II, Sunday August 19, 2018
	Presentations	<ul style="list-style-type: none"> Present to WMCLC in early August (TBD) Present to ACE on September 5, 2018
September 27	Public Participation Meeting	<ul style="list-style-type: none"> CWC receives comments from the public and other stakeholders
January/ February 2019	CWC Meeting	<ul style="list-style-type: none"> Approval of 60% Waste Diversion Action Plan
	Council	<ul style="list-style-type: none"> Implementation details and final cost estimates to be provided at this time

3) RESIDENTIAL GARBAGE COMPOSITION

3.1 OVERVIEW

The key to developing new programs and initiatives to achieve 60% waste diversion is understanding what currently makes up garbage and how it may change in the future.

3.2 CURRENT GARBAGE COMPOSITION

What is currently in the garbage is shown on the next pages and discussed below. A more detailed breakdown on what is in garbage is provided in Appendix E. Single families make up about 70% of London's households and generate about 61,000 tonnes of the residential garbage each year that is collected and landfilled. A large percentage of this waste could be composted or recycled.

A breakdown of what is in the typical garbage bag from a single family residence is illustrated on Figure 2 (next page). About 7% is material that should have been placed in the Blue Box. A further 13% of the garbage, including textiles, scrap metal, electronics, renovation materials and plastic bags, which could have been dropped off at a depot, taken to a store for recycling or are materials that have been identified in the province's Strategy for a Waste-Free Ontario for future diversion programs.

About 60% of landfill garbage is primarily organic matter and is compostable. The organics are made up of food scraps (36% of all waste), non-recyclable paper like paper towel & paper napkins, yard materials, pet waste and sanitary products (e.g., diapers).

About 30% of London's households live in multi-residential (apartment/condominium) buildings and generate approximately 23,000 tonnes of garbage per year. A breakdown of the garbage collected from multi-residential buildings is illustrated in Figure 3.

Garbage Collection

The City collects garbage from 124,000 single family households and 56,000 multi-residential households.

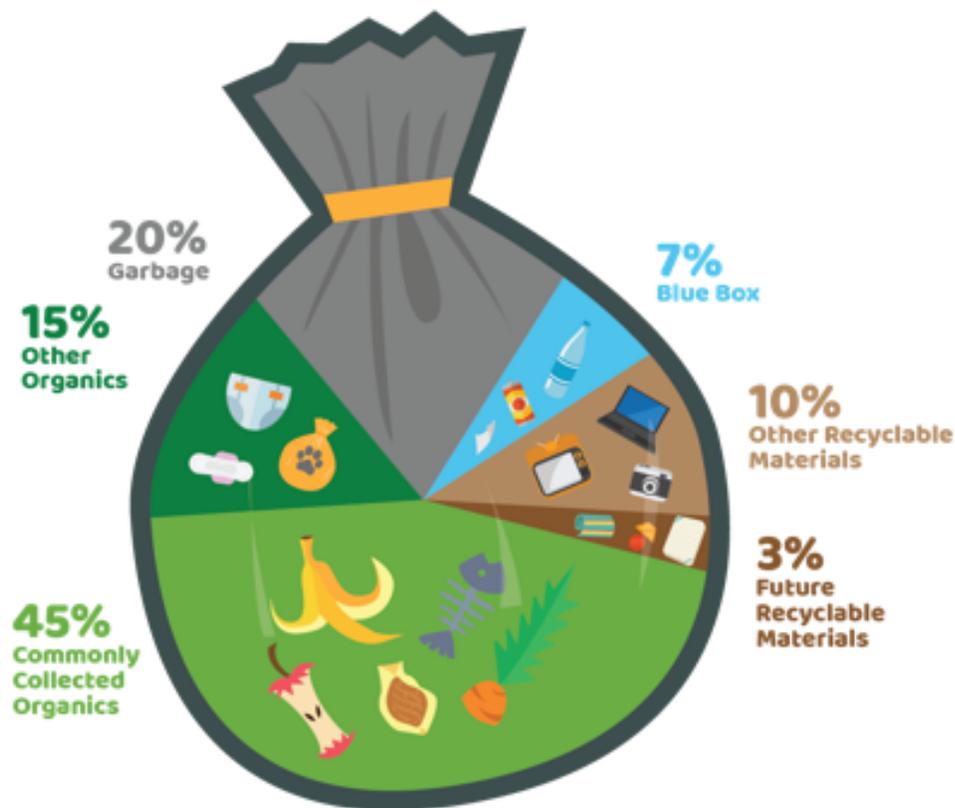
Single family households are limited to 3 containers per collection plus bulky items (e.g., couches, mattresses, etc.).



Multi-residential households do not have container restrictions. Bulky items are handled separately by tenant/owner or the building owner.



Figure 2 - What Are We Throwing Away? (single family homes)



Commonly Collected Organics

Organics that are easily composted. They include food waste and non-recyclable paper (soiled paper, tissues, paper towels).

Other Organics

Pet waste and sanitary products (e.g., diapers) which typically require pre-processing to remove the plastic bag that contains the pet waste and plastic covering of the diaper.

Blue Box

Items that were placed in the garbage but should have gone in the Blue Box.

Other Recyclable Materials

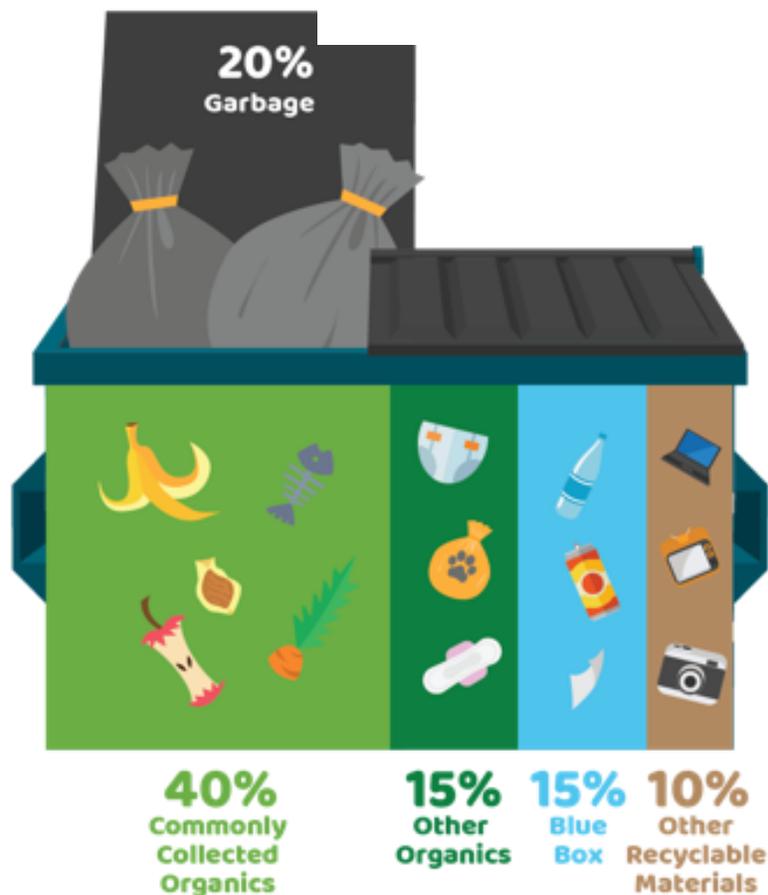
Items that were placed in the garbage but should have been dropped off at a depot or returned to retailer for recycling such as textiles, scrap metal, electronics, renovation materials and plastic bags.

Future Recyclable Materials

Items that may have local recycling options in the future such as carpets, mattresses and furniture.

The garbage composition from multi-residential buildings is similar to the garbage from single family households. The main difference is a higher percentage of recyclables in the garbage (15% versus 7% for single family) but less of the garbage is compostable (55% versus 60% for single family).

Figure 3 - What Are We Throwing Away? (multi-residential homes)



Commonly Collected Organics

Organics that are easily composted. They include food waste and non-recyclable paper (soiled paper, tissues, paper towels).

Other Organics

Pet waste and sanitary products (e.g., diapers) which typically require pre-processing to remove the plastic bag that contains the pet waste and plastic covering of the diaper.

Blue Box

Items that were placed in the garbage but should have gone in the Blue Box.

Other Recyclable Materials

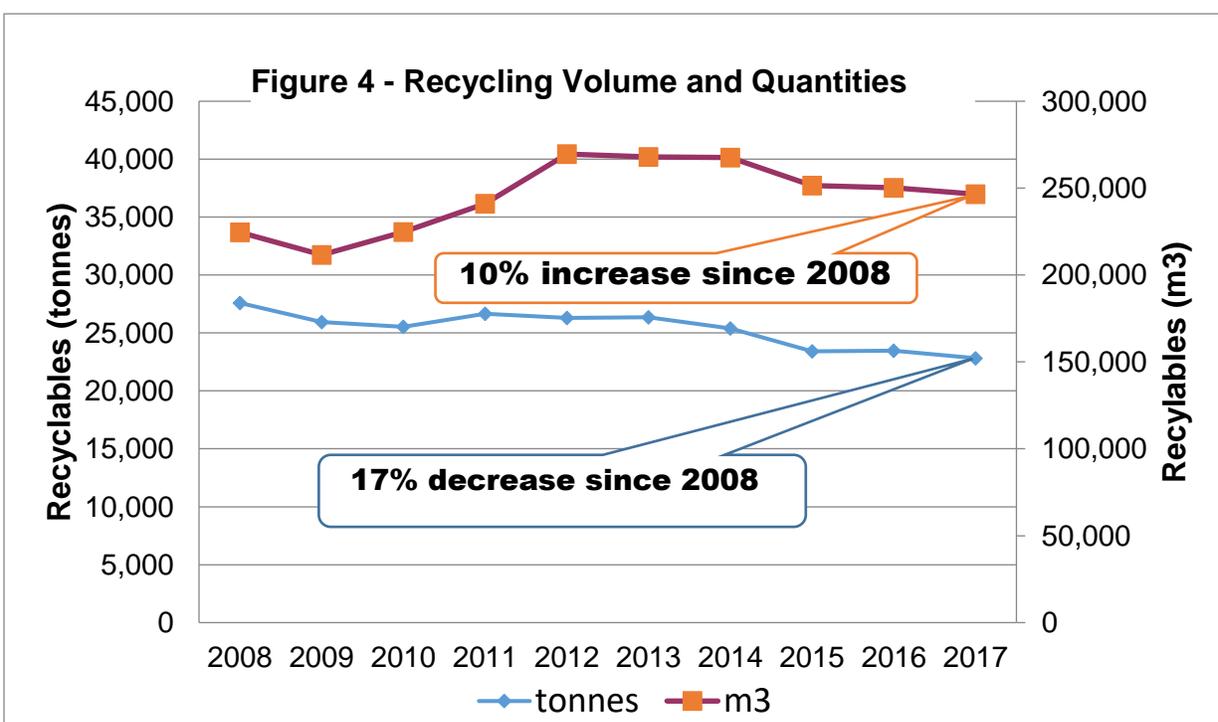
Items that were placed in the garbage but should have been dropped off at a depot or returned to retailer for recycling such as textiles, scrap metal, electronics, renovation materials and plastic bags.

3.3 FUTURE GARBAGE COMPOSITION

The waste stream is constantly changing. These changes are a result of:

- Shifting habits and behaviours - fewer people reading printed newspapers resulting in less newsprint to recycle; more people ordering online resulting in more cardboard boxes; changes in eating habits, attitudes toward cooking and busier lifestyles have resulted in a growing demand for convenience foods and ready-to-go meals.
- Light-weighting of product packaging to reduce manufacturing costs - companies find ways to reduce the weight of product packaging, to reduce their costs. Examples include; the quantity of polyethylene terephthalate (PET) plastic in beverage containers (e.g., water bottles) has decreased by 50% over the last several years; more concentrated products which use less packaging.
- Material substitution - some companies are switching packaging materials such as steel cans or glass containers to plastic or aseptic packaging.
- Composite packaging design - there is an increase in single-serve and convenience packaging which results in challenges for recycling and composting operations (e.g., coffee pods, multi-layer freezer packs).

The majority of these changes will impact Blue Box recycling and result in less “easy to recycle” materials (e.g., newspapers, steel cans, etc.) and more “difficult to recycle” materials (e.g., plastics, pouches, etc.). The changes will also reduce the weight of recyclables collected while at the same time increasing the volume of recyclables (Figure 4) and the cost of recycling.



4) ANALYSIS AND PROPOSED ACTIONS

4.1 BLUE BOX (BLUE CART) PROGRAM

Summary - Proposed Actions, Diversion and Savings

It is expected:

- the responsibility for the Blue Box program will be transferred to industry in the future (as early as 2023 based on current legislation and policy timelines);
- the province will mandate increased capture of recyclables from the current 63% (provincial average) to 75%; and
- other proposed initiatives (bi-weekly garbage collection, reduced container limits, consideration of user pay or clear bags) will encourage more use of the existing program.



These changes will increase London's diversion rate by an additional 2% to 3% and the transition of all Blue Box costs to industry will reduce the City's waste diversion costs by \$1.5 to \$1.8 million dollars per year.

Background

Existing Program

The City provides opportunities to recycle Blue Box materials through its curbside, multi-residential, depot and public space recycling programs. The City diverted approximately 23,000 tonnes of recyclables in 2017. This is approximately 14% of all residential garbage.

The City collects a wide range of materials which has increased over the years.

Most items in the Blue Box are common to municipalities, with the key differences being: plastic film (e.g., plastic bags) and expanded polystyrene (e.g., Styrofoam™). London has not added plastic film and expanded polystyrene to its program due to the high costs and limited markets.

It is expected that a common basket of materials to be recycled will be established once responsibility for the program is transferred to industry. For this reason, no changes to the materials collected are planned for London in the near future.

Why doesn't the City recycle Expanded Foam Polystyrene (EPS) and film plastic?

- ✓ EPS does not have stable markets and can contaminate other materials at the recycling facility.
- ✓ Film plastic wraps around moving equipment parts at the recycling facility and is costly to collect and process.

Information on materials collected in the City's Blue Box program can found in Appendix A.

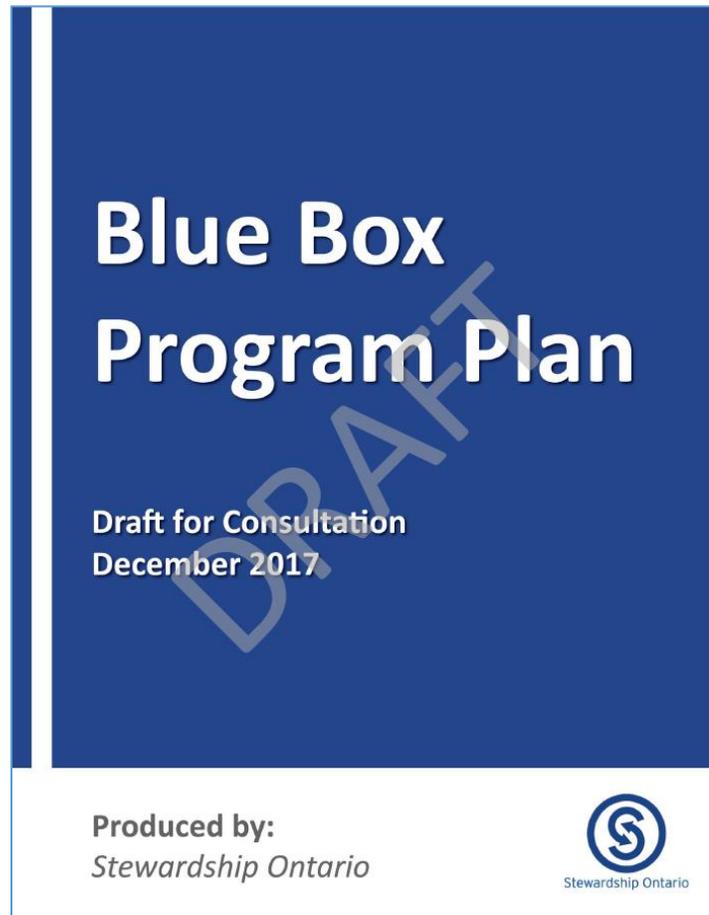
New Provincial Direction

The existing Blue Box Program Plan (2003) is based on a cost share model of 50/50 between municipal governments and the companies that produce the Paper Products and Packaging (PPP) collected in the Blue Box Program. The programs are being managed and operated by Ontario municipalities.

The new proposed model is a combination of extended producer responsibility (EPR) and eventually moving to Individual Producer Responsibility (IPR) (also commonly called full producer responsibility). It is based on individual producers being legally and fully responsible for meeting outcomes set by the government, which would include waste diversion targets, service standards, promotion and education requirements and administrative penalties. Industry would fund 100% of the recycling costs of their products and product packaging.

The current Blue Box program diverts approximately 63% of all designated recyclables. The province has indicated that a capture rate of 75% of all designated recyclables may be more appropriate under the new model.

The Strategy for a Waste-Free Ontario (2017) shows the transition of the Blue Box Program to the new model being completed by 2023. In February 2018, Resource Productivity and Recovery Authority (RPRA) announced that “In light of comments received on this consultation draft [the report cover above], Stewardship Ontario and the Authority have determined that more time is needed to address the comments received.” As of end of June 2018, no further details have been released.



4.2 NEW (OR EXPANDED) RECYCLING PROGRAMS AND INITIATIVES

Summary - Proposed Actions, Diversion and Costs

The proposed program for materials collected in the garbage that are potentially recyclable is summarized in Table 9.

Table 9 – Summary of Proposed New (or Expanded) Recycling Programs and Initiatives

Material	Proposed Actions	Implementation Schedule
Bulky Plastics	<ul style="list-style-type: none"> • Continue with existing pilot project • Consider implementation of an expanded program once long term stable markets have developed 	in progress
Clothing and Textiles	<ul style="list-style-type: none"> • Develop a textile awareness strategy • Pilot depot collection at select multi-residential buildings 	2019
Ceramics (e.g., Toilets)	• Drop-off at W12A EnviroDepot at no cost	2019
	• Ban from garbage collection	2020
Small Metal (e.g., Appliances, Electrical Tools and Scrap Metal)	• Pilot curbside collection methods	2019
	• Semi-annual collection of from single family home	2020
	• pilot depot collection at select multi-residential buildings	2020
Furniture (Wooden)	• Drop-off at W12A EnviroDepot at no cost	2019
	• Semi-annual curbside collection from single family homes	2020
	• Ban from garbage collection	2021
Carpets, Mattresses	• Wait to see if the province develops an EPR program under the <i>Waste-Free Ontario Act</i>	2018 to 2021
	• If no EPR program, implement a pilot project for voluntary recycling of materials at the EnviroDepots on a fee for service basis	2022
	• Consider implementation of ban on curbside collection with either a depot or curbside collection service	2023

It is estimated that the above programs for wooden furniture; small appliances, electrical tools and small scrap metal; large ceramics and textiles would divert approximately 0.4% to 0.8% of residential waste and cost approximately \$350,000 to \$550,000 annually.

Background

Existing Programs

There are many opportunities to recycle items in the residential waste stream in addition to materials recycled through the Blue Box program. In total approximately 13,000 tonnes of Other Recyclables were diverted from landfill in 2017. Details on these City programs are provided in Appendix A.

Waste-Free Ontario Strategy

Information on the Waste-Free Ontario Strategy was previously provided in Section 1.2. The strategy lists a number of products and materials that will be considered for recycling under a full EPR program.

“The province will designate new materials under the new producer responsibility regime. When identifying potential candidate materials for full producer responsibility, the province will consider products and packaging whose recovery helps fulfil one or more of the following three broad results:

- recovering high-volume resource streams to increase diversion*
- keeping hazardous materials out of landfills to protect our environment*
- reducing domestic and global greenhouse gas emissions to fight climate change*

...Materials will be designated through regulations made under the Resource Recovery and Circular Economy Act, 2016. Based on previous consultations, the first set of materials will include, but is not limited to

- small appliances*
- electrical tools*
- batteries*
- fluorescent bulbs and tubes*
- mattresses*
- carpets*
- clothing and other textiles*
- furniture and other bulky items”*

Potential Products/Materials

The status of programs to manage each of the materials listed in the Waste-Free Ontario Strategy as well as other potential recyclable materials are presented in Table 10.

Table 10 - Status of Potential Materials to Recycle

Product/ Materials		Status	Estimated Quantity in Garbage (tonnes/year)
Batteries		<ul style="list-style-type: none"> • most batteries end up in the garbage • provincial recycling program already exists 	<50
Bulky Plastics		<ul style="list-style-type: none"> • Some bulky plastics are collected at the curb and from multi-residential buildings • City operates a pilot recycling program 	50 to 100
Carpets		<ul style="list-style-type: none"> • carpets collected at the curb for single family homes • carpets not collected from multi-residential buildings • No existing recycling opportunities 	600 to 800
Ceramics		<ul style="list-style-type: none"> • ceramics (including toilets) are collected at the curb • ceramics (excluding toilets) are collected at multi-residential buildings • ceramics can be recycled at local Construction, Renovation and Demolition (CR&D) recycling companies 	500 to 600
Clothing and other textiles		<ul style="list-style-type: none"> • 50% of material in garbage may have reuse potential • many drop-off depot locations already exist 	2,500 to 3,000
Small Metal	Electrical tools	<ul style="list-style-type: none"> • most electrical tools end up in the garbage • most are recyclable as scrap metal 	<100
	Small appliances	<ul style="list-style-type: none"> • most small appliances (e.g., toasters, hand mixers, etc.) end up in the garbage • many of these are recyclable as scrap metal or electronics 	200 to 250
	Scrap Metal	<ul style="list-style-type: none"> • many smaller pieces of scrap metal from households (e.g., frying pans, baking pans, bottle caps, etc.) end up in the garbage instead of being recycled 	600 to 700

Table 10 - Status of Potential Materials to Recycle

Product/ Materials	Status	Estimated Quantity in Garbage (tonnes/year)
Fluorescent bulbs and tubes	<ul style="list-style-type: none"> • many bulbs end up in the garbage • provincial recycling program already exists 	<50
Furniture	<ul style="list-style-type: none"> • furniture in general is primarily wood, metal, upholstered or plastic • metal furniture is banned from collection and can be recycled as scrap metal • wood and upholstered furniture is collected from single family homes but not multi-residential buildings (that have City bulk bin collection) 	300 to 500
Mattresses	<ul style="list-style-type: none"> • mattresses collected at the curb for single family homes • mattresses not collected from multi-residential buildings (that have City bulk bin collection) • no existing recycling opportunities 	600 to 800

A detailed assessment of recycling the items in Table 10 is presented in Appendix F and summarized below.

Batteries

There are over 20 retail locations, 30 businesses and schools and 4 EnviroDepots where single-use and rechargeable batteries are collected for recycling in London.

Several municipalities in Ontario have implemented semi-annual collection of batteries in conjunction with their Blue Box program. It is estimated a similar program in London would divert approximately 20 to 30 tonnes of batteries. Semi-annual collection is not recommended for London because the expected transition of the Blue Box program to industry will complicate collection. In addition the province will likely develop new provincial programs for batteries under the *Waste-Free Ontario Act*.

It is recommended not to make any changes to the current program in the City at this time.

Bulky Plastics

The City has been piloting the recycling of bulky plastics at the Manning Drive Regional Material Recovery Facility.

Recently, the scrap plastics market has increased quality requirements. Bulky plastic loads must now have no or minimal metal, fabric, paper and other contaminants or they will be rejected. This standard is difficult to achieve since many bulky plastics like toys are multi-material items and may also contain some metal or fabric components.

The pilot project could be become a city-wide program by banning collection of bulky plastics at the curb coupled with accepting bulky plastics at the EnviroDepots. There are insufficient bulky plastics to warrant occasional (e.g., semi-annual) collection at the curb. The cost of collecting bulky plastics using a depot system would be approximately \$8,000 to \$16,000 per year.

It is recommended that the City not make changes to its pilot project for recycling bulky plastic recycling until long term stable markets have developed.

Carpets

It is estimated that approximately 600 to 800 tonnes of carpet are discarded by homeowners and collected curbside annually as garbage.

The City could ban the collection of carpet at the curb coupled with accepting carpet discards at the EnviroDepots. Occasional (e.g., semi-annual) collection at the curb is not recommended because of the added cost (cannot be collected with existing garbage collection vehicles) and the reduced recyclability of the carpet if it is left at the curb for an extended period prior to collection.

Bulky Plastics

- Bulky Plastics refers to all larger plastic household items that are not suitable for the Blue Box. Typical bulky plastic items includes plastic lawn furniture, large toys and 20 litre pails.
- It is estimated that 50 to 100 tonnes of bulky plastics placed in the garbage annually.



Carpet Recycling

- There is one carpet recycling facility in Ontario located in Toronto.
- There are no municipal programs for recycling carpets in Ontario.
- California has the most extensive carpet recycling program in North America:
 - Captures 11% of discards
 - 80% of captured material is diverted from landfill (equal amounts sent to reuse/recycling facilities and energy production through energy-from-waste facilities).



It is estimated that a depot service would capture at least 600 to 800 tonnes per year if collection of carpets at the curb was banned and accepted at no cost at the EnviroDepots. The cost of the program would be approximately \$220,000 to \$290,000 per year (excluding initial capital costs).

It is expected that a depot system would only collect 200 to 300 tonnes per year if a fee was charged to recover the cost of the program as some of the carpets would be taken to cheaper disposal locations within and outside of the City.

It is recommended that the City:

- Wait to see if the Province develops a provincial program for carpets under the *Waste-Free Ontario Act* as there are limited markets for recycling carpets in the province.
- If no provincial program exists by 2021, implement a pilot project for voluntary recycling of carpets discards at the City EnviroDepots at no cost while continuing to collect carpets at the curb.

Data from the pilot project would be used to confirm the costs, operational needs, and logistics of moving to a ban of carpet collection at the curb and whether to offer the program for free, on a partial recovery basis or on a full cost recovery basis. The cost of a one year pilot project is estimated to cost \$80,000 to \$100,000.

Ceramics

It is estimated that there is between 500 and 600 tonnes of ceramics in the garbage annually. Ceramics can be easily crushed and recycled as aggregate, which is how ceramics like ceramic tiles and toilets taken to local Construction, Renovation & Demolition (C,R&D) recycling companies are recycled.

Occasional (e.g., semi-annual) collection at the curb is not recommended because of the low quantities coupled with the likelihood that residents would be unwilling to hold onto ceramics (including toilets) for an extended period.

It is recommended that the City:

- Provide a drop-off location for ceramics at no cost at the City's EnviroDepots in 2019; and,
- Ban collection of toilets at the curb in 2020.

It is estimated the above measures will divert 100 to 150 tonnes of ceramics (predominately toilets) and cost \$10,000 to \$15,000 per year (excluding initial capital costs).

Clothing and Textiles

An active community-based clothing and textile program already exists in London handling about 50% of the available material. It is estimated that there is 2,500 to 3,000 tonnes of textiles in the garbage annually of which approximately 50% has potential to be reused/recycled. Approximately 70% of this material comes from single family homes and 30% from multi-residential buildings. This means there is approximately 900 to 1,050 tonnes of reusable textiles in the garbage from single family homes and 350 to 450 tonnes in the garbage from multi-residential homes.

There are many options for donating textiles in good condition. They include un-staffed drop-off bins at stores and mall parking lots, staffed drop-off depots (Goodwill, Mission Store, St. Vincent de Paul, etc.), door to door collections (Diabetes Canada's 'In The Bag' program) and picked up at your home (Diabetes Canada's reusable goods donation program).

There are no major municipalities in Ontario that offer regular curbside collection of textiles. Some large municipalities have textile drop-off bins in select multi-residential buildings or at key locations through the municipality (e.g., City of Markham).

The province may develop a new provincial program for clothing and textiles under the *Waste-Free Ontario Act* in the future but many municipalities are taking measures to increase diversion of clothing and textiles in the interim as there are markets for textile reuse and recycling.

It is recommended that the City:

- Develop a textile awareness strategy to promote existing reuse opportunities; and,
- Pilot depot collection at select multi-residential buildings beginning in 2019.

It is estimated that a textile awareness program would cost \$10,000 to \$30,000 annually and be required for 3 to 5 years followed by less investment when the practice has become the norm. A pilot depot collection project would cost between \$5,000 and \$10,000. It may be possible to generate enough textiles from multi-residential buildings to pay for the on-going cost of a permanent program. These programs are estimated to divert 150 to 400 tonnes of clothing and textiles annually.

Textile Recycling

- London has an active community-based program that reuses/ recycles approximately 3,300 tonnes of clothing and textiles annually
- There are approximately 1,200 to 1,500 tonnes of useable clothing and textiles in the garbage.
- The overall diversion rate of useable clothing and textiles is approximately 70% (3,300 tonnes reused/ recycled of a total of 4,500 to 4,800 tonnes of useable clothing and textiles).



Small Metal (Small Appliances/Electrical Tools/Scrap Metal)

It is estimated that 800 to 1,000 tonnes of small appliances (e.g. toasters, hand mixers, etc.), electrical tools and small pieces of scrap metal end up in the garbage annually even though these materials can be taken to an EnviroDepot or scrap metal yard to be recycled. Approximately 75% of this material (600 to 750 tonnes) comes from single family homes and 25% (200 to 250 tonnes) from multi-residential buildings.

The province may develop a new provincial program for small appliances and electrical tools under the *Waste-Free Ontario Act* in the future but measures to increase diversion of these materials can be taken in the interim. There are strong markets for scrap material and collection can be provided at a reasonable cost.

In order to divert more of this material from the waste stream, it is recommended that the City:

- Implement semi-annual curbside collection of small metal items beginning in 2020, and;
- Pilot depot collection at select multi-residential buildings beginning in 2020.

A few Ontario municipalities allow residents to put metal cookware in their Blue Box and some offer a call-in service for the pickup of large appliances, but none offer a dedicated collection of small appliances, electrical tools and small pieces of scrap metal. Various methods of curbside collection could be piloted in 2019 prior to implementing a City-wide program.

It is estimated that a semi-annual curbside collection program would capture 250 to 400 tonnes of material, cost \$70,000 to \$80,000 to collect and generate \$40,000 to \$60,000 in revenue. It is likely much of the metal will be collected by private scrap haulers before City collection crews arrive. This will reduce potential revenue but also reduce collection costs.

Possible Curbside Collection Parameters

- Limit items to the size of a Blue Box or smaller.
- Accept all appliances, electrical tools, small electronics or other items with a cord.
- Consider use of the Blue Box or similar container to place materials at the curb.

Fluorescent bulbs and tubes

Fluorescent bulbs and tubes are accepted for recycling at several retail locations and the City's four EnviroDepots. The four EnviroDepots received 20 tonnes of fluorescent bulbs and tubes in 2017. The amount being received is expected to gradually decrease over time as most light bulbs currently being sold are LED. It is expected the province will likely develop new provincial programs for fluorescent bulbs and tubes under the *Waste-Free Ontario Act*.

It is recommended not to make any changes to the current program in the city at this time.

Furniture

Furniture is generally comprised of wood, metal, plastic and/or upholstery. Metal furniture is banned from collection and can be recycled as scrap metal. Wood, plastic and upholstered furniture is collected from single family homes for disposal but not multi-residential buildings (with bulk bin garbage collection).

Wood and upholstered furniture in poor condition is placed at the curb for disposal. It is estimated that the City collects 300 to 500 tonnes of furniture annually from single family homes and about one third is wood furniture. Wood, plastic and upholstered furniture in good condition should be donated for reuse but some is placed at the curb for disposal.

There are no recycling options for upholstered furniture in poor condition. Plastic furniture would likely be part of the bulky plastics recycling program discussed early.

The only recycling option for wood furniture, at this time, is to use as wood chips for daily cover at the landfill. The minor metal and plastic components (e.g., handles, drawer sliders, etc.) coupled with the wood being painted or stained prevents the wood chips from being used as fuel or for landscaping purposes.

The province may develop a new provincial program for furniture under the *Waste-Free Ontario Act* in the future. It is recommended by 2020 the City:

- Wait to see if the Province develops a provincial program for upholstered furniture under the *Waste-Free Ontario Act* as there are no markets for recycling upholstered furniture in the province;
- Provide a drop-off location at W12A EnviroDepot for wood furniture in 2019;
- Begin semi-annual collection of wooden furniture in 2020; and,
- Ban wooden furniture from curbside garbage collection in 2021.

It is estimated the above measures will divert 100 to 150 tonnes of waste to be used as landfill cover and cost \$70,000 to \$80,000 annually. Having all the wooden furniture collected semi-annually, instead of a call-in service, will provide an opportunity for re-use of the furniture by residents who see furniture on the street they could use.

Furniture Recycling

Metal

Several large Ontario municipalities offer a call-in service for the collection of large metal items for recycling including furniture.

Upholstered

There is no recycling of upholstered furniture by municipalities in Ontario.

Plastic Furniture

There is no recycling of plastic furniture by municipalities in Ontario.

Wood

There are no large Ontario municipalities that collect wood furniture for processing into wood chips. The Municipality of Thames Centre provides semi-annual collection of wood, including furniture and ships to Try Recycling for processing.

Mattresses

It is estimated approximately 1,000 to 1,200 tonnes of mattresses and box springs are discarded by homeowners annually or about 50,000 to 60,000 units. About 60% of these are placed at the curb for garbage collection.

The City could ban the collection of mattresses and box springs at the curb coupled with accepting them at the EnviroDepots.

Providing occasional (e.g., semi-annual) or on-request collection at the curb is not considered practical at this time due the cost of providing such a service.

It is estimated that a depot service would capture at least 600 to 800 tonnes per year if collection of mattresses and box springs at the curb was banned and accepted at no cost at the EnviroDepots. The cost of the program would be approximately \$600,000 to \$700,000 per year (excluding initial capital costs).

It is expected that a depot system would only collect 200 to 300 tonnes per year if a fee was charged to recover the cost of the program as some of the mattresses would be taken to cheaper disposal locations within and outside of the City.

It is recommended that the City:

- Wait to see if the Province develops a provincial program for mattresses under the *Waste-Free Ontario Act* as there are limited markets for recycling mattresses in the province.
- If no provincial program exists by 2021, implement a pilot project for voluntary recycling of mattresses and box springs at the City EnviroDepots at no cost while continuing to collect mattresses and box springs at the curb.

Data from the pilot project would be used to confirm the costs, operational needs and logistics of moving to a ban of mattress collection at the curb and whether to offer the program for free, on a partial recovery basis or on a full cost recovery basis. The cost of a one year pilot project is estimated to cost \$150,000 to \$250,000.

Mattress Recycling

- There are two mattress recycling facilities in Ontario (located in Barrie and Toronto).
- Over 90% of the material in mattresses and box springs can be recycled.
- The largest municipality with a recycling program is the City of North Bay. Residents must take mattress to a drop-off depot and are charged \$20 to cover costs.



4.3 CURBSIDE ORGANICS MANAGEMENT PROGRAM

Summary - Proposed Actions, Diversion and Costs

The proposed organics collection program for curbside homes is:

- Implement curbside Green Bin program
- Implement bi-weekly garbage collection

It is estimated that the proposed program will increase London’s diversion rate by approximately 8% to 12% and have an annual operating cost \$3.9 to \$5.5 million.

Background

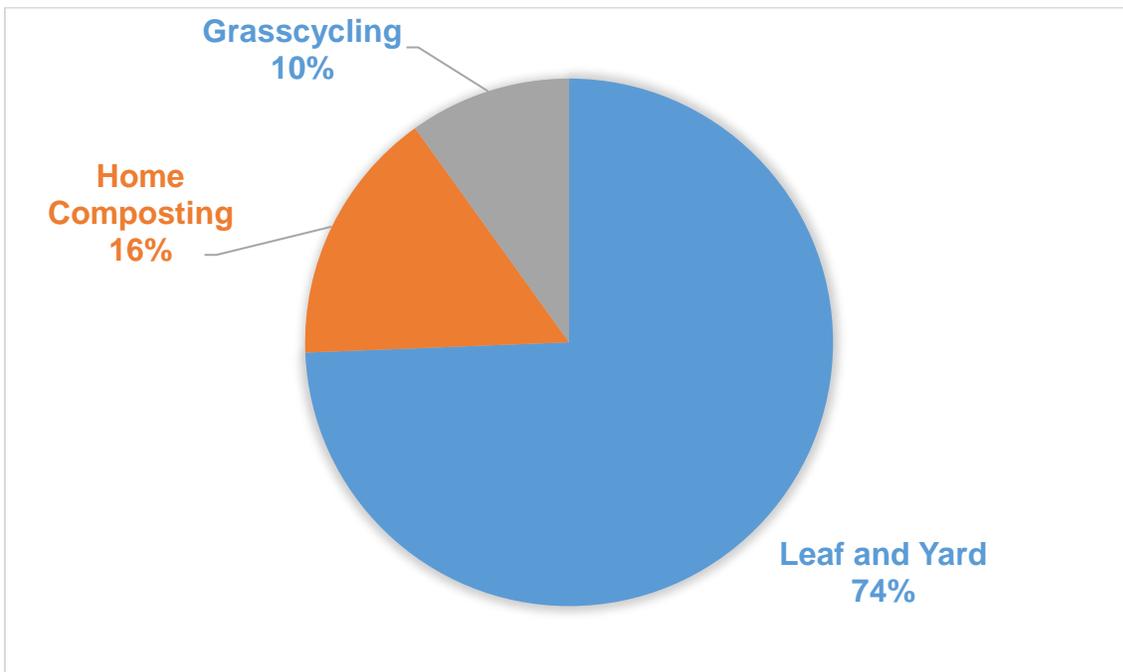
Existing Programs

The City has a number of programs in place to divert organics from single family residences; home composting, grasscycling (ban on the collection of grass trimmings and pay-per-bag to drop-off grass at EnviroDepots), curbside collection of yard waste, drop-off of yard waste at EnviroDepots and a Christmas tree collection program. The City currently diverts 36,000 tonnes of organics. This represents 50% of commonly collected organics. Commonly collected organics refers to yard waste, food scraps, soiled paper, tissues, etc. but does not include pet waste and sanitary products.

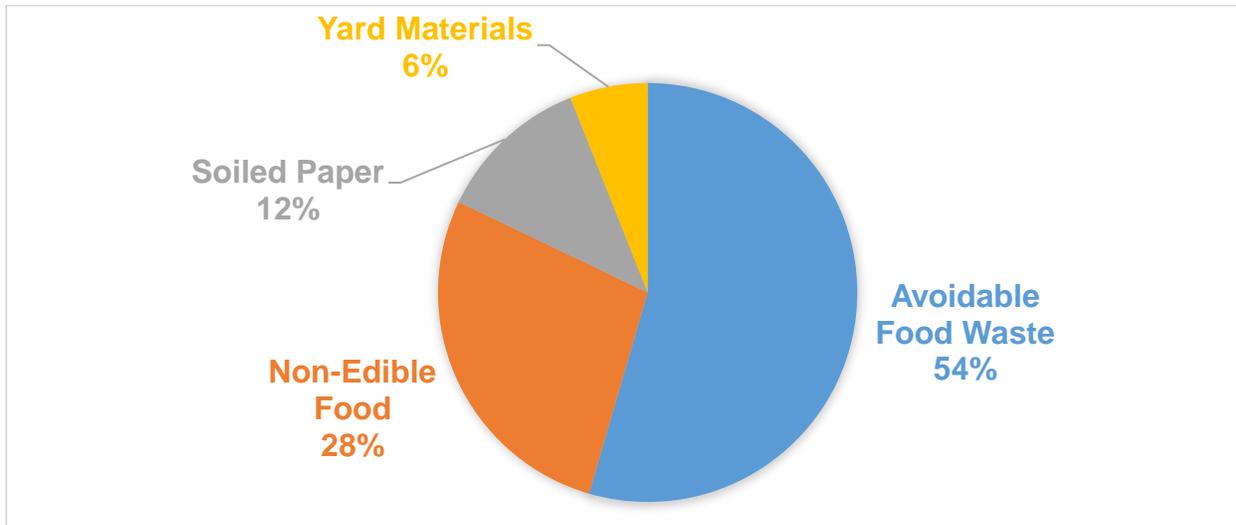
Figure 5 provides a breakdown of the various types of organics in the waste stream.

Figure 5 – Organics Breakdown

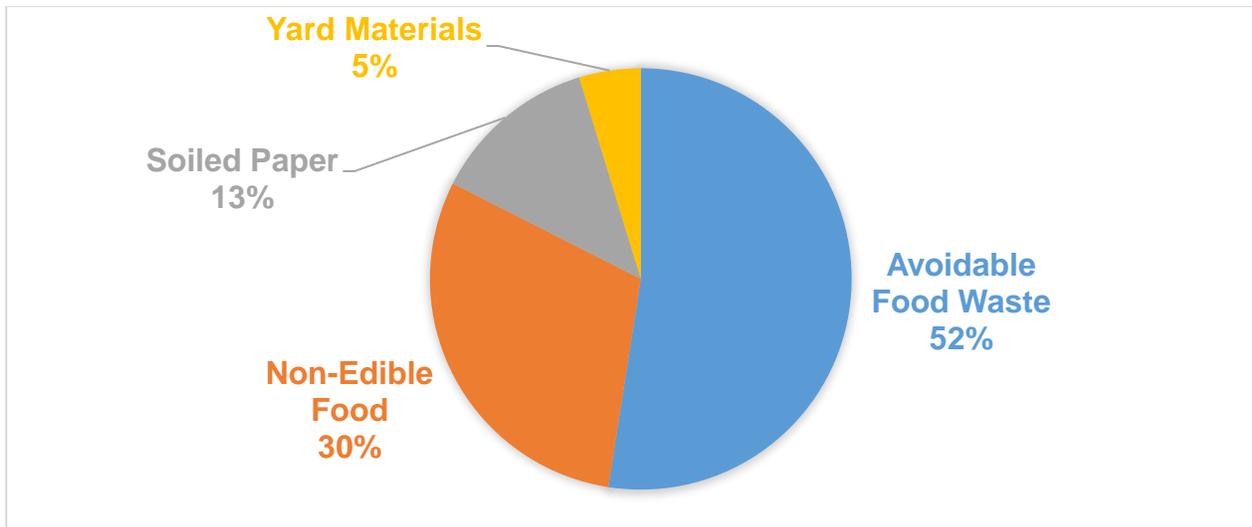
5a) Organics Diverted 36,000 tonnes



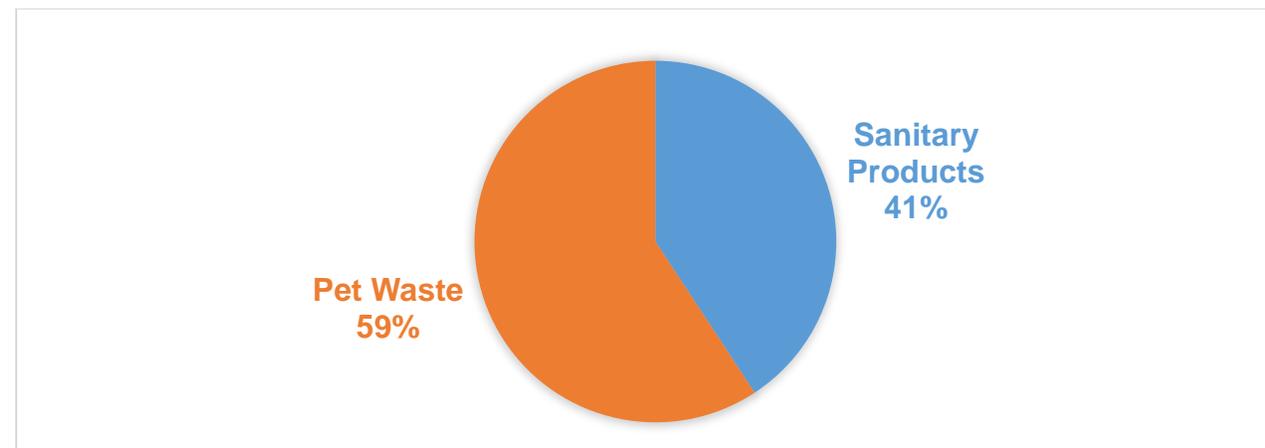
5b) Commonly Collected Organics Curbside in the garbage - 27,000 tonnes



5c) Commonly Collected Organics Multi-Residential in the garbage - 9,000 tonnes



5d) Other Organics in the garbage - 14,000 tonnes (11,000 tonnes curbside, 3,000 tonnes multi-residential)



Getting to 60% waste diversion will not be possible without an organics program because so much of the garbage currently collected is organics. As shown in Figure 5b and 5c, approximately 40% to 45% of garbage consists of “commonly collected organics” such as food waste and tissues/towelling and a further 15% of more “difficult to manage” organics like pet waste and sanitary products. Some of these organics will be reduced by proposed food waste avoidance, community composting and home composting programs (see Section 4.5) but the majority of organics will remain in the garbage without a city-wide collection program to divert this waste. Options for managing these organics are a Green Bin (source separated organics) program or a mixed waste processing program.

Green Bin Program – Homeowners place organics from their household in a “Green Bin” container which is collected separately from garbage. Green Bin programs typically capture 50% to 60% of the organics when garbage is collected bi-weekly and less if garbage is collected weekly. Details on existing programs in Ontario are presented in Appendix G.

The organics can be processed anaerobically or aerobically. Most existing processing facilities in the Province are at capacity or too far away to be practical. Available processing options for London include:

- Orgaworld (London)
- Seacliffe (Leamington, 2 hours away)
- Pre-process at Waste Management Resource Recovery Area beside the W12A Landfill site and ship to StormFisher (London) or several small farm digesters
- Build a facility in the Waste Management Resource Recovery Area beside W12A Landfill



Mixed Waste Processing – Garbage is separated into two or more waste streams for further processing. Further processing can include anaerobic or aerobic processing of an organics rich stream, capture of low quality recyclables, and production of a refuse derived fuel (RDF) or solid recovered fuel (SRF).

There are two permanent facilities in Canada (Edmonton and Halifax). There is one facility in Ontario that is piloting mixed waste processing (Canada Fibers Dongara High Diversion Facility in Toronto). It may be able to process London’s mixed waste and remove the organic fraction and other materials.



The City also has the option of building its own facility.

Food and Organic Waste Policy Statement

As discussed in Section 1.2, the Ministry of the Environment and Climate Change (now the Ministry of Environment, Conservation and Parks) issued the Food and Organic Waste Policy Statement on April 30, 2018. The document establishes the following targets and timelines:

- larger municipalities that currently do not have a Green Bin program (like the City of London) need to implement an organics management program that will achieve at least a 70 per cent waste reduction and resource recovery of food and organic waste generated by single-family dwellings by 2025.
- multi-residential buildings need to implement an organics management program that will achieve at least a 50 per cent waste reduction and resource recovery of food and organic waste by 2025.

The document states the:

“collection of source separated food and organics waste is the preferred method of servicing single family dwellings” but notes that “alternatives to the collection of source separated food and organics waste may be used if it is demonstrated that provincial waste reduction and resource recovery targets can be achieved efficiently and effectively”.

Mixed Waste Processing Pilot

In 2016, Canada Fibers bought the idle Dongara waste processing facility which previously had been used to process garbage into refuse derived fuel (RDF) pellets. The facility closed partly due to the regulatory and approval issues with using the RDF. Canada Fibers repurposed the facility and has run pilot projects using the facility as a mixed waste processing facility and as a material recovery facility. Toronto, Peel and London have all sent garbage to this facility to learn more about mixed waste processing. Details of the London pilot project are provided in Appendix H. Capture rates from the pilot project are summarized in Table 11. Estimated capture rates for a new purpose-built mixed waste processing area also provided in Table 11.

Table 11 - Summary of Mixed Waste Processing Pilot Capture Rates

Component	Canada Fibers MWP Facility	New Mixed MWP Facility
Organic Rich Fraction (including moisture loss)	25% to 30%	35% to 45%
Recyclables	3% to 5%	5% to 15%
RDF or upgraded to SRF	0% to 10%	0% to 20%
Total Percentage Captured ¹	30% to 40%	50% to 70%

Notes: 1. Cannot add maximum value for individual components. For example, facilities that maximize SRF production will have decreased organic rich fraction.

Comparison

A comparison of a Green Bin program versus a mixed waste processing program for managing curbside organics is presented in Table 12.

Table 12 - Comparison of Green Bin and Mixed Waste Processing Programs

Factor	Comment
Environmental	<ul style="list-style-type: none"> A mixed waste processing program potentially captures 25% to 80% more organics, reduces greenhouse gases (GHG) by a corresponding amount and opens up the possibility of producing solid recovered (SRF).
Financial	<ul style="list-style-type: none"> A Green Bin program costs approximately \$30 to \$45 per year to service a curbside household (about 124,000 households) compared to \$70 to \$115 per year to undertake mixed waste processing for the same households.
Social	<ul style="list-style-type: none"> Mixed waste processing program offers more convenience to residents (no change to how they manage waste).
Technical	<ul style="list-style-type: none"> The rules and regulations around mixed waste processing are evolving as current regulations do not explicitly address mixed waste processing or the products produced. There is limited experience with mixed waste processing in Canada. Past experience has not been positive in Canada and parts of North America. Facilities have either been closed (e.g., Three County (Total Recycling) System, Aylmer, Ontario; Plasco Energy Group, Ottawa, Ontario; SUBBOR, Guelph, Ontario; Dongara Pellet Plant, Vaughan, Ontario; Conporec Integrated Waste Management & Composting, Sorel-Tracy, Quebec; and several facilities in the United States) or retooled away from partially mixed waste processing or similar systems to source separated systems (e.g., City of Guelph wet/dry recycling; City of Moncton wet/dry recycling). This includes a recent decision in the City of Edmonton (March 2018) not to re-open its mixed waste processing facility in favour of progressing with a source separated organics collection program (see additional details on the next two pages). Modern mixed waste processing systems in Europe appear to have addressed many of the earlier challenges; however, the track record in North America is very limited at this time. This is expected to change in the next two to five years. Green Bin is the preferred method in the provincial Food and Organic Waste Framework and Policy Statement.

Recent information and/or decisions on mixed waste processing

[Extracts from]

Metro Vancouver, British Columbia

To: Zero Waste Committee

From: Paul Henderson, General Manager Solid Waste Services

Date: May 29, 2013 Meeting Date: June 6, 2013

Subject: **Review of Mixed Waste Material Recovery Facilities**

CONCLUSION

Staff from Metro Vancouver and the City of Vancouver visited mixed waste processing facilities in California in late April 2013 to examine their governance, operation, and performance. Mixed waste processing facilities visited were found to be high cost and recover limited recyclables. Facilitating the development of private sector MWMRFs in Metro Vancouver would be inconsistent with the ISWRMP and disadvantage local recyclers that depend on source separated materials.

[Extracts from]

THE REGIONAL MUNICIPALITY OF PEEL

WASTE MANAGEMENT STRATEGIC ADVISORY COMMITTEE AGENDA

DATE: Thursday, November 30, 2017

Mixed Waste Processing

Staff completed a feasibility study of Mixed Waste Processing to process Peel's garbage as a complement to source separation programs to help meet the Region's target of 75 percent 3Rs waste diversion.

Across North America (and within Canada) there are many examples of Mixed Waste Processing facilities that did not meet expectations. This is especially true of the low carbon fuel component but also true of the organics fraction. Removing grit and contamination from the organics fraction will not be easy but there are examples in Europe where this is done successfully, so staff believes it can be done. Producing low carbon fuel that consistently meets market specifications is even more difficult, with very few examples of this being done successfully.

- Mixed Waste Processing may not be able to successfully divert organics if the province applies new product quality requirements that preclude the use of material derived from mixed waste. The quality requirements applicable to the organic output of Mixed Waste Processing must be confirmed.
- The organic output of Mixed Waste Processing may not consistently meet product quality requirements, particularly for heavy metals, so long as items of household hazardous waste are present in the garbage. Programs or policies to eliminate household hazardous waste from the garbage should therefore be maintained and enhanced.

continued

Recent information and/or decisions on mixed waste processing

- Mixed Waste Processing may not be able to produce a marketable Low-Carbon Fuel product if the coal-burning industries are unable or unwilling to adjust their fuel quality requirements, particularly with respect to chlorine concentration.

Costs

In order to process all of its garbage, Peel would need to secure 250,000 tonnes per year of Mixed Waste Processing capacity. Options for securing Mixed Waste Processing capacity are developing a wholly Region-owned facility, partial ownership of a facility developed in partnership with other municipalities or private companies, and procuring capacity at a privately owned facility.

The capital cost of a 250,000 tonnes per year Mixed Waste Processing facility is estimated to be \$250 million, excluding land. The cost to operate and maintain the facility and manage output materials, excluding potential revenues from the sale of recyclables, Renewable Natural Gas or Low-Carbon Fuel, is estimated to be in the range of \$190 per tonne. All estimated costs are expressed in 2017 dollars.

[Extracts from]

CITY OF EDMONTON COUNCIL MINUTES

March 20, 2018 – Council Chamber

Waste Management Strategy Update

3. That Administration proceed with initial planning for a source-separated organics program for organic waste processing and collection, with planned implementation starting in Fall 2020 for the units receiving curbside collection.

Using limited cost information on mixed waste processing followed by either composting or anaerobic digestion, very preliminary estimates for London suggest the following:

- Capital costs for a 100,000 tonnes per year facility will be between \$50 and \$100 million (depending on what facilities would be new versus existing facilities); and
- Net operating costs, assuming reasonable revenues from recyclables, production of renewable natural gas and the sale of SRF, would be between \$100 and \$150 per tonne.

City are recommending that a curbside Green Bin is the best direction for London. More evidence is required on mixed waste processing in Ontario before the uncertainty around the technical and regulatory risks can be removed. For all the recent progress made in the field of mixed waste processing, there are as many if not more examples that highlight the challenges of this approach. For these reasons, City staff is recommending to proceed with a mixed waste processing pilot project in the multi-residential sector and continued monitoring of ongoing work in a few Ontario municipalities (e.g., Region of Peel, City of Toronto, Region of Durham, County of Oxford).

Previous cost estimates for a Green Bin program include: initial capital of \$12 million and on-going annual operating costs of \$3.9 million. These estimates are based on a weekly collection of organics comprised of food waste and tissues/paper towelling (diapers/sanitary products would not be included) and bi-weekly collection of garbage. It is estimated that 13,000 to 15,000 tonnes of organics would be collected per year. Almost all the material collected would be diverted.

A Green Bin program that includes pet waste and sanitary products is expected to collect 18,000 to 22,000 tonnes of material. Some of the material collected would not be diverted (e.g., plastic bags containing pet waste, portion of diapers). A preliminary estimate of costs of this type of program is approximately \$5 million annually.

It is expected that the cost of mixed waste processing may decrease in the future because of improved technology and potential revenues from producing renewable natural gas from the organics.

In the future a mixed waste processing program may be preferred if the technical and regulatory risks are addressed. For this reason, it is recommended that the City's Green Bin program be designed to offer flexibility to transition to a mixed waste processing program in the future.

Flexibility can be achieved by the City:

- not building its own processing facility for the organics from the Green Bin Program or entering into a long term contract (e.g., ten or more years) for processing capacity; and,
- having the processing contract(s) match the expected service life of the trucks (about seven years).

Garbage Collection Frequency

Nine of the 13 largest Ontario municipalities with a Green Bin program have transitioned to bi-weekly garbage collection (Table 13), and at least two of the other programs are reviewing the option to go to bi-weekly collection. Municipalities have found that the amount of organic material collected increases by 50% to 100% with the introduction of bi-weekly garbage collection. Collection of Blue Box recyclables also increases with the introduction of bi-weekly garbage collection.

It is recommended that London switch to bi-weekly, same day garbage collection and weekly recycling collection with the introduction of source separated organics collection.

Implementation Plan

If the City proceeds with a Green Bin program, an implementation plan will be developed to refine

cost estimates, determine operational requirements and finalize an implementation schedule. Decisions on operational requirements are presented in Table 14.

Table 13 - Garbage Collection Frequency for Large Municipalities with Green Bin Collection

Frequency of Garage Collection	Municipalities
Weekly	Hamilton ¹ , Niagara ¹ , Simcoe County, Kingston
Bi-weekly	Durham, Halton, Ottawa, Toronto, Peel, Waterloo, York, Guelph, Barrie

¹ Reviewing bi-weekly

Table 14 - Green Bin Operational Decisions

Operational Decisions	Options
What is collected?	<ul style="list-style-type: none"> Commonly collected organics (food waste and tissues/paper toweling) Yard waste (none or top up cart) Other organics (pet waste and sanitary products)
How it is collected?	<ul style="list-style-type: none"> Co-collected with garbage Separate collection vehicles (e.g., one person side loaders)
Who processes material?	<ul style="list-style-type: none"> Private facility (e.g., Orgaworld) Pre-process at Waste Management Resource Recovery Area and ship to anaerobic digester (e.g., StormFisher) Build City facility operated by the private sector
Bin size	<ul style="list-style-type: none"> Small (35 to 45 litre) Medium (50 to 60 litre) Large (greater than 60 litre); will require semi-automatic or automatic collection
Liners/bags	<ul style="list-style-type: none"> Paper (paper bags, paper towels, newspaper) Compostable plastics Plastics (typically only allowed if collecting pet waste and/or sanitary products)

The draft implementation schedule for a curbside Green Bin Program is identified on Table 15.

Table 15 - Draft Green Bin Implementation Schedule

Date	Task
January 2019	Finalize Operational Details
February 2019	Finalize Costs and Approval of Authorization to Spend Funds from Approved Capital Budget
Spring 2019	Request for Proposals (RFP) for Processing of Green Bin Materials
Winter 2019/2020	Award Processing Contract Release Request for Tenders (RFT) for new Waste Collection Vehicles
Spring 2020	Award Collection Vehicle Contract Release RFT for Supply and Delivery of Green Bins
Fall 2020	Award Green Bin Supply Contract
Spring/Summer 2021	Start of Major Promotion and Awareness Program Distribution of Green Bins
Fall 2021	Begin Roll-out of Program

4.4 MULTI-RESIDENTIAL ORGANICS MANAGEMENT PROGRAM

Summary - Proposed Actions, Diversion and Costs

The proposed organics collection program for multi-residential homes is a:

- Mixed waste processing pilot on a portion of the waste from multi-residential homes

It is estimated that the proposed program will increase London's diversion rate by approximately 0.5% to 0.7% and have an annual operating cost \$0.4 to \$0.7 million. The learnings from the pilot project will help the City in future decisions about whether or not to implement a full scale mixed waste processing program in multi-residential buildings and/or curbside homes.

Background

Municipal Program versus Individual Building Programs

The provincial Food and Organic Waste Policy Statement requires individual multi-residential buildings and not the municipality to provide an organics management program by 2025. This requirement is similar to the requirement for multi-residential buildings not the municipality to provide a Blue Box program.

Most municipalities, including London, do provide Blue Box programs for multi-residential buildings because of the improved service and lower program costs that are possible through “economies of scale” and having a consistent service for all citizens in the municipality. Some larger municipalities in Ontario already provide an organics management program to multi-residential buildings and are expected to continue to do so in the future.

Considering the above, it is recommended that the City provide an organics management program for multi-residential buildings.

Comparison

Just as in the curbside program, a Green Bin program is less expensive and offers less technical and regulatory risk where as a mixed waste processing program offers more convenience to residents and will capture more organics.

A multi-residential Green Bin program is much less effective in terms on increasing waste diversion, than a comparable curbside Green Bin program, (see Table 16). For this reason it is not recommended to proceed with a multi-residential Green Bin program.

Table 16 - Comparison of Typical Curbside and Multi-Residential Green Bin Programs

Consideration		Curbside	Multi-Residential
Capture Rate		50% to 60%	20% to 25%
Cost per Tonne Diverted		\$250 to \$350	\$500 to \$600
Contamination Levels	Commonly Collected Organics	2% to 5%	5% to 15%
	All Organics	5% to 15%	15% to 25%

A multi-residential mixed waste processing program is preferred but for all the recent progress made in the field of mixed waste processing, there are as many if not more examples that highlight the challenges of this approach. This is why it is recommended to proceed with a small scale one to two year pilot project in the multi-residential sector and

to continue to monitor work being undertaken in a few key Ontario municipalities (e.g., Region of Peel, City of Toronto, Region of Durham, County of Oxford).

The pilot project will allow to the City to confirm operational requirements, determine technical constraints and consult with the MOECP about regulatory requirements. The learnings from the pilot project will help City in future decisions about whether or not to implement a full scale mixed waste processing program in multi-residential buildings and/or curbside homes.

Preliminary details for a mixed waste processing pilot are presented below:

- include both low-rise and high-rise buildings;
- process approximately 15% of multi-residential waste (60 tonnes waste per week);
- cost approximately \$500,000 per year (between \$330 and \$550 per tonne diverted); and
- divert between 900 tonnes per year (30%) and 1,500 tonnes per year (50%) of the waste to beneficial uses

4.5 OTHER NEW ORGANICS MANAGEMENT PROGRAMS

Summary - Proposed Actions, Diversion and Costs

The following additional organics management programs are proposed:

- Food Waste Avoidance – Develop a food waste avoidance strategy;
- Home Composting - Reduce the cost of composters at the EnviroDepots and undertake additional sale events at select community locations; and
- Community Composting – Provide financial support to community groups or environmental organizations that want to set up a community composting program.

It is estimated that approximately 0.3% to 0.6% of residential waste will be diverted by the above measures and cost \$200,000 to \$300,000 per year.

Background

Food Waste Avoidance

On average London households throw out 105 kilograms per year of avoidable food waste (i.e., food that at one point could have been eaten). The monetary value of this wasted food is estimated to be between \$450 to \$600 per household annually which is worth between \$60 to \$100 million city-wide, per year. This food waste also represents a considerable part of our household carbon food print not to mention lost nutrition. Food waste avoidance entails better management of the food that we buy so that less of it ends up in the garbage. In short, this means optimizing household food planning, purchase, storage, preparation and serving of food.

The City in conjunction with Western University, PhD Candidate Paul van der Werf and 2cg Consulting piloted two outreach projects for reducing the amount of avoidable food waste thrown into the garbage.

Pilot Project #1 focused on reminding people of the annual value of household food waste using a 'Reduce Food Waste, Save Money' campaign. Homeowners were provided with a package of information including a fridge magnet with tips and over the pilot project study period were sent a series of email messages reinforcing the saving money theme, each highlighting a unique food waste reduction tip and directing households to the www.foodwaste.ca website for more detailed information.

Pilot Project #2 provided households with a range of containers they could use to manage their food. The kit included plastic containers, mason jars, and Ziploc bags. This included a fridge magnet with food saving tips, a grocery list note pad and freezer bag stickers. These households also had access to the www.foodwaste.ca website.

The lower cost program, Pilot Project #1, was determined to be more effective in reducing the amount of avoidable food waste thrown into the garbage.

Based on research, local data in London, community feedback and survey data, it is recommended that the City:

- develop a food waste avoidance program in 2019 based on a 'Avoid Food Waste, Save Money' campaign

For planning purposes it is estimated that a food waste avoidance program will result in a 10% reduction in food waste in 10% to 30% of London households and will cost \$150,000 to \$200,000 per year. This would divert 200 to 600 tonnes of food scraps and save residents \$900,000 to \$2,700,000.

It is noted that the food waste reduction program has the potential to reduce significantly more food waste. This would result in additional savings for residents and increased greenhouse gas reductions but have a smaller impact on increased diversion as it is expected that the food waste going to the Green Bin would decrease as food waste avoidance increased. This would however reduce the cost of the Green Bin program.

Home Composting

Home (or "backyard") composting has played an important role in waste reduction in London since the mid-1990s. Between 1995 and 1999 the city of London participated in a provincial grant program to provide subsidized home composters to residents. Through this program, the City sold approximately 53,000 subsidized composters. Since 2007 the City has sold composters at cost from the EnviroDepots. The units are sold for \$35 and approximately 400 to 800 units per year are sold. Home composting is promoted on the City's website and through information flyers.

Two pilot projects were undertaken in 2013 to learn more about the potential to increase waste diversion by increasing home composting. The pilot projects tested strategies to increase the uptake of home composting units by residents. One pilot project in Northridge involved door-to-door sales of composters at a subsidized rate (\$10 per composter). The other pilot project in Old South included the pre-order and pick up at a local community school and a higher price for the composters (\$20 per composter).

It is estimated that home composting currently diverts between 5,000 and 6,000 tonnes of material annually and approximately 40% to 50% of households do some composting.

Initial estimates suggest that an additional 500 to 1,500 tonnes per year of food scraps could be diverted (up to 1% increase in overall diversion) with an aggressive home composting program modeled on the Northridge pilot project. It is estimated that it would take 3 years to canvass the City and cost approximately \$400,000 to \$500,000. Similarly, initial estimates suggest that less than 500 additional tonnes would be diverted (less than 0.5% increase in overall diversion) with a home composting program modeled on a local community pick up location. It is estimated this program would cost approximately \$40,000 to \$100,000.



It may be possible to increase home composting by reducing the cost of the home composter at the EnviroDepots to \$20, \$10 or free and doing additional promotion and outreach. Reducing the cost of composters to \$20 per unit would cost \$10,000 to \$50,000 per year. Reducing the cost of composters to \$10 would cost \$20,000 to \$100,000 per year. It is expected that reducing the cost of composters would result in less than 500 additional tonnes being diverted (less than 0.5% increase in overall diversion).

It is recommended that the City:

- reduce the cost of composters at the EnviroDepots from \$35 to \$20 per unit for one year to determine the impact on up-take of composters and estimated waste diversion; and,
- undertake additional sale events at \$10 per unit at several community locations (e.g., community centres) and community events (e.g., Home County Music and Art Festival) for one year to determine the impact on waste diversion.

A decision on whether or not to continue the programs would be made following the first year. For planning purposes it is assumed that the above measures will continue on, result in an annual diversion of 300 tonnes and cost \$80,000 to \$100,000 per year to operate.

Community Composting

The City could consider composting operations in locations where community members can compost their garden or kitchen waste using large bin composters, small scale in-vessel composters or vermicomposting. Organic waste collection bins could be located at different participating sources, e.g., churches, community gardens, coffee shops, etc. Collected waste would be dropped off to the community composting area. Final compost could be used in community gardens or for local landscaping needs.

The City of Toronto provides funding to FoodShare, a non-profit food security organization that supports Toronto Compost Leaders, a grass roots initiative to build community composting capacity in multi-residential buildings using food waste. No other large municipality in Ontario has a formal community composting program.

Community composting may require provincial approvals depending on the location and where the food waste is coming from.

It is recommended that the City:

- set aside funding for community groups or environmental organizations that want to set up a community composting program; and
- funding would cover 100% of capital costs.

It is suggested that City set aside \$10,000 to \$20,000 per year to support community composting initiatives. For estimating purposes, it is assumed that 10 community composting sites will be established by 2022 diverting approximately 20 to 40 tonnes per year.

4.6 WASTE REDUCTION AND REUSE INITIATIVES AND POLICIES

Summary - Proposed Actions, Diversion and Costs

The following waste reduction and reuse initiatives and policies are proposed:

- create a Waste Reduction and Reuse Coordinator position within the Solid Waste Management Division;
- \$150,000 to 250,000 per year in increased funding be allotted to waste reduction and reuse initiatives;
- reduction of the container limit to 2 or 3 containers per collection when the Green Bin program with bi-weekly garbage collection is implemented;
- further explore the use of clear bags for garbage collection if London does not move to roll-out cart based garbage collection system;
- further explore a full user pay garbage system if London moves to roll-out cart based garbage collection system;

- further examine other incentive and disincentive initiatives (best practices) from other municipalities (e.g., mandatory recycling by-law, reward systems, user fees, etc.); and
- include the calculation of waste reduction in addition to waste diversion when providing waste management progress reports to Council.

In addition to the City measures, it is expected that additional province wide measures as part of their Waste-Free Ontario Strategy will be undertaken and many residents will take additional actions on their own to reduce their waste.

It is estimated that the above measures will cost the City \$150,000 to \$350,000 per year. For planning purposes, it is estimated all waste reduce and reuse initiatives and policies will divert approximately 1% to 4% of residential waste.

Background

Waste Reduction and Reuse Initiatives

There are numerous initiatives that could be introduced that focus on raising awareness and engaging citizens to make small changes in their daily life to reduce waste and increase reuse of materials. Initiatives include lending libraries, repair workshops, promotion of reuse events and increased waste reduction education and outreach.

As some of the initiatives listed above are already underway in London through other organizations, the City could explore options to build partnerships with these organizations. This could include providing financial support for new waste reduction and reuse programs and initiatives.

The most effective way of increasing diversion through waste reduction and reuse is often by increasing community engagement, education and providing feedback to residents. The impact of any one community engagement or education initiative may not be significant but together these small changes contribute to cultivating a culture of waste reduction and over time could make a significant difference to how we manage resources. To accomplish this, it is proposed to increase funding and staff resources for waste reduction and reuse initiatives.

Waste Reduction Success Story

In 2007, the Ontario government introduced a goal to reduce the number of carry-out plastic bags in the province by 50% by 2012.

A number of initiatives were introduced by industry and municipalities including promotion of reusable bags and bins, improved bagging practices at check-outs, charging for plastic bags.

By 2009 there was a 70% drop in Ontario's per-capita use of plastic bags.

It is hoped the City's initiatives coupled with any provincial and industry initiatives will reduce per capita garbage going to landfill. Currently, overall the diversion rate is reported to council on a regular basis. The diversion rates for specific programs are also provided to Council as required. It is not possible to measure the reduction/reuse achieved by individual initiatives but is possible to calculate

the overall change in per capita waste generation from year to year. Including this measure in future reports to Council will allow us to track progress being made in waste reduction and reuse and highlight their importance.

Summary

It is recommended that the City:

- create a Waste Reduction and Reuse Coordinator position within the Solid Waste Management Division;
- \$150,000 per year in increased funding be allotted to waste reduction and reuse initiatives; and
- the City include the calculation of waste reduction in addition to waste diversion when providing waste management progress reports to Council.

Waste Reduction and Reuse Policies

Although there are high levels of resident participation in City diversion programs, participation is voluntary, and does not require residents to first minimize the quantity of waste being generated in the home. There are a number of "behaviour change initiatives" that could be undertaken to encourage both waste reduction (i.e., not produced in the first place) and waste diversion of recyclables and compostables. As waste diversion programs mature and all practical programs have been implemented, behaviour change initiatives become the key tools remaining to increase diversion.

Some of these programs are not costly to implement and may generate revenue (e.g., user pay for garbage) or reduce costs (e.g., lower container limits). Other programs would require support by businesses and residents, and could range from tougher enforcement of waste by-laws (e.g., garbage container and weight limits) to City policies and by-laws that would impact how business is conducted and consumers must abide by (e.g., restricting/banning certain business transactions). Some residents and businesses may see these programs as inconvenient or "going too far".

Below are some common behaviour change/adjustment initiatives that may have a role in London in the future. Most of these initiatives will require a change to current Council policies and practices and be implemented through a by-law.

Bag Limits

Reducing the container limit encourages participation in the various waste diversion programs as well as reducing garbage generation.

The City of London currently has a 3 Container Limit (included in taxes) for garbage collection for single family households. The City's container limit takes into consideration the longer cycle times between collections which varies from 8 to 12 days throughout the year. This is equivalent to 1.8 containers per week for a 12 day cycle to 2.6 containers per week for an 8 day cycle with an average of 2.4 containers per week over the entire year.

Most large Ontario municipalities with a source separated organics program have a garbage container limit equivalent to one or two containers per week. It is recommended that the City implement a 2 or 3 Container Limit per collection if the City implements a source separated organics collection program with bi-weekly garbage collection.

Residents will still have the option of paying to dispose of extra garbage at the curb or the EnviroDepots.

Clear Bags

Some municipalities have residents use clear bags so that recyclables or compostables could be easily spotted in the garbage. This is more common in the Maritimes but the City of Markham has had a clear bag program for five years and credits this program for a significant reduction in the amount of garbage and an increase in recycling and composting. London is currently looking at garbage collection options including collection of garbage in roll-out carts. A clear bag program is not compatible with a roll-out cart program for garbage collection.

London should further explore the use of clear bags for garbage collection if London does not move to a roll-out cart based garbage collection system.

User Pay

Some smaller municipalities have gone to full user pay systems where residents pay for every container of garbage placed to the curb. Full user pay systems encourage participation in the various waste diversion programs as well as reducing one's garbage generation.

A full user pay system is typically not practical in larger municipalities unless the municipality has a cart based garbage collection system. In Toronto, residents pay an annual fee ranging from \$255 to \$487 per year per household depending on the size of cart they select.

A full user pay garbage system should be explored further if London moves to roll-out cart based garbage collection system.

Other Incentive and Disincentive Programs

The vast majority of Londoners participate in various diversion programs although there are those that refuse to participate in these voluntary programs. There are various incentive and disincentive programs that will encourage greater participation.

For example, the City could explore developing a mandatory by-law for the diversion of materials for which there are recycling or composting programs. Enforcement of the by-law may require additional staff. Mandatory diversion by-laws usually work best in conjunction with a clear garbage bag program.

Alternatively, some municipalities ban recyclables or other materials from garbage collection. The City currently has banned a number of materials from garbage collection including renovation materials, grass clippings, blue box recyclables, scrap metal, electronics, tires and yard materials. These materials were banned because reasonably convenient recycling options exist. As new programs are developed, consideration could be given to banning materials accepted by these programs.

There are incentive programs that the City could consider to encourage greater program participation like the Gold Box program in Hamilton or Recycle Bank (rewards program) in the United States.

Summary

It is recommended:

- reduction of the container limit to 2 or 3 containers per collection when the Green Bin program with bi-weekly garbage collection is operational;
- further explore the use of clear bags for garbage collection if London does not move to a roll-out cart based garbage collection system;
- further explore a full user pay garbage system if London moves to roll-out cart based garbage collection system; and
- further examine other incentive and disincentive initiatives (best practices) from other municipalities (e.g., mandatory recycling by-law, reward systems, etc.).

4.7 ENVIRONMENTAL, SOCIAL AND COST SUMMARY

In summary, this report proposes the set of actions identified on Table 17 to achieve 60% waste diversion. By taking these actions, the City and Londoners receive a number of environmental social and financial benefits which are listed below.

Environmental Benefits

1. Increased Waste Diversion

The Province's *Strategy for a Waste-Free Ontario: Building the Circular Economy* in February 2017 identifies two key aspirational long term environmental goals. One of these environmental goals is zero waste. Going from 45% to 60% waste diversion is a significant step towards this goal.

2. Reduced GHG

The other key aspirational long term environmental goal identified by the Province is zero GHG emissions from the waste sector. The measures in this Action Plan will reduce GHG emissions by 17,000 to 27,000 tonnes annually. This is equivalent to removing 4,200 to 6,800 cars from the road.

Table 17 - Proposed Actions to Achieve 60% Residential Waste Diversion

Blue Box (Blue Cart) Programs	
1.	Increase capture of recyclables from 63% to 75% (less placed in the garbage)
New (or Expanded) Recycling Programs and Initiatives	
2.	Bulky Plastics <ul style="list-style-type: none"> a) Continue with existing pilot project b) Consider implementation of an expanded program once long term stable markets have developed
3.	Carpets <ul style="list-style-type: none"> a) Wait to see if the Province develops a provincial program for carpets under the <i>Waste-Free Ontario Act</i> as there are limited markets for recycling carpets in the province b) If no provincial program exists by 2021, implement a pilot project
4.	Ceramics <ul style="list-style-type: none"> a) Provide a drop-off location for ceramics at no cost at the City's EnviroDepots b) Ban collection of toilets at the curb
5.	Clothing and Textiles <ul style="list-style-type: none"> a) develop a textile awareness strategy to promote existing reuse opportunities b) pilot depot collection at select multi-residential buildings
6.	Small Metal (Small Appliances/Electrical Tools/Scrap Metal) <ul style="list-style-type: none"> a) implement semi-annual curbside collection of small metal items b) pilot depot collection at select multi-residential buildings
7.	Furniture <ul style="list-style-type: none"> a) Begin semi-annual collection of wooden furniture b) Provide a drop-off location at W12A EnviroDepot for wooden furniture c) Ban wooden furniture from curbside garbage collection
8.	Mattresses <ul style="list-style-type: none"> a) Wait to see if the Province develops a provincial program for mattresses under the <i>Waste-Free Ontario Act</i> as there are limited markets for recycling mattresses in the province b) If no provincial program exists by 2021, implement a pilot project
Curbside Organics Management Program	
9.	Implement a curbside Green Bin program
10.	Implement bi-weekly garbage collection
Multi-Residential Organics Management Program	
11.	Implement a mixed waste processing pilot (to recover organics and other materials) on a portion of the waste from multi-residential homes

Table continues

Table 17 - Proposed Actions to Achieve 60% Residential Waste Diversion

Other New Organics Management Programs
<p>12. Develop and implement a food waste avoidance strategy</p> <p>13. Reduce the cost of composters at the EnviroDepots and undertake additional sale events at select community locations</p> <p>14. Provide financial support to community groups or environmental organizations that want to set up a community composting program</p>
Waste Reduction and Reuse Initiatives and Policies
<p>15. Create a Waste Reduction and Reuse Coordinator position within the Solid Waste Management Division</p> <p>16. Provide financial support for community waste reduction and reuse initiatives</p> <p>17. Reduce the container limit to two or three containers per collection when the Green Bin program with bi-weekly garbage collection is operational</p> <p>18. Further explore the use of clear bags for garbage collection if London does not move to a roll-out cart based garbage collection system</p> <p>19. Further explore a full user pay garbage system if London moves to a roll-out cart based garbage collection system</p> <p>20. Further examine other incentive and disincentive initiatives (best practices) from other municipalities (e.g., mandatory recycling by-law, reward systems, user fees, etc.)</p> <p>21. Provide additional feedback approaches to residents (including how waste reduction and waste diversion are calculated when providing waste management progress reports)</p>

3. *Reduced Landfill Impacts*

Reducing the amount of waste going to the W12A Landfill will reduce nuisance impacts such as traffic, litter, vermin, noise and odours; and the amount of additional land and/or height of the proposed expansion of the W12A Landfill.

4. *Better Use of Material and Resources*

Materials diverted will be turned into useful products instead of being landfilled. For example, if organics from a Green Bin program were composted, it would result in the production of approximately 350,000 to 500,000 bags of compost with a market value of \$700,000 to \$1,100,000. If the organics were anaerobically digested, it would result enough biogas to generate 1 to 1.5 million m³ of renewable natural gas.

Social Benefits

5. *Creation of Jobs*

Studies have also shown that Ontario's existing waste diversion programs can create up to 10 times more jobs than waste disposal. The MOECP estimates that for every 1,000 tonnes of waste diverted in Ontario, seven jobs are created through the existing waste diversion programs. California's Department of Resources, Recycling and Recovery estimates that up to 5 jobs every 1,000 tonnes of waste diverted. These

“rules of thumb” suggest that approximately between 125 and 170 jobs will be created (direct and indirect; within and outside London).

6. *Social Satisfaction*

Undertaking the proposed actions in this plan, will allow many residents to feel additional satisfaction or pride living in an environmentally progressive city.

Financial Benefits

7. *Short-term Landfill Savings*

Reducing the quantity of waste to the landfill reduces the capital and operating cost of the landfill.

The average capital and operating cost for the W12A Landfill is estimated to be approximately \$30 to \$40 per tonne. Some of these costs are variable costs that vary directly with the quantity of waste going to the landfill. In other words, the cost goes up the same amount for every additional tonne of waste going to the landfill. An example of this would be leachate collection system costs.

Some of the costs are fixed costs and do not change with the quantity of waste going to the landfill. An example of this would be groundwater monitoring costs.

It is estimated that the average landfill savings for each tonne of waste diverted from the landfill after accounting for fixed costs and variable costs is approximately \$15 to \$20 per tonne.

The annual landfill savings is projected to be approximately \$360,000 to \$480,000 per year. The majority of these savings would be in capital costs (about 75%) which could be used to reduce the annual contribution from general taxes required for the Sanitary Landfill Reserve Fund. City staff are recommending that W12A Landfill costs and savings be handled separately as more details become known through the environmental assessment process and current and future capital cost impacts associated with landfill operations.

8. *Avoid Increase in Long Term Disposal Costs*

The existing landfill has less than 11 years of capacity remaining and it is expected that approval of any expansion of the landfill by the MOECP would be unlikely unless the City has programs in place to achieve 60% waste diversion.

The increase in waste disposal costs will be significant if the City must export its waste to a private landfill elsewhere in Ontario. The increase in disposal costs for the City to export its waste is estimated to be approximately \$5 to \$7 million per year.

Cost Summary

The approximate cost, expected diversion and timeline for implementation for the actions listed in Table 17 are summarized in Table 18. The cost to implement the 60% Waste Diversion Action Plan is estimated to range from \$5.05 to \$7.45 million with the most likely cost being \$6.5 million.

Table 18 - Summary of Diversion, Estimated Operating Costs and Schedule

Program Category	Diversion Rate		Annual Estimated Operating Cost			Schedule
	Range	Likely	Range	Likely	\$/Hhd ^a	
Blue Box Recycling Improvements	1% - 3%	2%	\$0	\$0	\$0	Likely not under City control ^b in the future
New Recycling Programs and Initiatives	0.4% - 0.8%	0.6%	\$350,000 - \$550,000	\$450,000	\$2.00 - \$3.00	2019 ^c - 2021
Curbside Organics Management Program	8% - 12%	10%	\$3,900,000 - \$5,500,000	\$5,000,000	\$21.75 - \$30.50	2020 - 2022
Multi-Residential Organics Management Pilot Program	0.5% - 0.7%	0.6%	\$400,000 - \$700,000	\$500,000	\$2.25 - 4.00	2020
Other Organic Management Programs	0.3% - 0.6%	0.4%	\$250,000 - \$350,000	\$300,000	\$1.50 - \$2.00	2019 ^c - 2021
Waste Reduction, Reuse Initiatives and Policies	1% - 4%	1.4%	\$150,000 - \$250,000	\$150,000	\$0.50 - \$2.00	2019 ^c - 2021
Total^c	11% - 21%	15%	\$5,050,000 - \$7,450,000	\$6,500,000 (\$36.00)	\$28.00 - \$41.50	2019^c - 2022

Notes:

- Based on 180,000 households.
- The provincial Waste-Free Ontario Strategy calls for a transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full EPR program by 2023. The EPR program will require producers to take full financial and operational responsibility for all Ontario municipal Blue Box programs.
- 2019 Multi-year budget has \$140,000 assigned to new waste diversion initiatives.
- Totals may not add due to rounding.

Table 19 provides a comparison of waste management system costs for London and other municipalities that are part of the Municipal Benchmarking Network Canada initiative. The table also highlights London's expected costs after implementation of the 60% Diversion Action Plan.

Table 19 – 2016 Municipal Waste Management Costs^a

Municipality	Cost per Tonne		Cost per Household		
	Collection & Disposal	Diversion	Collection & Disposal	Diversion	Total
Calgary	216	346	150	89	239
Durham	324	205	127	106	232
Halton	248	201	97	106	203
Hamilton	344	151	150	69	218
Montreal	230	249	129	82	211
Niagara	195	138	90	102	192
Regina ^b	150	331	150	59	209
Sudbury (Greater)	349	181	168	92	260
Toronto	240	442	90	158	248
Waterloo	226	195	142	94	236
Windsor ^b	204	123	118	45	163
Winnipeg ^b	107	260	83	82	165
Average	236	235	124	90	215
London (existing programs) ^b	121	123	89	50	139
London (60% - likely cost) ^c	156	161	87	86	173
London (60% - high cost) ^d	156	171	87	91	178

Notes

- From Municipal Benchmarking Network Canada. Includes all costs including amortization, landfill liability costs and municipal overhead. Includes Blue Box recycling revenue but excludes all other revenue (e.g., landfill tipping fees, WDO funding, waste collection fees, EnviroDepot fees, etc.).
- No Green Bin program.
- City of London current program cost with Likely Cost from the 60% Waste Diversion Action Plan (Table 18).
- City of London current program cost using the High end of the Range from the 60% Waste Diversion Action Plan (Table 18).

Table 19 shows that if London implemented all parts of the 60% Waste Diversion Action Plan using the Likely costs estimate of \$6.5 million it would have the 3rd lowest overall waste system cost on a per household basis and lowest cost among municipalities that have a Green Bin program. It would also be one of the few municipalities to reach 60% waste diversion.

Using the High end of the Range (\$7.25 million) from the 60% Waste Diversion Action Plan (Table 18) London would still have the 3rd lowest overall waste system cost on a per household basis and lowest cost among municipalities that have a Green Bin program.

Funding 60% Waste Diversion

Potential funding sources to lower the annual cost of \$5.05 to \$7.45 million by \$1.8 to \$3 million per year are highlighted below.

Operating Costs

As shown in Table 18, annual operating costs for the 60% waste diversion action plan will range from \$5.05 million to \$7.45 million and will depend on final program design, market competition, etc. The most likely annual operating cost is estimated to be \$6.5 million.

City staff continue to examine a number of financing approaches. The change in government in Ontario has created additional uncertainty as a number of potential revenues sources for waste diversion are on hold. Besides taxes, potential sources of revenue currently include:

- Additional recycling program costs paid by industry - potential cost savings from expected transition from the current Blue Box program, which is municipally managed and co-funded by industry and municipalities, toward a full EPR program paid 100% by industry by 2023. This is expected to reduce the City's current waste diversion program costs by \$1.5 to \$1.8 million. In addition there is the potential of one time capital funding for recycling infrastructure.
- Other extended producer responsibility revenues - for items such as branded organics (e.g., diapers, soiled paper, tissues/toweling) carpets, textiles, furniture and other consumer goods. This sources could range between \$50,000 and \$150,000 per year.
- W12A Landfill levy to support diversion - a specific amount charged on every tonne of garbage that is placed in dedicated fund for waste reduction and waste diversion. The amount that could be collected is based on many factors (e.g., which garbage is it applied to, what fee, etc.). Levies between \$2 and \$20 per tonne are noted in some jurisdictions. This source could range between \$250,000 and \$1 million per year.
- Greenhouse gas offset credits associated with organics diversion - The Government of Ontario was working on introducing an emissions offset protocol for aerobic composting into Ontario's Cap & Trade program, based on an existing protocol used in Alberta (e.g., five composting projects currently listed on the Alberta Emissions Offset Registry). The

value of these offsets would have been between \$100,000 and \$500,000 per year based on an assumed value of around \$20 per tonne of GHG emissions offset (and increasing over time). It is unclear at this time how/if this funding opportunity will be replaced.

A summary of estimated operating costs and potential annual funding is identified on Table 20.

Table 20 – Summary of Estimated Costs and Potential Funding

	Low	High	Likely (Anticipated)
Costs (Table 18)	\$5,050,000	\$7,450,000	\$6,500,000
Revenues	\$1,800,000	\$2,950,000	\$2,000,000
Total Estimated Costs			\$4,500,000

Capital

Capital costs for the 60% Waste Diversion Action Plan will depend on program design, technology considerations, etc. The largest capital expenditure will be for the Green Bin Program. A capital cost of \$12 million for the Green Bin program had previously been estimated (January 2016, Multi-year Budget deliberations). Other waste diversion initiatives listed in the Action Plan may require new investment in the order of \$500,000 to \$3 million for a total of \$12.5 to \$15 million in capital expenditures.

It is expected that capital costs for the 60% Waste Diversion Action Plan will be able to be funded from the existing capital budget. The current ten-year capital program includes \$35 million in 2020 for new solid waste diversion technologies to increase diversion. After allocating up to \$15 million for the Action Plan, there would be \$20 million left for advanced waste diversion and/or resource recovery technologies.

5) RESOURCE RECOVERY STRATEGY

As referred to in this Action Plan, the City of London has three major projects underway:

1. The Resource Recovery Strategy involves the development of a plan to maximize waste reduction, reuse, recycling, resource recovery, energy recovery and/or waste conversion in an economically viable and environmentally responsible manner. Resource Recovery strategies (i.e., often known as waste diversion strategies) are developed and approved at the local government level and do not require Provincial government approval. This is the focus of this chapter.
2. The 60% Waste Diversion Action Plan, the purpose of this overall report, is both a standalone plan and part of the larger Resource Recovery Strategy. It essentially covers the period from 2018, through implementation and measurement in 2023 (when all projects and initiatives are in place as per current timelines).
3. The Residual Waste Disposal Strategy involves the development of a long-term plan to manage residual waste (waste after resource recovery) and involves completion of an Individual Environmental Assessment (EA) as prescribed by the Ministry of the Environment & Climate Change (MOECC). The Individual EA requires approval by the Minister of Environment & Climate Change and Cabinet.

Traditional Waste Diversion and Waste Management Technologies and Practices

Generally, in Ontario, waste management systems include variations on the following practices to reach higher levels of waste diversion:

- Waste avoidance/prevention/minimization (not created in the first place)
- Reuse/refurbish/repurpose (for use again)
- Source separated recyclables (to be collected, processed, marketed and re-manufactured)
- Source separated leaf and yard waste (to be collected, processed and marketed)
- Source separated organics (food and other organics wastes) (to be collected, processed and marketed). Processing technologies generally include aerobic composting and anaerobic digestion (AD) technologies
- Energy from waste (EFW) through combustion
- Landfill

To go beyond 60% waste diversion will require the use of more advanced waste diversion and resource recovery technologies and practices. The purpose of this chapter is to provide a brief update on:

- Definitions and Terminology
- Overview of Steps to Develop a Resource Recovery Strategy for London
- Current Timetable for Resource Recovery Strategy

5.1 DEFINITIONS AND TERMINOLOGY

The field of solid waste management has a plethora of definitions that fall into different categories including:

- Regulatory definitions usually defined by the Province of Ontario although some are defined at the Federal Government;
- By-law definitions usually defined by municipalities (and not always consistent from one municipality to the next); and
- Definitions created by waste management, recycling and other related organizations that have no legal foundation; however, they are often used by the members and adopted by others.

Some definitions often have a historical basis and have not been modernized; although the technologies within the definition are different than in the past. The inconsistency in legal definitions can be problematic when different provinces are compared. In addition, different technologies can be lumped together in some definitions with little understanding as to why that is the case. The remainder of this section highlights a number of terms and some different definitions.

Resource Recovery and Resource Recovery System

“Resource recovery means the extraction of useful materials or other resources from things that might otherwise be waste, including through reuse, recycling, reintegration, regeneration or other activities. This includes the collection, handling, and processing of food and organic waste for beneficial uses. Although energy from waste and alternative fuels are permitted as waste management options, these methods are not considered resource recovery. The recovery of nutrients, such as digestate from anaerobic digestion, is considered resource recovery.”

Resource recovery system means any part of a waste management system that collects, handles, transports, stores or processes waste for resource recovery purposes, but does not include disposal.”

* source – Ministry of the Environment & Climate Change, Food and Organic Waste Policy Statement, April 2018, <https://www.ontario.ca/page/food-and-organic-waste-framework>

Integrated Solid Waste Management

“Integrated Solid Waste Management (ISWM) is a comprehensive waste prevention, recycling, composting, and disposal program which works cohesively to prevent, recycle, and manage solid waste in ways that most effectively protect human health and the environment. ISWM considers local needs and conditions, and then applies the most appropriate combination of waste management approaches for that situation. The major components of ISWM activities are waste prevention, recycling and composting, resource recovery, and, disposal in properly designed, constructed, and managed landfills.”

* source - based on the EPA definition noting that determining a date of this definition is difficult because many current documents are now archived on the USEPA website.

* Environment Canada and the Ministry of the Environment & Climate Change do not have specific definitions; however, many municipalities in Ontario and across Canada have created definitions to meet their needs.

Advanced Resource Recovery Technologies and Practices

Generally, advanced resource recovery technologies and practices fall under one of these categories:

- Anaerobic Digestion (AD - Biogas)
- Mixed Waste Processing (MWP)
- Mechanical/Biological Treatment (MBT)
- Waste Conversion Technologies (WCT)
- Energy from Waste (EFW)

The literature does not contain consistent definitions for these technologies and sometimes groups of technologies may be classified under a single heading.

Anaerobic Digestion (AD - Biogas)

AD facilities can be listed under both traditional (as noted above because it is a proven technology in Ontario) and advanced in the case of Ontario as most AD experience has been associated with farm operations. With respect to AD as part of Mechanical-Biological Treatment (MBT) or as part of a mixed waste processing (MWP) system, this would be considered advanced and belongs in this section.

“Anaerobic digestion means the decomposition of organic matter by bacteria in an oxygen-limiting environment (as defined in Regulation 347 under the Environmental Protection Act). The biogas generated through anaerobic digestion can be used to fuel electrical generators, or it can be further processed into renewable natural gas. The digestate may also be used as a soil amendment that is most commonly used in agricultural operations.”

* source – Ministry of the Environment & Climate Change, Food and Organic Waste Policy Statement, April 2018, <https://www.ontario.ca/page/food-and-organic-waste-framework>

“What is Biogas? Biogas is a renewable source of methane, the main ingredient in natural gas. It can be used for heating and cooling, or to generate electricity that can be used on-site or fed into the distribution grid. It can be refined into renewable natural gas that can be injected into gas pipelines or compressed and used as a vehicle fuel. The entire system, including the energy generating components, is typically referred to as a biogas facility or a biogas plant.

Biogas is produced when organic materials — anything from municipal organic wastes or bio-solids, food processing by-products, or agricultural manure and crop residues —

break down in an oxygen-free environment. The process is called anaerobic digestion (AD) and usually occurs in a specialized tank or vessel – the anaerobic digester. AD is also the process that generates biogas or landfill gas (LFG) within landfills.

Anaerobic digesters have a number of end products, including digestate, a nutrient-rich slurry that can be applied directly on agricultural land, or material that is composted and then used for a range of purposes. Digester solids are materials from after de-watering that can be composted, and are well suited to be mixed with leaf and yard waste.”

*Source - Canadian Biogas Association, Municipal Guide to Biogas, March 2015
<https://www.biogasassociation.ca/>

Mixed Waste Processing

Mixed-waste processing involves no generator separation of waste, with all waste processed at what’s been called a “dirty” material recovery facility (MRF).¹ Recyclables are then pulled out at the MRF through a combination of manual and mechanical sorting. The sorted recyclable materials may undergo further processing required to meet technical specifications established by end-markets while the balance of the mixed waste stream is sent to a disposal facility such as a waste-to-energy facility or landfill”.²

* source(s)

¹ Waste 360 <http://www.waste360.com/mrfs/10-points-explain-mixed-waste-processing>

² Wikipedia https://en.wikipedia.org/wiki/Materials_recovery_facility

“Mixed waste processing means resource recovery processes that recover food waste or organic waste from waste streams where food and organic waste is co-mingled with other wastes.”

* source – Ministry of the Environment & Climate Change, Food and Organic Waste Policy Statement, April 2018, <https://www.ontario.ca/page/food-and-organic-waste-framework>

Mechanical/Biological Treatment (MBT)

“Mechanical Biological Treatment (MBT) technologies are pre-treatment technologies which contribute to the diversion of MSW from landfill when operated as part of a wider integrated approach involving additional treatment stages. Mechanical Biological Treatment (MBT) is a generic term for an integration of several mechanical processes commonly found in other waste management facilities such as Materials Recovery Facilities (MRFs), composting or Anaerobic Digestion plant. MBT plants can incorporate a number of different processes in a variety of combinations. MBT therefore compliments, but does not replace, other waste management technologies such as recycling and composting as part of an integrated waste management system. MBT plants include the:

- *Pre-treatment of waste going to landfill;*

- *Diversion of non-biodegradable and biodegradable MSW going to landfill through the mechanical sorting of MSW into materials for recycling and/or energy recovery as refuse derived fuel (RDF);*
- *Diversion of biodegradable MSW going to landfill by:*
- *Reducing the dry mass of MSW prior to landfill;*
- *Reducing the biodegradability of MSW prior to landfill;*
- *Stabilization into a compost-like output (CLO) for use on land;*
- *Conversion into a combustible biogas for energy recovery; and/or*
- *Drying materials to produce a high calorific organic rich fraction for use as RDF.”*

* source - Mechanical Biological Treatment of Municipal Solid Waste, February 2013, Dept. of Environment, Food and Rural Affairs, www.defra.gov.uk

Waste Conversion Technologies (WCT)

Waste Conversion Technologies (WCT) include the broad range of technologies which are applied to recover the inherent stored resource value of targeted waste feedstocks and/or MSW and to make these resources available for use rather than for disposal.

“There are a large number of technologies on the market at the moment and the use of many terms and definitions, with often different meaning. This reduces the possibility of comparing the different options. This chapter lists the most important concepts used in this field alphabetically.

- *Gasification is the thermal breakdown of waste under oxygen starved conditions (oxygen content in the conversion gas stream is lower than needed for combustion), thus creating a syngas (e.g. the conversion of coal into city gas).*
- *Plasma gasification is the treatment of waste through a very high intensity electron arc, leading to temperatures of > 2,000°C. Within such a plasma, gasifying conditions break the waste down into a vitrified slag and syngas.*
- *Pyrolysis is the thermal breakdown of waste in the absence of air, to produce char, pyrolysis oil and syngas (e.g. the conversion of wood into charcoal).”*

* source - International Solid Waste Association (ISWA), [Alternative Waste Conversion Technologies, 2013](#)

“New technologies to convert municipal and other waste streams into fuels and chemical commodities, termed conversion technologies, are rapidly developing. Conversion technologies are garnering increasing interest and demand due primarily to alternative energy initiatives. These technologies have the potential to serve multiple functions, such as diverting waste from landfills, reducing dependence on fossil fuels, and lowering the environmental footprint for waste management. Conversion technologies are particularly difficult to define because their market is in development and many of their design and operational features are not openly communicated by vendors. EPA’s Office of Research and Development conducted research to evaluate and develop a “State of Practice” report for State and local decision-makers on the suite of emerging waste conversion technologies.”

* source - USEPA State of Practice for Emerging Waste Conversion Technologies, 2012 https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=305250

Energy-from-Waste (EFW)

EFW is “A facility that generates steam and/or electricity through the combustion of municipal solid waste.”

* source – Canadian Resource Recovery Council, <http://www.resourcerecovery.ca/info/glossary/>

“Energy-from-Waste is any technology, which recovers energy from the management/processing of waste materials. This includes Anaerobic Digestion, Mass Burn, Gasification, Plasma Gasification, and Landfill Gas Recovery.

Waste Derived Fuel is any technology designed to turn waste materials into a fuel product with the recovery of recyclables materials as part of the fuel development process.”

* source – Ontario Waste Management Association, Guiding Principles Integrated Solid Waste Resource Recovery and Utilization (OWMA EFW/WDF Committee, November 2011) <https://www.owma.org/articles/guiding-principles-on-integrated-solid-waste-recovery-and-utilization>

Energy can be recovered from waste by various (very different) technologies. It is important that recyclable material is removed first, and that energy is recovered from what remains, i.e. from the residual waste. Energy from waste (EFW) technologies include:

- *Combustion in which the residual waste burns at 850°C and the energy is recovered as electricity or heat*
- *Gasification and pyrolysis, where the fuel is heated with little or no oxygen to produce “syngas” which can be used to generate energy or as a feedstock for producing methane, chemicals, biofuels, or hydrogen (see also landfill gas and sewage gas)*
- *Anaerobic digestion, which uses microorganisms to convert organic waste into a methane-rich biogas that can be combusted to generate electricity and heat or converted to biomethane. This technology is most suitable for wet organic wastes or food waste. The other output is a biofertilizer.*

* source – Renewable Energy Association, United Kingdom <https://www.r-e-a.net/renewable-technologies/energy-from-waste>

Energy recovery from waste is the conversion of non-recyclable waste materials into usable heat, electricity, or fuel through a variety of processes, including combustion, gasification, pyrolyzation, anaerobic digestion and landfill gas recovery. This process is often called waste to energy (WTE).

* source - US EPA website, no date provided <https://www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw>

5.2 OVERVIEW OF STEPS TO DEVELOP A RESOURCE RECOVERY STRATEGY FOR LONDON

The Resource Recovery Strategy will outline the concepts, requirements, challenges, opportunities and timeframes for increasing waste diversion and resource recovery beyond 60%. Development of the Resource Recovery Strategy, as of June 2018, includes activities in the following areas:

1. Preliminary Review of Advanced Resource Recovery Initiatives and Technologies

Complete:	75%	In Progress:	25%	Not Started:	0%
-----------	-----	--------------	-----	--------------	----

Preliminary review of initiatives and technologies to develop a long list of advanced resource recovery opportunities that require further investigation. This was undertaken through literature review, Internet search, work completed by the Institute for Chemical and Fuels from Alternative Resources (ICFAR)/Western University and several site visits.

2. Consideration of Regional Resource Recovery Opportunities

Complete:	25%	In Progress:	0%	Not Started:	75%
-----------	-----	--------------	----	--------------	-----

In 2017, the City canvassed nearby municipalities (Elgin County, Huron County, Lambton County, Middlesex County, Oxford County and Perth County) responsible for waste management to determine their interest in using any future resource recovery facility(ies). All municipalities expressed an interest in being included in discussions about any new resource recovery facilities and indicated they would consider using the facility depending on the cost.

The potential for a regional facility may make it possible to consider technologies that require larger waste quantities in order to be economically feasible.

3. Alignment with Provincial Strategies and Legislation

Complete:	25%	In Progress:	25%	Not Started:	50%
-----------	-----	--------------	-----	--------------	-----

Development of the Resource Recovery Strategy will need to align with the provincial Strategy for a Waste-Free Ontario: Building the Circular Economy as well as the new Food and Organic Waste Framework and additional documents that are forthcoming.

4. Consideration of Learnings from the Mixed Waste Processing Working Group

Complete:	0%	In Progress:	100%	Not Started:	0%
-----------	----	--------------	------	--------------	----

As noted in Section 1.5, formed in early 2017, the Region of Peel is the coordinator of a Mixed Waste Processing Working Group comprised of eight Ontario municipalities representing about half of Ontario's population. The Working Group shares updates,

research results, Committee/Council reports, site visit experience and related operational experiences.

5. Consideration of Learnings from London Waste to Resources Innovation Centre (LWRIC)

Complete:	0%	In Progress:	100%	Not Started:	0%
-----------	----	--------------	------	--------------	----

The primary goals of LWRIC are noted in Section 1.5. The City of London currently has signed Memorandum of Understanding (MoUs) with the following organizations:

- University of Western Ontario (Institute of Chemicals and Fuels from Alternative Resources); approved December 2016 with a current expiry date of December 31, 2019;
- Bio-TechFar Inc; approved June 2017 with a current expiry date of December 31, 2019;
- Hawthorne Green Key Group; approved June 2017 with a current expiry date of June 30, 2020;
- Try Recycling; approved June 2017 with a current expiry date of December 31, 2019;
- Canadian Plastics Industry Association; approved March 2018 with a current expiry date of March 31, 2020; and
- Try Recycling; approved June 2017 with a current expiry date of December 31, 2019;
- Resource Energy Development of Canada Ltd.; approved March 2018 with a current expiry date of March 31, 2021.

One MoU has expired:

- Green Shields Energy; expired December 31, 2017.

The City (LWRIC), Canadian Biogas Association and Union Gas worked together in 2016/2017 to assess the economic feasibility and environmental benefits of producing biogas by anaerobically digesting the organic fraction of the London's residential waste stream, and subsequently converting the biogas to renewable natural gas (RNG) for use in compressed natural gas vehicles. Two scenarios were considered: collecting and anaerobically digesting source separated organic (SSO) materials or anaerobically digesting organic materials separated from a mixed waste stream at a processing facility (facility-separated organics - FSO). This study included sending out a Request for Information (RFI) to anaerobic digestion technology suppliers. Details of this work can be found at:

https://biogasassociation.ca/images/uploads/documents//2017/CBA_London_Report.pdf

6. Request for Information

Complete:	0%	In Progress:	50%	Not Started:	50%
-----------	----	--------------	-----	--------------	-----

As noted in section 1.5, the City released a Request for Information (RFI) to obtain information about resource recovery (i.e., waste processing) technologies that might be suitable for the City of London to divert waste away from the City's Landfill. As noted in the 60% Waste Diversion Action Plan, it is expected that the 60% diversion could be achieved by a combination of enhanced waste reduction initiatives, increased capture of Blue Box materials, the introduction of recycling of various bulky items and the introduction of an organics management program.

About 50 technology/vendors requested/received the RFI document. Twenty-six (26) submissions were received by the City by the closing date of June 22, 2018. The review period will take place between July and September. In alphabetical order, the City received submissions from the following organizations:

- | | |
|--|--|
| 1. 3Wayste North America | 14. Enerkem Inc. |
| 2. AIM Environmental Group Inc. | 15. Envac OPTibag AB |
| 3. Anaergia Inc. | 16. EverGreen Energy Corp |
| 4. BHR Resource Recovery Inc. | 17. Fresh Technologies, Inc. |
| 5. Bradam Canada Inc. | 18. Green Shields Energy |
| 6. Canada Fibers Ltd | 19. Groupe Bioenertek Inc |
| 7. CCI BioEnergy Inc | 20. Miller Waste Systems Inc. |
| 8. CHAR Technologies Ltd. | 21. Orgaworld Canada a division of Renewi |
| 9. Clearblue Ltd. | 22. Pivotal Integrated Resource Management Inc |
| 10. Clorox Company of Canada | 23. Sacyr Environment USA, LLC |
| 11. Corporation of the City of Stratford | 24. Stormfisher |
| 12. Cole Engineering Group Ltd. | 25. Tucker Engineering Associates, Inc. |
| 13. Eco Burn Inc. | 26. Walker Environmental Group |

7. Preliminary Analysis

Complete:	0%	In Progress:	20%	Not Started:	80%
-----------	----	--------------	-----	--------------	-----

A preliminary analysis of the potential programs/initiatives will be completed looking at environmental (diversion rate, Greenhouse Gas benefits); social (public support, resident benefits/issues); financial (costs, revenue) and technical (collection/processing issues, stability of end markets, status of technology) considerations.

8. Peer Review

Complete:	0%	In Progress:	0%	Not Started:	100%
-----------	----	--------------	----	--------------	------

A consulting firm that specializes in waste management technologies will be used to conduct a peer review of the portions of the Resource Recovery Strategy dealing with any technical analysis and newer resource recovery technologies.

5.3 CURRENT TIMETABLE AND PROPOSED DIRECTION FOR RESOURCE RECOVERY STRATEGY

The general activities and actions and timetable to complete the Resource Recovery Strategy is identified on Table 21. It is worth noting that this timeframe crosses over the existing Council (December 2014 to November 2018) and the next Council (2018 to 2022). The timetable may be adjusted to accommodate new information and/or direction.

Table 21 – Proposed Activities and Timetable to Complete Resource Recovery Strategy

Date	Event	Comments
July - December		<ul style="list-style-type: none"> Incorporate any new details that may be identified during the final stages of the Action Plan
January - March 2019	CWC Meeting	<ul style="list-style-type: none"> Present the Resource Recovery Strategy
	Council	
2 months	Provide feedback opportunities on WhyWaste Resource Recovery Strategy website	<ul style="list-style-type: none"> Advertise in the London Free Press, The Londoner and on social media
	Circulate to Community Stakeholder Groups	<ul style="list-style-type: none"> Circulate and ask for feedback from Waste Management Community Liaison, Committee (WMCLC), W12A Landfill Public Liaison Committee, Urban League and Advisory Committee on the Environment (ACE)
	Circulate to Waste Management/ Recycling Companies	<ul style="list-style-type: none"> Circulate and ask for feedback from local companies including Emterra, Green Valley Recycling, Miller Waste, Orgaworld, StormFisher, Try Recycling, Waste Connections and Waste Management
	Presentations	<ul style="list-style-type: none"> Present to WMCLC Present to ACE
1 month	Public Participation Meeting	<ul style="list-style-type: none"> CWC receives comments from the public and other stakeholders

6) SUMMARY OF KEY IMPLEMENTATION REQUIREMENTS

For the 60% Waste Diversion Action Plan to be successfully implemented, additional steps, actions and nudging/changing attitudes are required. Listed below are 15 implementation requirements that will be very helpful in moving from 45% waste diversion to the target of 60% waste diversion by the end of 2022.

The challenges, opportunities and rewards of achieving 60% waste diversion require Londoners to embrace change. At the same time, Londoners will be required to accept that new programs come with some frustration and inconvenience. However, increasing waste diversion should be considered as a long-term environmental investment opportunity in a similar light as our investments in education and health care.

These Top 15 requirements, in brief, have been developed from successful initiatives in London, a literature review of successful waste diversion programs in other communities, and successful implementation of programs in related services.

1. **Supportive elected officials and City Council.** Elected officials are key to engaging their constituents in a manner that meets their needs. Consistent information that contains easy to understand expectations for all involved is key. A common voice, whenever possible, builds confidence in decisions and direction made by Council.
2. **Sustainable program funding.** Programs must be funded to meet requirements, meet community expectations and balance other priorities in the community.
3. **The role of media.** Media play a critical role in informing the community about waste diversion initiatives and programs. It is critical that information is easily accessible and that spokespeople are available to respond to media requests for additional information. This will help the community learn about new initiatives and programs, as well as encourage them to obtain further details to help them understand how to participate.
4. **Well-developed implementation workplans.** A number of the undertakings in the 60% Waste Diversion Action Plan are significant. Workplans must address resource needs, timeframes, contractor requirements, and allow for adequate time for Londoners to adjust.
5. **Demonstrate leadership through examples.** Members of Council, City staff and community leaders must demonstrate that they are part of the change and prepared to participate in the new waste diversion programs and initiatives (“lead by example” and “practice what you preach”).
6. **Delivery of information, education and promotion on how to participate in new initiatives and programs.** There are important similarities and differences between information (e.g., how to participate), education (e.g., why should I participate) and promotion (e.g., how to increase participation). Because Londoners have been at 45% waste diversion since about 2014 and few new initiatives/programs have been added during that time, there will be an appetite for new materials. Examples of tools

and outreach programs from other communities will be key to reducing the learning curve and containing/reducing costs of production. The role and value of social media is constantly changing.

7. **Convenient, accessible and understandable services.** The more Londoners are asked to do, the more challenges can occur. It must be recognized that waste diversion and waste reduction are not priorities for many families. Services need to be considered in the context of all Londoners and be as accessible as possible.
8. **Willingness of many Londoners to embrace changes.** Londoners need to be behind these programs and embrace a culture of change.
9. **Incentives and rewards need to be considered.** Wherever possible, incentives and rewards should be considered to help with achieving the new and/or adjusted behaviours required for Londoners.
10. **Strong and enforceable by-laws also must be considered.** By-laws may be required as a backstop for certain actions (e.g., mandatory recycling, use of clear nags, etc.).
11. **Strong collaborations to deliver the new programs.** Opportunities to have shared implementation experiences and other collaborations will assist in achieving results in different communities in London.
12. **Build local capacity in the community.** Many of the initiatives will not be led by the City, rather they will be led by the community. This can be achieved by ensuring that resources are available and a collaborative approach is established at the start.
13. **Flexibility and transition capabilities.** Some initiatives and programs planned today may need to be adjusted prior to implementation or after implementation. A certain mind-set is required to allow some initiatives and programs to develop on their own. This can allow for additional creativity, innovation and fun. In addition, larger programs can be designed at the outset to have transition capabilities as new technology and techniques become available.
14. **Tracking and measurement systems.** It is imperative that understandable tracking and measurement systems are established prior to implementation. Tracking and measuring progress is essential for continually improving waste diversion programs. Successful communities will track and benchmark their waste diversion performance, including participation rates, quantity and volume of materials diverted, customer satisfaction, and programs costs, revenues and other savings.
15. **Regular feedback.** Opportunities to provide feedback and information to elected officials, residents, media, businesses, service providers, etc. will ensure that progress (or lack of progress) is being shared. An annual report on waste diversion performance in an easy-to-read format that can be widely shared (in different formats) will be key.

Appendix A

Residential Waste Diversion Programs

Table A-1 2017 City of London Residential Waste Management Programs– Estimated Tonnes Diverted

This page has intentionally been left blank.

This appendix provides a description of the City's various waste diversion programs and the quantity of material diverted by each program in 2017.

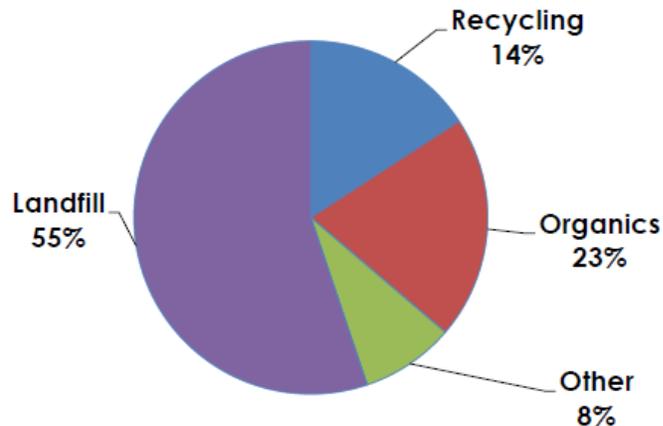
This data is summarized in Table A-1 and Figure A-1.

Table A-1: 2017 CITY OF LONDON RESIDENTIAL WASTE MANAGEMENT PROGRAMS – ESTIMATED TONNES DIVERTED

PROGRAMS	Single Family Households	Multi-Residential Households	Total Tonnes
<i>Recycling</i>			
a) Curbside Recycling Program	18,670	0	18,670
b) Multi-Residential Recycling Program	0	3,220	3,220
c) City Depots (EnviroDepots, W12A)	620	260	880
d) Public Space Recycling (estimate)	30	20	50
Subtotal	19,320	3,550	22,820
<i>Organics Management</i>			
e) Home Composting Program (estimate)	5,680	0	5,680
f) Grasscycling (estimate)	3,580	0	3,580
g) Curbside Yard Waste Collection	5,250	0	5,250
h) Depot Yard Waste Collection	16,240	0	16,240
i) Fall Leaf Collection	4,760	0	4,760
j) Christmas Tree Recycling	100	0	100
Subtotal	35,610	0	35,610
<i>Other Programs</i>			
k) Waste Electronics & Electrical Equipment	200	70	270
l) Tire Recycling	2,310	570	2,880
m) Wood Waste/ Construction, Renovation & Demolition Waste	5,070	0	5,070
n) Scrap Metal	690	70	760
o) Textile/Small Household Item Reuse	1,390	350	1,740
p) Municipal Household Special Waste	430	110	540
q) Brewers Retail Container Recycling	1,750	440	2,190
Subtotal	11,840	1,610	13,450
Total Waste Diverted	66,770	5,160	71,880
Total Waste Disposed¹	65,500	24, 230	89,730
Total Waste	129,900	29,400	161,610
Diversion Rate	50%	18%	45%

Notes 1. Includes process residuals from recycling and composting programs.

Figure A-1 - 2017 Waste Diversion



Blue Box Recycling Programs

Curbside Recycling – 18,670 tonnes

The City collects a wide range of recyclables from all curbside households as part of its Blue Box Recycling program. The materials collected in 2017 were newsprint & flyers; household paper; magazines, catalogues & books; paper egg cartons & boxes; cardboard boxes; glass bottles & jars; aluminum food & beverage cans; steel food & beverage cans; foil containers & foil; empty metal paint cans; empty aerosol cans; plastic bottles, jugs, plant pots/trays, large pails & tubs; milk & juice cartons; drink boxes and cardboard cans.

Materials collected were taken to the City's Manning Drive Regional Material Recovery Facility (MRF) for processing and subsequent shipping to various end markets. This facility also receives recyclables from other City programs and other municipalities. Material is weighed upon entering and leaving the MRF.

A portion of this material is allotted to each program (curbside, multi-residential, other municipalities) equal to the percentage of incoming recyclables from each source. In 2017, 20,340 tonnes of materials were collected curbside of which approximately 1,670 tonnes would become process residuals.

Multi-Residential Recycling – 3,220 tonnes

The City collects the same range of recyclables at the majority of multi-residential buildings. The property owner is responsible for purchasing and providing 360 litre carts for residents to sort their recyclables. As a result, a few multi-residential buildings do not have recycling because the property owner has not provided carts. In 2017, approximately 50,000 multi-residential units had access to on-site recycling and 3,000 units did not. Residents from buildings without on-site recycling must take their recyclables to one of four City EnviroDepots. City staff have made numerous attempts to further reduce the number of units without on-site access to recycling.

The materials collected, how they are processed and calculation of the quantity recycled is the same as the curbside Blue Box program. In 2017, 3,560 tonnes of materials were collected from multi-residential buildings of which approximately 290 tonnes would become process residuals.

Depot Recycling – 880 tonnes

As noted above, the City operates four EnviroDepots (Oxford Street, Clarke Road, Try – Clarke Road and W12A Landfill) that accept a range of materials including Blue Box recyclables. The Blue Box materials collected, how they are processed and calculation of the quantity recycled is the same as the curbside Blue Box program.

The Blue Box materials accepted is the same as the curbside Blue Box program.

In 2017, 960 tonnes of materials were collected from multi-residential buildings of which approximately 80 tonnes would become process residuals.

Public Space Recycling – 50 tonnes

The City has over 40 EnviroBins located throughout the Downtown, Old East Village, Richmond Row and Wortley Village, for use by the residents when they are out shopping or going to restaurants and/or for the residents that live above some commercial establishments. Each EnviroBin has three compartments: containers, paper and garbage.

The Blue Box materials accepted is the same as the curbside Blue Box program.

Organic Programs

Home Composting – 5,680 tonnes

The City sells composters at cost at its Oxford Street and Clarke Road EnviroDepots. In the 1990's the City also sold composters at "truck load sale events". Over the years the City has sold 55,900 composters including approximately 800 in 2017. The *Manual on Generally Accepted Principles (GAP) for Calculating Municipal Solid Waste System Flow* recommends that municipalities assume each composter sold diverts 100 kilograms per year. This estimate is based on many factors, assumption and measured programs generally between the years 2000 and 2010. It remains a reasonable number and used by Ontario municipalities.

Grasscycling – 3,580 tonnes

The City stopped collecting grass clippings in 1995 and started promoting grasscycling. Grasscycling refers to leaving grass clippings on the lawn when mowing.

Because grass consists largely of water (80% or more), contains little lignin, and has high nitrogen content, grass clippings easily break down and return to the soil within one to two weeks, acting primarily as a fertilizer supplement and, to a much smaller degree, a mulch. Grasscycling can provide 15-20% or more of a lawn's yearly nitrogen requirements.

The amount of grass diverted in 2017 was estimated to be approximately 30 kilograms per curbside household or 3,580 tonnes in total. **Curbside Yard Waste Collection – 5,250 tonnes**

The City provides curbside collection of yard materials. This includes plant trimmings, brush and branches up to 10 cm in diameter. In 2017 yard materials were collected on a six week cycle and each home received five collections.

The collected yard materials are transported to TRY Recycling's composting facility for processing. The incoming material is weighted. On average about five percent of the incoming material becomes process residuals and 95% is either consumed during the composting process or is made into compost and sold. In 2017, 5,510 tonnes of yard materials were collected curbside of which approximately 260 tonnes would become process residuals.

Curbside Fall Leaf Collection – 4,760 tonnes

The City provides curbside collection of fall leaves beginning in mid-October. Yard materials are also collected with the fall leaves. In 2017 fall leaves were collected on a three week cycle and each home received three collections.

The collected yard materials are transported to TRY Recycling's composting facility for processing. Approximately 4,760 tonnes were collected. On average about 5% of incoming material becomes residue (or about 240 tonnes). How they are processed and the calculation of the quantity composted is the same as for yard materials.

Depot Yard Material Collection – 16,240 tonnes

Residents can drop off yard materials at the City EnviroDepots year round. The collected yard materials are transported to TRY Recycling's composting facility for processing. Approximately 13,880 tonnes were collected. How they are processed and the calculation of the quantity composted is the same as for yard materials. There was assumed to be 5% residue from processing or about 690 tonnes.

Christmas Tree Collection – 100 tonnes

In 2017, the City offered Christmas tree curbside collection during the first week in January. All four EnviroDepots were also accepting Christmas trees for composting. The trees are chipped on-site at the Depot locations and trees collected curbside were taken to TRY Recycling where they are chipped and composted.

Other Programs

Waste Electronics and Electrical Equipment Recycling – 270 tonnes

Waste Electronics and Electrical Equipment (WEEE) recycling is made up of two components. The first component is electronics collected at the EnviroDepots and shipped for recycling. In 2017 the EnviroDepots collected 210 tonnes of material electronics were shipped through the Ontario Electronic Stewardship (OES) program. The second component is appliances collected at the EnviroDepots and recycled. In 2017, 60

tonnes of appliances were collected and recycled. This does not include WEEE that is delivered by Londoners to other drop-off locations in the city.

Tire Recycling – 2,880 tonnes

The annual Municipal Datacall administered by Resource Productivity & Recovery Authority (RPRA) compiles information on materials diverted and disposed by Ontario municipalities. Most of the information used by the RPRA is provided by the local municipality but some of information comes from programs administered by provincial organizations. In the case of tires, information on the quantity of tires recycled in a community is provided by the Ontario Tire Stewardship. This organization looks after the Used Tires Program in Ontario and ensures tires are reused or recycled.

The 2017 Datacall estimate is 2,880 tonnes of tires were recycled/reused in the City of London. Included in this total is 70 tonnes of tires collected at the three City EnviroDepots as part of the Used Tire Program.

Construction, Renovation and Demolition Material Recycling – 5,070 tonnes

The City banned the collection of construction renovation and demolition waste in the 1980's. At the time the average household produced about 15 kilograms of wood waste and renovation material waste each year. At the time of the ban it was assumed about half of this material would be recycled and about half would likely continue to be landfilled as residents would hide small amounts wood waste and renovation materials in their garbage bags for collection.

Beginning in 2004, the City's EnviroDepots began to accept wood waste and renovation materials (including shingles) for recycling. The material is taken to TRY Recycling for processing where approximately 50% to 60% is made into useable products and 40% to 50% becomes residual and is landfilled. The City also accepts of wood at the W12A Landfill which is made into wood chips for on-site use.

In 2017, the EnviroDepots received 2,470 tonnes of wood waste and renovation materials. Approximately 2,225 tonnes of this material was recycled and 245 tonnes became Residual Waste and was landfilled. A further 1,975 tonnes of wood waste was recycled at the W12A Landfill.

It was assumed that approximately half of the residential renovation materials not taken to an EnviroDepots (870 tonnes) was taken to private construction, renovation and demolition waste recycling companies (TRY Recycling and Green Valley Recycling) and recycled while the other 50% (870 tonnes) was residue from recycling, hidden in the residential garbage or disposed of privately.

Scrap Metal Recycling – 760 tonnes

The City stopped the collection of scrap metal (e.g., barbeques, bicycles, etc.) and appliances in the 1990's. At the time the average person produced about 2.5 kilograms of scrap metal each year. At the time of the ban it was assumed about half of this material would be recycled and about half would likely continue to be landfilled as residents would hide small amounts of metal in their garbage bags for collection.

Beginning in 2004, the City's EnviroDepots began to accept scrap metal for recycling. The material is taken to Zubick's for processing. It is assumed 100% of the metal is recycled. In 2017, the EnviroDepots received 520 tonnes of scrap metal.

It was assumed that approximately half the residential scrap metal not taken to an EnviroDepots (240 tonnes) was taken to other scrap metal dealers and recycled while the other 50% (240 tonnes) was placed in the garbage.

Textile/Small Household Item Reuse/Recycling – 1,740 tonnes

In 2017, residents could take textiles, books and small household items to a Goodwill drop off located at the Oxford Street and Clarke Road EnviroDepots. Goodwill has estimated that they received 540 tonnes of material at these locations.

The City offers free disposal of materials to not-for-profit reuse organizations (e.g., Goodwill) to encourage and support these programs. The RPRA Datacall estimates that reuse/recycling organizations given free disposal increase their diversion efforts by 10% and this incremental increase is part of a municipalities diversion estimate.

Approximately 12,000 tonnes of materials were diverted from landfill in 2017 through reuse/recycling organizations receiving free disposal which translates into an additional 1,200 tonnes toward municipal diversion.

MHSW Recycling – 540 tonnes

The City collects all forms of Municipal Hazardous and Special Waste (MHSW) at the HSW depot at the W12A landfill including paints, solvents, pesticides, oil filters, used oil, antifreeze, batteries, florescent bulbs, compressed cylinders and oil & antifreeze containers. Some of these materials (batteries, florescent bulbs, compressed cylinders and oil & antifreeze container) are also collected at the Oxford Street and Clarke Road EnviroDepots.

The materials are shipped to various processing facilities across Ontario licensed to accept this material. The majority of the material is recycled including paint, antifreeze and oil.

The estimate of the weight of material diverted is based on a combination of actual weights for some materials and estimated weights based on the volume shipped for other materials.

Brewer's Retail /LCBO Bottle Recycling/Reuse – 2,180 tonnes

The 2017 RPRA Datacall shows 2,180 tonnes of Brewer's Retail and Liquor Control Board of Ontario (LCBO) containers being recycled/reused in the City of London.

Appendix B

Community Engagement Activities

B1 Open House 2

B2 Open House 1

B3 Community Events

B4 Other Engagement

B5 Project Website

This page has intentionally been left blank.

Appendix B1

Open House #2

November 29, 2017 Horton Street Goodwill Industries (3rd floor) 255 Horton Street (at Wellington), London 2 - 4 p.m. and 5 – 8 p.m.	November 30, 2017 Lambeth Community Centre 7112 Beattie Street, London 2 - 4 p.m. and 5 – 8 p.m.
--	---

The Open Houses were advertised in The Londoner newspaper on November 16 and 23, 2017; on the City's calendar; on the City website; by London.ca public notices November 16 and 23, 2017; in the London's City Green publication; on the City's Facebook page on November 26, 2017; on posters at select City facilities; on the City's e-news on November 13 and 17, 2017; on the London Environmental Network and on the project website.

Letters or emails were sent between November 14 – 16 to local businesses that use the existing landfill, neighbours within 2 km of the Waste Management and Resource Recovery Area, community groups and PLC members. Individuals who signed up at Open House #1 and on the project website were sent an email on November 27, 2017. One person was sent a letter on November 27.

At these open house sessions the public learned about changes to waste management and diversion coming from the Province, potential programs/initiatives to achieve 60% diversion and key technologies for advanced diversion and resource recovery. Another focus of the open house was to inform the public and seek input on the preliminary conceptual 'Alternative Methods' for landfill expansion and the criteria to be used to comparatively evaluate the 'Alternative Methods'.

A total of 38 (19 related to waste diversion) display boards were featured at Open House #2. Boards pertaining to waste diversion and photos of the open house are included in Appendix B1.

This event was designed to provide opportunities for attendees to speak directly with the City and the EA consulting team. Attendees were asked to sign in and were encouraged to fill out a comment sheet to provide feedback and recommendations.

A total of 34 and 43 people attended Open House #2 on November 29 and 30, 2017, respectively. The overall atmosphere of the open house was professional, courteous and respectful.

Comments were received through completion of the formal feedback sheet from 34 people. In addition, one email exchange was received where the public provided feedback. Overall, meeting attendees were satisfied with the information presented and provided positive feedback on the quality of the information materials and answers provided. A summary of the feedback comments is provided in Appendix C.

Resource Recovery Strategy Boards from Open House 2



London's Short-Term Waste Diversion Goal

On October 30, 2017, Council set a short-term waste diversion goal of 60% by 2022. Please review the information presented and let us know how you think we can reach our 60% target.



getinvolved.london.ca



Upcoming Changes in Ontario: Extended Producer Responsibility

What is Extended Producer Responsibility?

Extended Producer Responsibility (EPR) means that the companies that produce or import products in Ontario will be fully responsible for having them recycled or reused.

Currently, municipalities pay for about half of the cost of the Blue Box program. The new legislation - The Ontario Waste Free Act - will shift full responsibility to producers (and importers).



What products will EPR apply to?

- To start: Blue Box materials, tires, electronics, and municipal hazardous & special waste. These materials will transition to EPR in the next 2 to 5 years.
- In the near future: carpets, mattresses and furniture will be considered.
- In the future: other materials (e.g., wooden furniture, etc.) will be considered.

What does this mean for London meeting its Diversion Target?

The intent of the legislation is to increase diversion across Ontario. Higher diversion targets will provide legislative backing to help us meet our goal of 60% by 2022.

getinvolved.london.ca





Upcoming Changes in Ontario: Food and Organic Waste Action Plan

What is the Food and Organic Waste Action Plan?

Food and organic wastes make up approximately one-third of Ontario's total waste stream. To reduce and manage this waste the Province is developing a Food and Organic Waste Action Plan. The Final Plan will recommend steps to:



- Reduce the amount of food that becomes waste in the first place
- Divert food and organic waste from landfill

What's expected in the Final Plan?

The Final Plan is scheduled to be released in early 2018 and is expected to include:

- Targets for food waste reduction
- Targets for food and organic waste diversion from landfill
- Mandatory food and organic waste programs for municipalities with a population over 50,000
- Possible ban on disposal of food and organic waste at transfer stations and disposal facilities (e.g., landfills)

What does this mean for London meeting its Diversion Target?

An organics management program (e.g., green bin, recovery of organics from mixed waste) will be part of our strategy to reach our diversion goal of 60% by 2022. Final decisions on London's organics management plan will need to wait until the Food and Organic Waste Action Plan has been finalized.

getinvolved.london.ca



Getting to 60% by 2022



The following boards focus on the specific strategies that will help get us to our waste diversion target of 60% by 2022. **Please complete the Feedback Booklet and tell us what you think about the different options.**



Organics Management

- Food waste reduction initiatives
- Home composting
- Community composting
- City wide organics program



Recyclables

- Carpet, mattresses and textiles
- Electronics, scrap metal and small metal appliances
- Wooden furniture
- Bulky plastics



Waste Reduction & Reuse Programs (examples)

- Waste Reduction Programs: lending libraries, repair workshops
- Community outreach programs: environment days
- Policies and by-laws: landfill bans, reduced garbage limit, pay per container, use of clear bags for garbage, mandatory separation programs

getinvolved.london.ca





Food Waste Reduction Initiatives



Background:

On average each London household wastes about \$600 worth of food over the course of the year. This is food that could have been eaten but wasn't.



This is waste that could have been avoided. Below are moderate and significant initiatives that will focus on reducing food waste.

Tell us how much you want to invest in this initiative?!	Moderate (investment of resources)	Significant (investment of resources)
How will resources be invested?	• Promotion and community outreach programs, and information to households.	• Same as Moderate plus provide each household with a food waste reduction tool kit to help them reduce food waste.
How much closer will it get us to the 60% goal?	0.12% 190 tonnes	1.3% 2,100 tonnes
Annual cost	\$180 K	\$1.2 M
Cost per household	\$1	\$7
Cost per tonne	\$950	\$570
Expected annual household savings	\$ 1 M	\$10 M
GHG ² avoided	600 tonnes	6,100 tonnes
GHG ² reduction for every tonne diverted	2.9 tonnes	

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months.

1. Approximate range of costs and tonnes are provided based on best available data.
2. Greenhouse Gas

getinvolved.london.ca



Home Composting



Background:

Home composting plays an important role in waste reduction in London. The City has sold close to 56,000 units that contribute to an estimated 5,600 tonnes of food and yard waste that is managed in backyards across London.



Tell us how much you want us to invest in this initiative?!	Existing (Home Composting Program)	Moderate (investment of resources)	Significant (investment of resources)
How will resources be invested?	• Promoted seasonally, sell at cost at EnviroDepots	• Moderate additional promotion and 50% subsidy of composters	• Significant additional promotion and outreach and 75% subsidy of composters
How much closer will it get us to the 60% goal?	3.5% (included in 45% current diversion rate)	0.2% 300 tonnes	0.7% 1,100 tonnes
Annual cost	\$150 K (saved in avoided landfill/preprocessing costs)	\$130 K	\$210 K
Cost per household	No additional	\$0.75	\$1.20
Cost per tonne	No additional	\$450	\$190
GHG ² avoided		240 tonnes	900 tonnes
GHG ² reduction for every tonne diverted		0.8 tonnes	

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months.

1. Approximate range of costs and tonnes are provided based on best available data.
2. Greenhouse Gas

getinvolved.london.ca





Community Composting



Background:

Community composting options can range from setting up backyard composters for resident use at a multi-residential building to installing higher tech composter units for public use in parks and community spaces.



What type of program? ¹	Low Tech (Private)	Low Tech (Public)	High Tech (Public)
How will resources be invested?	Composting at apartment buildings where residents can compost kitchen waste using large backyard composters or three-compartment wooden composters.	Community locations where citizens can compost their garden or kitchen waste using large backyard composters or three-compartment wooden composters.	Community locations where citizens can compost their garden or kitchen waste using technologies such as small-scale digesters or mechanical composting units.
How much closer will it get us to the 60% goal?	0.01% <small>20 tonnes</small>	0.01% <small>20 tonnes</small>	0.1% <small>200 tonnes</small>
Annual cost	\$2 K	\$4 K	\$80 K
Cost per household	\$0.01	\$0.02	\$0.45
Cost per tonne	\$150	\$300	\$400
GHG ² avoided	16 tonnes	16 tonnes	160 tonnes
GHG reduction for every tonne diverted	0.8 tonnes		

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months.

1. Approximate range of costs and tonnes are provided based on best available data.
2. Greenhouse Gas

getinvolved.london.ca



City Wide Organics – Curbside Program



Background:

A City wide organics collection program would provide the biggest boost to our waste diversion target of 60% by 2022. It is estimated that it would increase our diversion rate in the range of 9 to 14%.



A green bin is the most common type of program in Ontario for managing household organic waste and will be considered for London. Mixed Waste Processing is another option. Organics would continue to be collected with garbage, but instead of going to landfill the collected waste would be sorted to remove organics and recyclables, and anything left over would be landfilled.

What type of program? ¹	Curbside Green Bin Program	Mixed Waste Program
How will resources be invested?	Weekly collection of kitchen organics from approximately 120,000 curbside households. Organic waste is separated by homeowners and placed out for a separate organics pickup.	Residents would continue to place organic waste in garbage. Organic waste would be separated from garbage at a mixed waste processing facility to be composted or anaerobically digested.
How much closer will it get us to the 60% goal?	9% <small>14,000 tonnes</small>	14% <small>22,000 tonnes</small>
Annual cost	\$3.5 M	\$7 M
Cost per household	\$20	\$40
Cost per tonne diverted	\$250	\$300
GHG ² avoided	11,000 tonnes	18,000 tonnes
GHG reduction for every tonne diverted	0.8 tonnes	

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months.

1. Approximate range of costs and tonnes are provided based on best available data.
2. Greenhouse Gas

getinvolved.london.ca





City Wide Organics - Multi-Residential Program



Background:

About 30% of London's households live in multi-residential (apartment/condo) buildings and generate approximately 22,000 tonnes of garbage per year. The garbage from multi-residential buildings is similar to the garbage from single family households. The main difference is a higher percentage of recyclables in the garbage and less of the garbage is compostable. Options for diversion of organic waste from the multi-residential sector are the same as for curbside households: separation of organics in the home for collection (e.g., green bin program) or collection of unsorted waste that is later sorted in a mixed waste processing facility.



What type of program?¹	Multi-residential Green Bin Program	Mixed Waste Program
How will resources be invested?	<ul style="list-style-type: none"> Weekly collection of kitchen organics from approximately 55,000 multi-residential units. Organic waste is separated by homeowners and placed out for a separate organics pickup. Collection carts would be stored in a common common area similar to how recycling is stored. 	<ul style="list-style-type: none"> Residents would continue to place organic waste in garbage. Organic waste would be separated from garbage at a mixed waste processing facility to be composted or anaerobically digested.
How much closer will it get us to the 60% goal?	1.5% 2,500 tonnes	5% 8,000 tonnes
Annual cost	\$1.3 M	\$2.4 M
Cost per household	\$7	\$14
Cost per tonne diverted	\$500	\$300
GHG² avoided	2,000 tonnes	6,400 tonnes
GHG reduction for every tonne diverted	0.8 tonnes	

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months.

1. Approximate range of costs and tonnes are provided based on best available data.
2. Greenhouse Gas

getinvolved.london.ca



Other Recyclables



Background:

Mattresses, carpets and wooden furniture are currently collected as garbage in London. There is potential to recycle these materials. In fact, the Province has already identified mattresses and carpet as materials they wish to target for recycling in the future.



How will resources be invested?¹	Moderate (Collection at an EnviroDepot)	Significant (Semi-annual collection + EnviroDepot program)	
	The data below reflect the two investment options.		
	Carpet	Mattresses & Box Springs	Wooden Furniture
Impact on Diversion	0.1% 160 tonnes	0.3% to 0.6% 500 to 1,000 tonnes	0.1% 160 tonnes
Annual cost²	\$50 K to \$140 K	\$0.5 M to \$1.1 M	\$9 K to \$90 K
Cost per household	\$0.30 to \$0.80	\$3 to \$6	\$0.05 to \$0.50
Cost per tonne	\$350 to \$850	\$900 to \$1 K	\$50 to \$500
GHG³ avoided	400 tonnes	1,300 to 2,600 tonnes	600 tonnes
GHG reduction for every tonne diverted	2.6 tonnes	2.6 tonnes	3.8 tonnes

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months.

1. Approximate range of costs and tonnes are provided based on best available data.
2. Program costs may be covered in future under provincial program.
3. Greenhouse Gas

getinvolved.london.ca





Other Recyclables



Background:

Electrical equipment & scrap metal, textiles and bulky plastic items are currently being recycled and reused in London. However, a significant quantity of these materials continue to be landfilled. There is potential to increase diversion of these materials.



How will resources be invested? ¹	Moderate (Collection at an EnviroDepot)		Significant (Semi-annual collection + EnviroDepot program)
	The data below reflect the two investment options.		
	Electrical Equipment, Metal	Textiles	Bulky Plastics
Impact on Diversion	0.1% to 0.2% 160 to 320 tonnes	0.2% to 0.5% 320 to 800 tonnes	0.03% to 0.06% 50 to 100 tonnes
Annual cost ²	\$20 K to \$110 K	\$0 K to \$110 K	\$20 K to \$80 K
Cost per household	\$0.10 to \$0.60	\$0 to \$0.60	\$0.01 to \$0.40
Cost per tonne	\$125 to \$350	\$0 to \$150	\$400 to \$800
GHG ³ avoided	700 to 1,400 tonnes	3,000 to 8,000 tonnes	50 to 100 tonnes
GHG reduction for every tonne diverted	4.4 tonnes	10 tonnes	1 tonne

One tonne of GHG reduction is equivalent to removing 1 car off the road for 3 months

1. Approximate range of costs and tonnes are provided based on best available data.
 2. Program costs may be covered in future under provincial program.
 3. Greenhouse Gas

getinvolved.london.ca



Waste Reduction & Reuse Initiatives



Background:

These initiatives focus on raising awareness of options to reduce waste and engage citizens to make small changes to daily life.

The impact of any one initiative may not be significant, but together small changes contribute to cultivating a culture of waste reduction, and over time could make a significant difference to how we manage resources.



As some of those listed are already underway in our community through other organizations, we could explore options to build partnerships as well as establish new sharing programs where they are needed.

More research is required to understand the potential impact on diversion and GHG reduction.

How will resources be invested?	Program Cost for Examples	Moderate Investment	Significant Investment
		Per household Net annual cost	
Lending libraries	Lending of materials and equipment that are used infrequently reduces new product production and can save money for the public. Tool lending libraries, for example, are being developed in London.	\$0.25 \$45 K	\$0.50 \$90 K
Repair workshops	There is potential to reduce waste through repair and reuse workshops. These workshops will train unemployed citizens on how to fix household items (e.g., shoes, furniture, etc.) and extend their lives.	\$0.25 \$45 K	\$0.50 \$90 K
Promote reuse events	Explore options for reuse events to facilitate trading, selling or giveaway of materials for reworking, furniture, toys in a community, get artists and help to start the events do not contribute to litter or illegal dump.	\$0.25 \$45 K	\$0.50 \$90 K
Waste reduction education and outreach	Increase of general awareness campaigns on waste reduction (e.g., in addition to the above, buy in bulk, buy products that are repair products, avoid disposable products, avoid food at all (e.g. buy etc.)	\$0.55 \$100 K	\$1.10 \$200 K

getinvolved.london.ca





Waste Reduction Policies



Background:

Many of the City's waste diversion and reduction programs are voluntary; there is no mandatory recycling by-law for example. Other programs are written into the waste collection by-law, such as the 3 container limit on garbage, and a collection ban on materials such as scrap metal, appliances, and electronics.



Expanding the power of the by-law to reduce waste can be an effective means of increasing waste diversion. Changes to the by-law can also be implemented at relatively low cost. However, implementing by-law changes may not be popular, and this needs to be considered as we go forward. Alternative approaches that provide incentives to reduce will also be explored.

More research is required to understand costs, citizen acceptance of by-law changes, potential impact on diversion, and GHG reduction.

Do you support changes to the By-law to increase waste diversion?

Indicate which of the examples below you support.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Expand & enforce material bans

Some materials are banned from collection at the curb and landfill (e.g., electronics, scrap metal, appliances, and tires). This could be expanded to include materials that can be recycled/composted now or in the future, such as: Blue Box recyclables, wooden furniture, mattresses, carpet, and organics. An expanded list of banned materials may require additional enforcement to be effective.

Clear bags for garbage

Some municipalities have introduced clear bags for garbage to facilitate enforcement of material bans. Generally, clear bag programs have an allowance for one non-clear privacy bag.

Reduced garbage container limits

Further reduction of garbage container limits may be implemented in conjunction with new diversion programs, such as a city-wide organics program. This may also be accomplished by reducing frequency of collection of garbage (from once per six business days to bi-weekly collection).

User pay

In larger communities, user pay for garbage is typically restricted to cart based programs; residents pay an annual fee based on the size of cart they select.

Performance-based incentives

Some examples include: use of incentives such as point reward systems, or a "gold box" for correct recycling, rebate in User Pay programs for selection of the small size cart.



Current Waste Diversion and Resource Recovery Research

Residential Food Waste Avoidance Pilot

- Audits show up to two-thirds of food waste is avoidable
- Testing various methods to change behaviour



Mixed Waste Processing Pilot

- 25% to 50% of material in garbage could be recovered and diverted
- Further testing/research required



Waste Composition Studies

- Determine what remains in garbage
- Four season audit





London Waste to Resources Innovation Centre



- Part of Council's Strategic Plan (2015 - 2019)
- Potential research, testing and training centre for business, institutions and municipalities
- Working with partners (e.g., ICFAR) to examine new, emerging and next-generation resource recovery and waste conversion technologies... from feedstocks to end markets
- Focus on waste diversion and resource recovery associated with:
 - Household garbage
 - Other materials targeted by the Provincial Government
 - Source separated or facility separated organics
 - Other marketable products and/or creation of energy resources
 - Other "waste materials" into resources
 - Creating higher value end products
 - Growing the local and regional economy

getinvolved.london.ca





Possible Long Term Resource Recovery Options



Waste Conversion

Thermal or biochemical conversion of waste into synthetic gas, biofuel, biochar, etc.
Requires pre-processing of mixed waste



Energy-From-Waste (EFW)

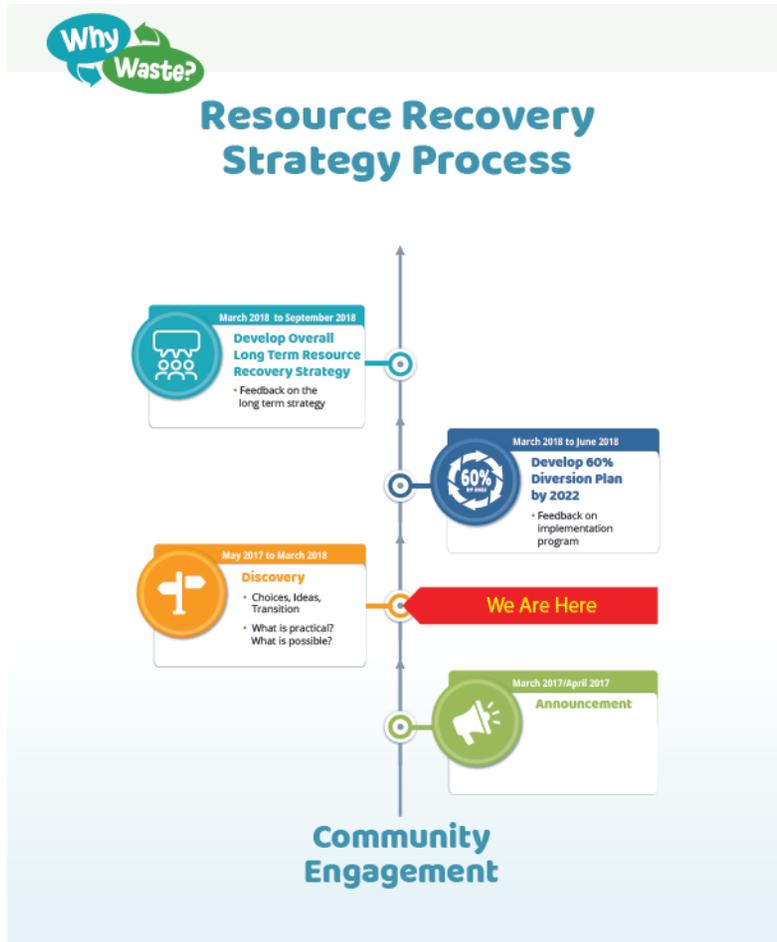
Incineration of waste creating energy and ash
None or limited pre-processing of mixed waste



Mixed Waste Processing/ Mechanical/Biological

Processing of mixed waste into organic and non-organic portions with recovery of recyclable material (limited)
Organics portion could be landfilled, composted to stabilize the waste prior to landfilling or sent to an anaerobic digester to create biogas and digestate
Non-organic portion could be landfilled or converted to Solid Recovered Fuel (e.g., pellets)





getinvolved.london.ca



Photos from Open House 2
November 29, 2017 – Horton Street Goodwill Industries



**Photos from Open House 2
November 30, 2017 – Lambeth Community Centre**



Appendix B2

Open House #1

<p>May 24, 2017 Horton Street Goodwill Industries (3rd floor) 255 Horton Street (at Wellington), London 2 - 4 p.m. and 5 – 8 p.m.</p>	<p>May 25, 2017 Lambeth Community Centre 7112 Beattie Street, London 2 - 4 p.m. and 5 – 8 p.m.</p>
--	---

The Open Houses were advertised in The Londoner newspaper on May 11 and 18, 2017; on the City website between May 11 and 25, 2017; in the London Free Press on May 13 and 20, 2017; on the City's Facebook page and Twitter on multiple dates; on posters at select City facilities; on the City's e-news on May 18, 2017; and on the London Environmental Network website.

Letters or emails were sent to local businesses that use the existing landfill, neighbours within 2 km of the Waste Management and Resource Recovery Area, community groups, neighbouring regional municipalities and PLC members between May 11 and May 17, 2017.

This open house provided a general overview of current City of London waste management programs as well as the EA process for the proposed expansion of the W12A Landfill site.

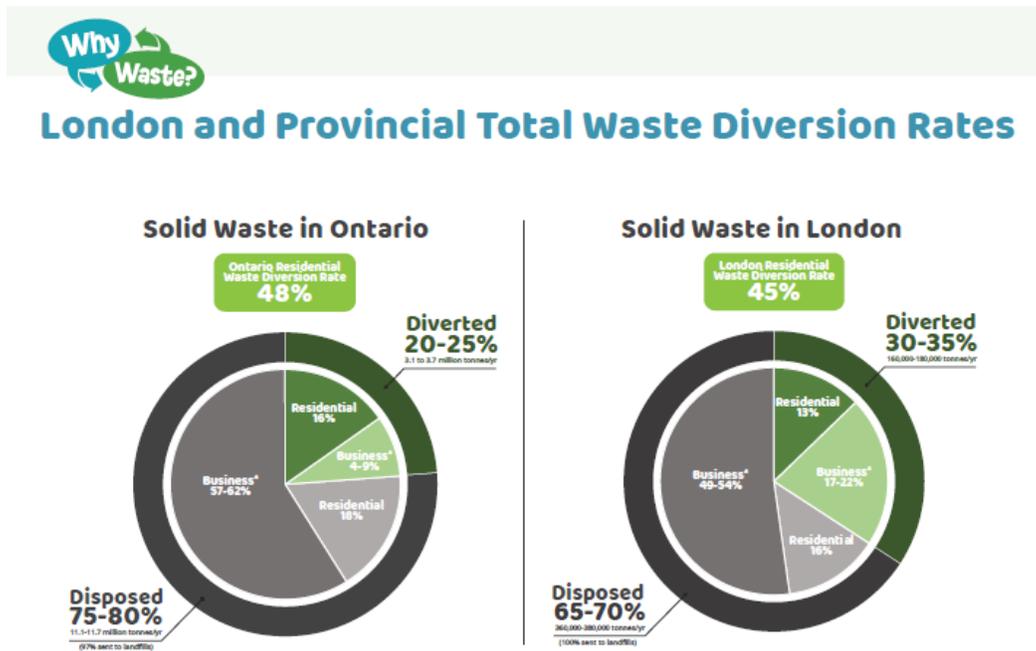
A total of 25 display boards were featured at Open House #1. Boards pertaining to the Resource Recovery Strategy and photos of the open house are provided in Appendix B2.

This event was designed to provide opportunities for attendees to speak directly with the City and the EA consulting team. Attendees were asked to sign in and were encouraged to fill out a comment sheet to provide feedback and recommendations.

A total of 21 and 44 people attended Open House #1 on May 24 and 25, 2017, respectively. The overall atmosphere of the open house was professional, courteous and respectful.

Comments were received through completion of the formal feedback sheet from five people. In addition, two email exchanges and a phone call were received where the public provided feedback. The public also provided thoughts on the City's Facebook page. Overall, meeting attendees were satisfied with the information presented and provided positive feedback on the quality of the information materials and answers provided. A summary of feedback comments is provided in Appendix C.

Resource Recovery Strategy Boards from Open House 1



* Business waste includes industrial, commercial and institutional (IC&I) waste as well as construction, renovation and demolition (CR&D) waste





Residential Waste Diversion and Disposal

Municipality	Management of Residential Waste (2015)	Diversion Program				Disposal		New, Emerging and Next Generation Technologies (Municipal responses as of Fall 2016)
		Blue Box Recycling	Green Bin	Leaf Yard Materials	Other Programs	Landfill	Energy-from-Waste (EFW)	
City of London		✓ 16%	0%	✓ 16%	✓ 13%	✓ 55%	0%	• Will examine diversion options during the development of the new Resource Recovery Strategy.
Regional Municipality of Durham		✓ 18%	✓ 11%	✓ 11%	✓ 14%	✓ 15%	✓ 31%	• Developing a business case for mixed waste processing and anaerobic digestion of the residual waste stream prior to EPW.
Essex Windsor Solid Waste Authority		✓ 15%	0%	✓ 15%	✓ 8%	✓ 62%	0%	• No recent investigations.
City of Guelph		✓ 13%	✓ 16%	✓ 13%	✓ 19%	✓ 39%	0%	• At appropriate times in agreements and waste disposal contract cycles; explore alternatives to landfill, including energy-from-waste technologies.
Regional Municipality of Halton		✓ 21%	✓ 14%	✓ 13%	✓ 9%	✓ 43%	0%	• Study completed in 2007 looking at energy-from-waste and thermal waste conversion technologies, decided not to pursue this option.
City of Hamilton		✓ 17%	✓ 14%	✓ 7%	✓ 9%	✓ 53%	0%	• Will examine alternative disposal technologies in the next Solid Waste Master Plan review scheduled for 2017.



Residential Waste Diversion and Disposal

Municipality	Management of Residential Waste (2015)	Diversion Program				Disposal		New, Emerging and Next Generation Technologies (Municipal responses as of Fall 2016)
		Blue Box Recycling	Green Bin	Leaf Yard Materials	Other Programs	Landfill	Energy-from-Waste (EFW)	
City of London		✓ 16%	0%	✓ 16%	✓ 13%	✓ 55%	0%	• Will examine diversion options during the development of the new Resource Recovery Strategy.
Regional Municipality of Niagara		✓ 19%	✓ 6%	✓ 16%	✓ 13%	✓ 46%	0%	• Plan originally recommended thermal technology with the recovery of recyclables as a preferred option. However because of changing circumstances, coupled with sufficient landfill capacity, continue to landfill residual waste. • Annual staff report updates on alternative waste management technologies.
City of Ottawa		✓ 17%	✓ 18%	✓ 2%	✓ 6%	✓ 57%	0%	• Gasification pilot project at the City's Trail Road Landfill plant. • Began operation in 2008 but only processed a fraction of its rated throughput. In 2015 the plant was decommissioned.
Regional Municipality of Peel		✓ 17%	✓ 6%	✓ 11%	✓ 10%	✓ 56%	0%	• Currently undertaking research on mixed waste processing facilities.
City of Toronto		✓ 17%	✓ 13%	✓ 12%	✓ 10%	✓ 48%	0%	• Not actively investigating at this time. • Will look at the viability of mixed waste processing in 5 years.
Regional Municipality of Waterloo		✓ 17%	✓ 5%	✓ 21%	✓ 10%	✓ 47%	0%	• Master Plan recommended investigating thermal technology (energy-from-waste, gasification, etc.) options. • Study investigating thermal technology options completed in 2016 and recommended no further action at this time.
Regional Municipality of York		✓ 19%	✓ 21%	✓ 12%	✓ 11%	✓ 25%	✓ 12%	• Currently undertaking research on the feasibility of different Source Separated Organics processing technologies.





Resource Recovery Strategy

To maximize waste reduction, reuse, recycling, composting and resource recovery in an economically viable and environmentally responsible manner

Key Project Parameters:

60% residential waste diversion by 2022



New organics management program(s) key method to reach 60% residential waste diversion



Look at the possibility of allowing neighbouring municipalities to use any new facilities developed by the City, under conditions approved by Municipal Council

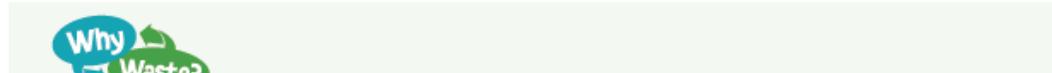


Strategy needs to be able to address how future technologies can have a (transition) role in the waste management system, if appropriate

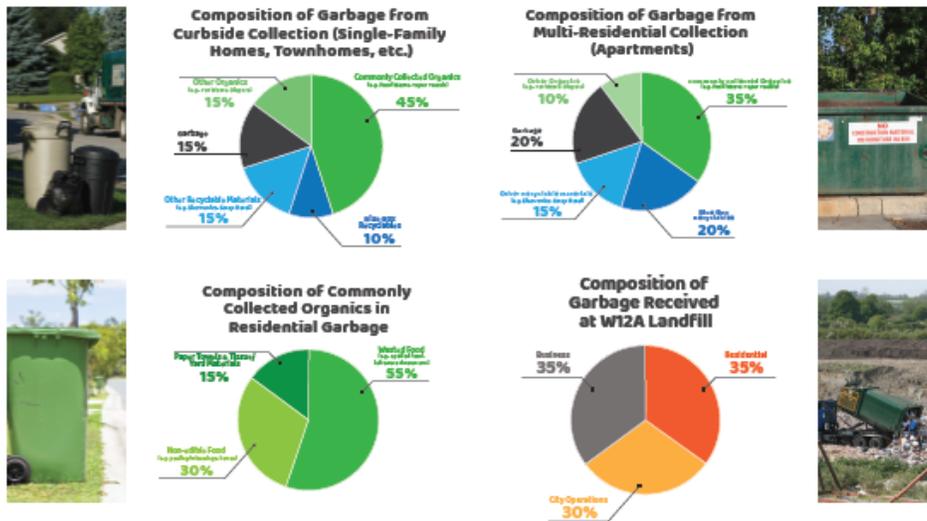




Resource Recovery Strategy Process



What is in the Garbage (Residual Waste)?





What Should We Do with Organics?



Food Waste Avoidance

Prevent the creation of food waste



Home Composting

Small scale composting at home



Community Composting

Communal composting in public places or at multi-residential buildings



Source Separated Organics

Green Bin Programs



Facility Separated Organics

Collected garbage is taken to a processing facility to remove organics



Waste Conversion

Conversion of organics (with other garbage) into synthetic gas, biofuel and/or biochar



Possible Long Term Resource Recovery Options



Waste Conversion

Thermal or biochemical conversion of waste into synthetic gas, biofuel, biochar, etc.
Requires pre-processing of mixed waste



Energy-From-Waste (EFW)

Incineration of waste creating energy and ash
None or limited pre-processing of mixed waste

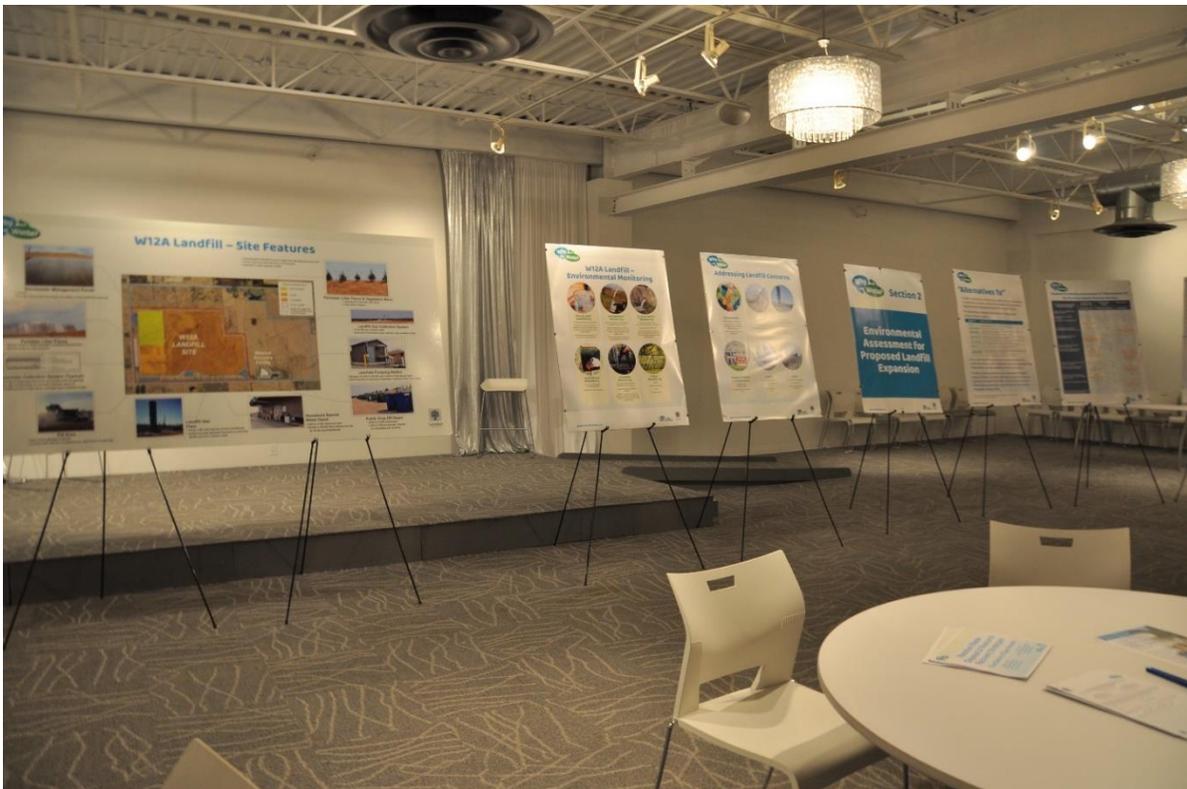


Mixed Waste Processing/ Mechanical/Biological

Processing of mixed waste into organic and non-organic portions with recovery of recyclable material (limited)
Organics portion could be landfilled, composted to stabilize the waste prior to landfilling or sent to an anaerobic digester to create biogas and digestate
Non-organic portion could be landfilled or converted to Solid Recovered Fuel (e.g., pellets)



**Photos from Open House 1
May 24, 2017 – Horton Street Goodwill Industries**



**Photos from Open House 1
May 25 – Lambeth Community Centre**



Appendix B3

Community Events

City staff attended public events to promote the Resource Recovery and Residual Waste Disposal Strategies. Events are listed below. Examples of the displays are also included in this Appendix. The display at these events was designed to provide opportunities for attendees to speak directly with City staff. There was no formal feedback process at the events except for the Home Show. (Home Show feedback is summarized in Appendix C.) A common inquiry at all events was the timeline of the implementation of green bins, as well as general recycling inquiries and general composting inquiries.

Community Events

Event	Date	Location
London Home Show	January 26 - 28, 2018	Western Fair District
Neighbourhood Service Days	August 28 - September 1, 2017	Crouch Neighbourhood Resource Centre, Northwest London Resource Centre, Glen Cairn Community Centre, Family Centre Argyle, Westmount Family Centre
Gathering on the Green 2	August 20, 2017	Wortley Village, The Green
Forest Festival	August 19, 2017	Harris Park
Inspiration Fest	July 23, 2017	Wortley Village, The Green
Home County Folk Festival	July 15 to July 16, 2017	Victoria Park
Sunfest	July 6 to July 9, 2017	Victoria Park
Sesquifest	June 29 to July 2, 2017	Downtown London
The Big Leak: Water Brothers	June 5, 2017	Central Library
Gathering on the Green	June 3, 2017	Wortley Village, The Green

Community Event Displays

London Home Show January 26 – 28, 2018



Gathering on the Green 2 August 20, 2017



Sesquifest June 29 – July 2, 2017



Appendix B4

Other Engagement

Various public and City committees and groups have been advised of on-going activities and their opinions solicited as and when appropriate. The Advisory Committee on the Environment (ACE), the Agricultural Advisory Committee (AAC), the Environmental and Ecological Planning Advisory Committee (EEPAC) and W12A Landfill Public Liaison Committee (PLC) are all regular City committees and groups who have been advised of the status of this project. Details of meetings where the Resource Recovery Strategy or 60% Waste Diversion Plan have been discussed are provided below:

ACE

Date	Discussion Topic
February 7, 2018	<ul style="list-style-type: none"> 1st Report of the Waste Management Working Group received.
September 6, 2017	<ul style="list-style-type: none"> 2nd Report of the Waste Management Working Group received.
June 7, 2017	<ul style="list-style-type: none"> 1st Report of the Waste Management Working Group received. ACE gave their support for both the Residual Waste Disposal and Resource Recovery Strategies.
May 3, 2017	<ul style="list-style-type: none"> Early Stages of the Residual Waste Disposal Strategy (Including Environmental Assessment for the expansion of the W12A Landfill) and the Development of the Resource Recovery Strategy.

EEPAC

Date	Discussion Topic
January 18, 2018	<ul style="list-style-type: none"> Overview of potential organics programs as part of 60% Diversion Action Plan & Resource Recovery Strategy
June 22, 2017	<ul style="list-style-type: none"> Update on Residual Waste Disposal Strategy and Resource Recovery Strategies

W12A PLC

Date	Discussion Topic
April 19, 2018	<ul style="list-style-type: none"> Residual Waste Disposal Strategy and Resource Recovery Strategy Update #3
February 15, 2018	<ul style="list-style-type: none"> Update and discussion about the Draft Proposed Terms of Reference
December 7, 2017	<ul style="list-style-type: none"> Update on Open House #2
October 19, 2017	<ul style="list-style-type: none"> Update about the CLC

August 17, 2017	<ul style="list-style-type: none"> • Displays for community engagement, upcoming Open House in November
June 15, 2017	<ul style="list-style-type: none"> • Residual Waste Disposal Strategy and Resource Recovery Strategy Update #2 • Feedback from Open House, CLC update
April 20, 2017	<ul style="list-style-type: none"> • Residual Waste Disposal Strategy and Resource Recovery Strategy Update #1 • Reminder of Social on May 5, Open Houses May 24 & 25

The Waste Management Working Group (WMWG) is a new working group of Municipal Council consisting of five councillors and the Mayor with the purpose of monitoring and advising on activities related to the Resource Recovery Strategy and Residual Waste Disposal Strategy and EA. This is intended to provide a more effective and focused structure for members of the Civic Works Committee and Municipal Council to review, provide input and approve the necessary actions for the successful development and implementation of both Strategies. Details of meetings where the Resource Recovery Strategy or 60% Waste Diversion Plan have been discussed are provided in the table below:

Date	Discussion Topic
March 8, 2018	<ul style="list-style-type: none"> • Progress Report #5: Community Engagement Program • Background Report #3: Development of 60% Waste Diversion Action Plan
January 18, 2018	<ul style="list-style-type: none"> • Update Report #8: Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies • Progress Report #4: Community Engagement Program
September 28, 2017	<ul style="list-style-type: none"> • Decision Report #4: Guiding Principles - Resource Recovery and Residual Waste Disposal Strategies • Update Report #5: Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies • Update Report #4: Community Engagement Program
June 27, 2017	<ul style="list-style-type: none"> • Progress Report #1: Community Engagement Program • Update Report #3: Project Timelines Update Report #2: Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies
January 19, 2017	<ul style="list-style-type: none"> • Decision Report #3: General Framework for the Community Engagement Program for the Resource Recovery and Residual Waste Disposal Strategies as Part of the Environmental Assessment Process • Decision Report #1: Draft Guiding Principles - Resource Recovery and Residual Waste Disposal Strategies • Update Report #1: Resource Recovery Update

A new Waste Management Community Liaison Committee (CLC) was also struck for this project consisting of representatives from waste management companies, small business, community groups and members at large. Details of meetings where the Resource Recovery Strategy or 60% Waste Diversion Plan have been discussed are provided in the table below:

Date	Discussion Topic
February 26, 2018	<ul style="list-style-type: none"> • Community Engagement Update including results of Open House 2 and Home Show • Update Resource Recovery Strategy (Between November 20, 2017 and February 23, 2018) • Next Steps – Resource Recovery Strategy
November 20, 2017	<ul style="list-style-type: none"> • Updates - Resource Recovery Strategy (Between October 16 and November 20, 2017) • Next Steps – Resource Recovery Strategy • Discussion of getting to 60% diversion
October 16, 2017	<ul style="list-style-type: none"> • Updates – Resource Recovery Strategy (Between June 5 and October 16, 2017) • Next Steps – Resource Recovery Strategy • Discussion of community involvement
September 13, 2017	<ul style="list-style-type: none"> • Group discussion on Key Project Parameters for Residual Waste Disposal Strategy including achieving 60% diversion by 2022
June 5, 2017	<ul style="list-style-type: none"> • Updates - Resource Recovery Strategy (Between March 30 and June 5, 2017) • Next Steps - Resource Recovery Strategy

Appendix B5

Project Website

The Resource Recovery Strategy webpage is published on the getinvolved.london.ca website. It was launched on March 24, 2017. There have been over 4,000 unique visitors to date with over 6,000 visits. This webpage has also been used to promote Waste Reduction Week. Visitors have the opportunity to learn about the Resource Recovery Strategy, provide feedback and subscribe to a mailing list to receive updates. Some examples of the content can be viewed below.



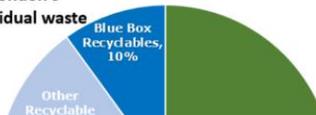
Home / Resource Recovery Strategy

- THE PROPOSAL
- MUNICIPAL DIVERSION
- PARTICIPATE!
- DOCUMENT LIBRARY
- SUBSCRIBE

Background

In London more than one tonne of waste is produced per person. This includes waste generated at home as well as waste generated by businesses. Much of this waste is diverted through numerous waste reduction, reuse, recycling and composting programs. The waste that remains can be considered "Residual Waste". All of the Residual Waste from households and a portion generated by businesses is disposed of at the City's W12A Landfill Site. This landfill opened in 1977 and is expected to reach capacity in 2025 based on the current amount of waste being received.

What's in London's Household Residual waste



Upcoming Events

Thursday 12 April 2018
Stay tuned!

Resource Recovery Strategy Timeline

- Project Start**
March 2017
- Establish Waste Management Community Liaison Committee**
April 2017

Home / Resource Recovery Strategy

- THE PROPOSAL
- MUNICIPAL DIVERSION**
- PARTICIPATE!
- DOCUMENT LIBRARY
- SUBSCRIBE

Waste Diversion in London and Ontario (2014)

- London's overall (residential and business) waste diversion rate is about 55% above the provincial average.
- London's residential waste diversion rate is well above the average rate (about 18% higher) compared to other Ontario municipalities without a Green Bin program.
- London's residential waste diversion rate is a little below (about 6%) the average rate for all municipalities.
- London's residential waste diversion rate is about 15% below the average rate for municipalities with Green Bin Programs.



Waste Management in Large Ontario Municipalities

Check out the residential waste management systems in the largest municipalities/recycling authorities in Ontario to see how they compare to London's waste management system. Information is provided on the municipalities demographics, amounts of waste diverted through various methods/programs and their long term plans for waste management. London will also be looking at other high performing municipalities such as Markham and Peterborough when developing its resource recovery strategy.

Select a municipality below to see a summary of their waste management system.

Home / Resource Recovery Strategy

Upcoming Events

Thursday 12 April 2018
Stay tuned!

Resource Recovery Strategy Timeline

- Project Start**
March 2017
- Establish Waste Management Community Liaison Committee**
April 2017
- Open House # 1**
May 24 and May 25, 2017
- Open House # 2**
November 29 and November 30, 2017
- Community Engagement**
Spring 2017- Spring 2018
- Circulation/Approval of 60% Diversion Action Plan**
June 2018 - July 2018
- Circulation of Draft Strategy**
August 2018 - December 2018

- THE PROPOSAL
- MUNICIPAL DIVERSION
- PARTICIPATE!**
- DOCUMENT LIBRARY
- SUBSCRIBE

London Food Waste Survey

Did you know more than 15% of food purchased by London households becomes waste? Wow!

Take our Food Waste Survey

Complete our Food Waste Survey for a chance to win one of four \$25 gift cards to a local grocery store.

Chance to win!

What Do You Think?

See what others are saying and let us know what you think.

Virtual Open House

Virtual Open House feedback results coming soon.

Draft Guiding Principles - Feedback Results

Upcoming Events

Thursday 12 April 2018
Stay tuned!

Resource Recovery Strategy Timeline

- Project Start**
March 2017
- Establish Waste Management Community Liaison Committee**
April 2017
- Open House # 1**
May 24 and May 25, 2017
- Open House # 2**
November 29 and November 30, 2017
- Community Engagement**
Spring 2017- Spring 2018
- Circulation/Approval of 60% Diversion Action Plan**
June 2018 - July 2018
- Circulation of Draft Strategy**
August 2018 - December 2018

Home / Resource Recovery Strategy

- THE PROPOSAL
- MUNICIPAL DIVERSION
- PARTICIPATE!
- DOCUMENT LIBRARY
- SUBSCRIBE

Committee Reports - Civic Works Committee

- First Report of the Waste Management Working Group**
PDF (762.45 KB)
February 7, 2017 meeting of the Civic Works Committee, Item # 10a
- Update and Next Steps - Resource Recovery Strategy and Residual Waste Disposal Strategy as Part of the Environmental Assessment Process**
PDF (1.61 MB)
February 7, 2017 meeting of the Civic Works Committee, Item #10
- Establishment of a Waste Management Working Group**
PDF (41.03 KB)
December 5, 2016 meeting of the Strategic Priorities and Policy Committee, Item # 2
- Individual Environmental Assessment Long Term Solid Waste Resource Recovery & Disposal Plans**
PDF (256.76 KB)
October 6, 2015 meeting of the Civic Works Committee, Item # 14

Committee Reports - Waste Management Working Group

- Background Document #1: Overview of Individual Environmental Assessment (EA) Process**
PDF (90.67 KB)
January 19, 2017 meeting of the Waste Management Working Group, Item #3
- Update Report #1: Resource Recovery Update**
PDF (179.53 KB)
January 19, 2017 meeting of the Waste Management Working Group, Item #4
- Decision Report #3: General Framework for the Community Engagement Program for the Resource Recovery and Residual Waste Disposal Strategies as Part of the Environmental Assessment Process**
PDF (105.59 KB)
January 19, 2017 meeting of the Waste Management Working Group, Item #7

Home / Resource Recovery Strategy

- THE PROPOSAL
- MUNICIPAL DIVERSION
- PARTICIPATE!
- DOCUMENT LIBRARY
- SUBSCRIBE

First Name

Last Name

Please enter your email address to join our mailing list.

Types of Information You Wish to Receive:

- Community Engagement Events (e.g. open houses)
- Online Engagement Opportunities (e.g. online survey)
- Ongoing Updates
- City Committee Meetings (when strategy is on the agenda)

Projects You Wish to Receive Information on:

- Residual Waste Disposal Strategy
- Resource Recovery Strategy
- Both

Submit

Upcoming Events

Thursday 12 April 2018
Stay tuned!

Resource Recovery Strategy Timeline

- Project Start**
March 2017
- Establish Waste Management Community Liaison Committee**
April 2017
- Open House # 1**
May 24 and May 25, 2017
- Open House # 2**
November 29 and November 30, 2017
- Community Engagement**
Spring 2017- Spring 2018
- Circulation/Approval of 60% Diversion Action Plan**
June 2018 - July 2018
- Circulation of Draft Strategy**
August 2018 - December 2018

Upcoming Events

Thursday 12 April 2018
Stay tuned!

Resource Recovery Strategy Timeline

- Project Start**
March 2017
- Establish Waste Management Community Liaison Committee**
April 2017
- Open House # 1**
May 24 and May 25, 2017
- Open House # 2**
November 29 and November 30, 2017
- Community Engagement**
Spring 2017- Spring 2018
- Circulation/Approval of 60% Diversion Action Plan**
June 2018 - July 2018
- Circulation of Draft Strategy**
August 2018 - December 2018

This page has intentionally been left blank.

Appendix C

Community Engagement Feedback

This page has intentionally been left blank.

Comments from getinvolved.london.ca April 12, 2017 to June 18, 2018**Q – What do you think? [about the Resource Recovery Strategy]**

- Work closely with grocery store and food producers to use a different waste stream for organic waste like composting . Create large composting bins for apartment buildings that won't have a smell and is easily accessible.. like composting gardens
- The ACE Subcommittee is meeting this evening to discuss the draft plan, with a particular focus on organics aspect of waste diversion.
- We do a good job now; keep on making incremental improvements. But NO GREEN BIN! Not Ever! Too expensive; small bank for a big buck!
- A composting program is essential (whether a green bin or other type of program) when the majority of waste is organic material.
- 45% of Londons waste is organic. Can those with yard space be encouraged/motivated to compost and reduce the cost of a green pickup?
- Detached homes can and should be encouraged to compost at home.
- A green bin program should be implemented for all multi unit buildings
- All food service locations should have a green bin pickup.
- Options already available for homeowners to compost but don't. Green waste like Durham can save landfill and has resale value at other end.
- Put a giant blue bin beside every garbage bin in the city; make it easier to recycle what we consume on the go than it is to throw it away.
- Lived in Brampton and used the green bin. I would like to see that in London also. More people likely to use green bin than compost at hom
- I lived in Hamilton in 2006 when they implemented a green bin. It reduced our household waste in half. London needs this!
- How can we stop repairable or good things from being thrown to the curb because it's easier? Some ideas here: <https://tinyurl.com/y9x28x8c>
- I just moved from the GTA where we've had our compost picked up weekly, for over five years. It's disappointing to see London so far behind.
- Website should show a detailed pie graph of the current recycling figure of 45%, followed by updates to see what plans are working best.
- everything that comes out of a grocery store should be Recycled, Reused or Composted and picked up at the curb by the city, in provided cans
- Agree with the other comments. Should have organic compost pick-up as part of a full composting plan and engagement strategy.
- London has a unique advantage to use existing organic waste treatment facilities where organic waste can be diverted to reach goals b4 2022.
- We have Orgaworld here in London * Where green bin waste is processed *so, why isn't the program implemented in our city too?
- I moved to London from the Niagara Region in 2015. I was shocked there was no green bin system here! Would be thrilled to see this happen.

- This is KEY: "How can we stop repairable or good things from being thrown to the curb because it's easier?"
- Encourage reuse of unwanted items:
<https://www.bristol2015.co.uk/method/resources/>
- would love to have green bin program...sister lives in Hamilton...everything goes into compost bins...great idea
- To encourage home composting, the city could consider a composter give away or sale at discounted price. Waterloo did this years ago.
- Why hasn't the City provided black bin composters for residents at a discounted price (we have 3 we use)?
- Organic waste pick up important. It takes 25 years for a head of lettuce to decompose in a landfill.
- Would love to see the green box program here in London. We do compost and recycle a lot. Most of our throw away garbage is food stuffs.
- I am concerned with ppl not using a green bin properly and increasing the amount of skunks, mice, raccoons and rats. Too many already!!!
- Shocking that London is surrounded by Municipalities that have Green Box programs and yet London doesn't. Embarrassing really.

Feedback on Second Round of Questions. Questions posed at Open House 2, online, London Home Show and to the Waste Management Community Liaison Committee. The number of responses varied by question, but ranged from 615 to 956.

What Level of Investment Are You Willing to Make?		Response	Summary Comment
Greater levels of waste diversion and resource recovery will require additional financial investments. On a household basis, how much more in municipal taxes and fees would you be prepared to pay per year?	\$0	17%	Over 80% of the respondents indicated they are prepared to pay more for waste diversion.
	\$1 - \$25	44%	
	\$26 - \$50	24%	
	\$51 - \$75	7%	
	\$76 - \$100	8%	
Potential New Programs and Initiatives (including the approximate annual cost per household)		Level of Support	Summary Comment
Food Waste Avoidance	No change: \$0	16%	Almost 85% support for some kind of program.
	Moderate Program: \$1	46%	
	Significant Program: \$7	38%	
Home Composting	No change: \$0	25%	

	Moderate Program: \$0.75	38%	75% support for all proposed options
	Significant Program: \$1.20	37%	
Community Composting	No change: \$0	20%	80% support for all proposed options
	Low Tech, Private: \$0.01	25%	
	Low Tech, Public: \$0.15	28%	
	High Tech, Public: \$0.45	27%	
City Wide Organics – Curbside Program	No Change: \$0	19%	Stronger support for Green Bin. Green Bin also preferred by CLC and ACE.
	Green Bin Program: \$20	62%	
	Mixed Waste Program: \$40	19%	
City Wide Organics – Multi-Residential Program	No Change: \$0	17%	Stronger support for Green Bin
	Green Bin Program: \$7	61%	
	Mixed Waste Program: \$14	22%	
Other Recyclables (people could choose more than 1 option)	No change: \$0	16%	About 15% do not support recycling other materials
	Carpet: \$0.30-\$0.80	30%	
	Mattresses/Box Springs: \$3-\$6	37%	
	Wood Furniture: \$0.05-\$0.50	25%	
	Electrical Equipment: \$0.10-\$0.60	34%	
	Textiles: \$0.00-\$0.60	21%	
	Bulky Plastics: \$0.01-\$0.40	29%	
Other Waste Reduction Initiatives (people could choose more than 1 option)	Lending Libraries: \$0.25-\$0.50	34%	Between 30% and 40% are supportive of various waste reduction initiatives
	Repair Workshops: \$0.25-\$0.50	35%	
	Promote Reuse Events: \$0.25-\$0.50	41%	
	Waste Reduction Education/Outreach: \$0.55-\$1.10	32%	

Waste Reduction Policies & By-laws (people could choose more than 1 option)	Expand and enforce material bans	31%	Between 15% and 30% are supportive of various waste reduction policies and by-laws
	Clear bags for garbage	19%	
	Reduce garbage container limits	23%	
	User pay (pay per bag or container)	17%	
	Performance-based incentives	24%	

Comments from Home Show January 26 – 29, 2018

Q – Do you have any other suggestions, comments or concerns for our consideration in the development of the Resource Recovery Strategy?

- Communal compost for complexes or condos
- Bring in green bins
- Citizens young and old need to be encouraged to stop littering! This was identified in the 1960's as a problem and now it is very problematic. I take a plastic bag to collect in my area. Have brought loads back as garbage and recycle material.
- Green box program PLEASE!
- Use the organic waste plant south of London
- Need to engage corporations and property management firms in the development process to increase buy-in.
- I have generally seen a reluctance to use green bins in 50% of my neighbours in other cities. Love the ideas of options for all types of bulky recyclables.
- Mirror Guelph's program
- Collect compost by city to reduce costs
- Green bin programs already in other cities in GTA should be implemented here too.
- Education. Training. Regular feedback from community by various means.
- Food waste recycling is long overdue in London. All of the suggestions on the boards are great!
- Clean and green!
- Policies enforcement! The impact to the overall system needs to be examined. Going to performance based incentives will not be successful.
- More electric chargers
- Would love to see the food waste program here in London
- Have recycling contractors follow current recycling strategies
- Green bins for composting
- Community give away day (Guelph & Winnipeg do it). 1 day residents can put all items @ curb for neighbours to come & claim & reuse
- Use hybrid garbage trucks
- Community composting for neighbourhoods

- Reinststitute the spring clean up program where old building materials etc could be put out on a given date. Often recyclers drove by and put old doors, lawnmowers, scrap to use. Crack down on student neighbourhoods.
- Program for organic waste.
- We have a roll out cart in Nova Scotia bi-weekly pick up – compost & garbage & recycling next wk. incl. meat, bones, lobster shells, (we freeze until pickup for bears, raccoons etc.) Need a similar program in London
- Green bin & recycling collection weekly with garbage in clear bags is biweekly. Another home composter campaign to incentivize homeowners to compost. Community events with compost/soil tests with professional to advise on use at home
- I think it's a great idea. It will impact people financially, but it is slight and if there are incentive plans introduced, it will be more attractive for community involvement.
- I would like to know how businesses are contributing - What they all doing to reduce 1X plastic use. HOW DOES TIM HORTONS get away with NOT being responsible for all their cups in the garbage??!?
- Please supply blue bins to promote recycling rather than having people throwing things out. A green box program would be very beneficial.
- Compost! Take Tech – get green Bins!
- Bottle & can deposits such as used in UK. They have 90%+ recycle. Set up machines in grocery department stores use ticket to pay for necessities. Too much focus on low incentives.
- I'd like to see a youth focused summer program to repair household appliances brought in by the public (a repair depot) – too much gets trashed unnecessarily. AMO needs to pressure the food and consumer goods industries to reduce packaging
- Please don't spend too much. Educate the children in grade schools. In high schools – set up programs for kids to do resource recover for 30 community service hours.
- Start accepting Styrofoam containers. Offer free composters for backyard.
- Green bins would be great!
- Encourage businesses (with financial incentive) not to over package their goods
- This is not an economic issue it is an education issue – People need to think “garbage” when they are shopping – Have a “think garbage” campaign
- Educate public on not purchasing anything in packages that are unnecessary e.g. cookies
- Have free green bins and blue bins and one free garbage bag. Charge for extra.
- Limit ban or educate on the horrors of one use plastic.
- Garbage pick up every two weeks.
- Educating the public on environmental effects, plus means of saving residents money would/could help encouraging recycling/reducing waste
- More instructions or public ads school programs may help
- Curbside pick-up of special materials (paint, electronics etc) once/year?

- Focus on re-use & reducing plastics
- Incinerate
- Paint containers
- Need more depots available for toxic waste
- We should be able to bring our paint cans (not empty) to the recycling sites
- Green bins!
- Paint cans
- Dirty oil after an oil change
- I don't agree with charging \$1.50 per bag when we already pay for garbage services in our taxes
- Styrofoam yes
- Sod tires mulch for sale
- Green bins a must
- Green bins 4 sure!!
- Green bins
- Styrofoam! Plastic grocery bags! Kleenex/napkins!
- Styrofoam is an issue & should be recycled
- Compost bins free
- Recycle days for electronics, more compost bins
- More awareness & instructions on what to do and make it convenient
- More frequent in the summer (smell). Any improvement is good.
- User pay works best
- Educate/advertise people to sort
- Move to weekly green bin & bi-weekly recycling & garbage
- User pay is a great system. Household composting should be mandatory.
- Don't sell our landfill space to other municipalities
- Stop letting others put garbage in our landfill – London only
- Great education. I like the idea that diversion is so effective
- How about tax reduction incentive for seasonal people
- Recycle Styrofoam
- Provide rebate to homeowner for full composting home units to prevent so much garbage. Police non users of blue box programs. Green bin is a good option. More yard waste pick up days.
- All great ideas! We need to Reduce, Reuse, Recycle Much More
- Green bin
- Performance based incentives too costly to implement
- Recycle plastic grocery bags!
- For sure an implementation of by-laws – more education at the elementary school board e.g. litterless lunches. Keep at it! We have to stay strong & keep educating. We cannot be like our American neighbours.
- Green boxes soon! Rain barrels

- Same garbage day every week
- The message needs to mean something to each person, how will it affect/improve/impact my quality of life – large numbers, population statistics not as helpful for personal accountability
- Encourage more composting of organic materials
- Educate the children in school – high school. Set up programs for high school kids to get community service hours
- Would like to see London move to organic recycling ASAP
- Give me a recycle bin please. It's ironic that we used 3 pieces of paper and paper ballots to complete this game
- Waste – green
- We need to expand plastic recycling program and kitchen waste
- Educate those who are not clear about value of recycling and waste reduction. More recycle bins at parks & other public facilities.
- I have relatives who have use the green bin curbside collection result in an infestation of mice in their community. Keeping costs down will garner support
- Questions with restaurants throwing recycled waste in regular waste... why?
- Need to promote organic recycling – teaching/pub ed. Well handled – there will always be critics
- More compost incentives. Give compost bins free currently pay over \$6K in taxes. Prior to incurring increases in taxes and fees I would like the City to demonstrate enhanced efficiencies within the current infrastructure.

Comments from Facebook post December 22, 2017 requesting feedback on possible options to handle organic waste, alternative landfill design concepts and proposed studies to evaluate the alternative landfill design concepts.

- Just learn from other cities. You don't have to reinvent the wheel.
- I heard a rumour that compost bins were purchased under Fontana but plan wasn't implemented Again? Just get it done this has been an embarrassment to London for over a decade

Comments from Open House 2 (questions from Comment Book) and virtual Open House

Q - Do you have any other suggestions, comments or concerns for our consideration in the development of the Resource Recovery Strategy?

- Stop free pick up of furniture. Wooden furniture needs to be broken down at dump and put in wood bin.
- Two free garbage tags should go with the annual garbage calendar.
- This could be a showpiece for London in so many ways.
- I think individuals should get more involved with there own garbage.

- Think about the City getting out of the “garbage collection” business [long term - hard sell]. Then everyone would have to deal with their own garbage and be aware of what they generate. Only collect recyclables. Alternative collection method – private contractors or do it yourself.
- Clear bags, textile recovery, organics diversion, food waste education
- Strongly support thermal or conversion of waste incineration!
- Need to look at what other cities and countries are doing ie ban plastic bags, zero waste stores, packaging bans etc, more bulk facilitation, restaurants need to be on board too (waste going to dumpsters, have more recyclables products, ban straws and disposable napkins. The public needs to be more informed about recycling rules and composting options and how to's. I heard on the radio about Oxford County's Green Cone. I went to their website and learned about it. I looked on London's website and saw that we have them! Why didn't I know about it? Why do so many people I know, not know how to recycle properly? No one seems to care. There are tons of visuals and ideas on social media that could be utilized. We can do this!
- Allow all plastics and metals, not just packaging. Only allow containers, no bags at the curb.
- No it is not worth. Landfill is easy to fill up and cause many problems (Full, communities take advantage). I think recycling and garbage processing plants will help our environment and economy. Jobs in recycling and garbage processing plants sort all materials and put many different kinds of materials before they go to recycling plants. Lot of people throw lot of black garbage bags into the bins and containers. They never put recycling materials into the blue box or blue containers. They are lazy and uncare. Enforcement is best way to inspect them. I want to increase toward 100% near future. 60% is OK but it is not enough to take recycling materials out of garbage. Fair is best way to deal the fair sharing price.
- Be creative. This can create many jobs also. Also make land a leader in waste recovery.
- Many of the program will create jobs. Not only at the collection and sorting side, but also afterwards with the people working with the reused materials.
- More open houses regarding up to date results
- No green bins! Way too expensive for taxpayers. Just expand the landfill as required.
- Pick up on one side of the road only (not arterial roads) to limit air pollution from garbage and recycling trucks.
- I think for the amount more you're being asked to pay a substantially higher amount of garbage is being diverted making it worth while.
- [many items proposed to add to recycling program] are recycled through Goodwill etc.
- We were told that we could no longer use plastic bags for leaves to save 300K in extra charges to city. Instead you have added \$5-15 per household to buy paper (fall apart) bags for leaves and did not reduce our taxes by the equivalent 300K.

- I would select user pay (all) to work in conjunction with a reduced container limit (perhaps pay per additional bag) and clear bags, bans and incentives
- Include info as to relative cost to London households compared to other municipalities. What do I pay now? What do residents pay in comparable municipalities? Really want a green bin program with bi-weekly pick up for regular waste

Comments from Facebook post Nov 26/17 advertising Open House 2

- we need to put some of the responsibility of waste back on the manufacturers..they need to use less packaging or pay municipalities to recycle or dispose of waste.
- Composting!!!! Give us green bins!!! We are so damn behind in this city, environmentally speaking (among so many other ways we're behind the times). But I've been pushing this city for household green composting bins for nearly a decade. Make it happen!!!!
- You can't get a representative sample of opinions by requiring people to show up in person at a handful of events. Your results are going to be skewed in favour of people who are in town, work compatible hours, are not single parents, etc.
- How about spending some time trying new ways to engage with people, and understanding the bias each introduces?
- don't need it...we already have 3 blue boxes and 2 composters. People have to be sensible and do it on their own. I wonder if I don't take the green bin will they give me a reduction in my taxes?.....hahahahahah
- I'd like the green bin which would reduce garbage. I also think manufactures should reduce extra packaging that isn't necessary. No products should be in the grocery store that can't be recycled. Please give us a garbage pick up where we have the same garbage day each week, like all other cities. We pay enough taxes and we do need a weekly pick up.
- Yes please to the composter idea Also can we please have bigger blue bins? We have 2 Metro bags full of garbage each week. And we put them into a black grabage bag for pickup. With the green bin means less for us a week
- There are alot of apartment buildings in London-bet they could use some help and support to increase recycling, we need an easier method of recycling plastic film rather than taking it to stores, we need to do more recycling of fabrics and fiber that is not good enough for resale
- I remember paying "environmental disposal fee" when buying electronic items. Does anyone know where that money went?
- Hey a green bin program going. London is one of a very few that doesn't do organic waste and it's embarrassing such a progressive city is so far behind in this regard
- Need use of various bins - waste, recycling and green bins which are then self limiting due to size.
Also automated emptying into garbage truck reduces labour , health costs etc.

- I feel sorry for all the residents who live near Orgaworld. The stench around that facility is unbelievable. For that reason, I will not participate in the green program.
- And the City will ignore all these ideas....oops, it's London and BRT is going to fix all the issues don't ya know!
- I already give you \$520.00 free labour every year for recycle pay taxes for garage pick up and by things with less package do reduce problems making the stuff now put leafs etc in bags to pick up which cost me money for composts that you put in areas where people who do not have cars can't get any now you want food scraps saved put out that smell and attracts animal bugs at my expense dream on
- teach your employee is how to pick up the garbage first,,not leave it all over our lawns
- Green bin idea brought to you by the Trash Panda lobby of London.
- An online survey would be great for the people who cannot make it to a meeting!
- Incineration and put some hydro back into the grid!
- why don't you people talk to Calgary Alberta they have all this covered out there and have for year
- I loved the green bin program when I lived in St. Thomas.
- Where are the green bins?!! I have one and it sits idle here in London.
- The city back in the 90s gave composting bins to everyone who wanted one. Do that again.

Comments from Facebook post September 12, 2017 requesting feedback on the Residual Waste Disposal Strategy

- Everyone should have a fire pit in their backyard to burn all the plastic trash they have
- Green bins have been an option for years but several city councils, including the current one, have waffled on this because of cost. What does a new landfill cost? Stop waffling and make the tough decisions!
- How about supporting/ encouraging (eventually forcing?) businesses to recycle too? My understanding is that at least some businesses do not recycle, including some large office blocks downtown. These places only produce a subset of waste "types" which currently go to landfill, yet could be easily diverted to provide massive gains in terms of landfill space very quickly.
- Green bins! I have four children, two in diapers and I recycle everything I can. I compost all of my food items and our household usually only puts out 1 garbage can a week.
- Federal regulations restricting the over packaging of ALL goods, imported and domestic, from food to toys, as well as requiring that any packaging used be biodegradable.
- We need organic waste pick up. Toronto has had it for 12 years, St. Thomas too. How do we raise our children to reduce, reuse, recycle if we as a city don't???

- I moved to St. Thomas a couple years ago, and it's like a paradise here for waste! In London I recycled and still had 4 large bags every 8 to 11 days for pickup in a 2 person house hold. Here we have the green bin and I put out only 1 bag every Wednesday. London should take the lesson.
- Need green bins, to much organic waste is going landfill when it could be turned into compost. Lots of food service business could greatly benefit from this.
- Look at the Norwegian/Swedish? Model where they incinerate. Could the incinerator at Westminster Campus be resurrected, technology has come so far and maybe there is a solution to the problem that shut it down. These countries have nearly 0 trash going to the landfills. Please check it out.
- I sat on the waste advisory council in Orillia, as well I co own a business providing effective waste reduction solutions to businesses across London and beyond. If there was an opportunity to meet with st...
- Green bins for sure! I also think there should be a deposit charged on pop cans, bottles, tetra packs, etc and locations (i.e. Grocery stores) to return them for the credit. I think this would help reduce what goes to landfill. Unfortunately a lot of people don't care and won't recycle unless it hits their wallet!
- Shouldn't we try to know what's filling the dump so quickly (besides the obvious answer of 'garbage')? Once we know that, figure out a way to reduce those top items.
- Pleasantly surprised at the comments this time around. I'm used to most Londoners complaining about a bag limit. I have a family of five and we put out a chip-bag sized bag every week. Move to zero-waste and compost. I also collect things like plastic bags that aren't picked up and take them to the grocery stores (yes they take that plastic film!) glad to see so many people on the zero-waste /green bin wagon
- Encourage more recycling and let us recycle more items! Lots of items London does not recycle.
- Encourage people to donate items and not throw them away (lots of places have drop off or even pickup)...
- There is a company in Atlanta Georgia that drills holes into the ground at the landfill. By letting the air reach the waste in the ground it breaks down faster and extends the life of the landfill. Was brought up about 15 to 20 years ago, but London said no. Could this be a solution now maybe.
- "If you think your waste being burned is a good thing then you are more inclined to just chuck things away rather than recycling them."
The last few weeks there has been alot of discussions about global warming and along with that, talks and news about...
- We need to move to a zero waste society. Get rid of the one time use products. Products that we do use should be biodegradable. Green Beaver Co, bamboo toothbrushes, aka cat litter can be composted reusable produce bags, reusable sandwich bags.
- As part of the short lived pilot for green bins I can attest that our waste was cut in half when we had a green bin. Bring them back!

- Our landfill would be perfectly fine if half of it was not filled by garbage from Toronto, time for Toronto's mayor and council to start thinking about dumping their city's waste in landfills in their own city, not ours.
- We also need to look at recycling every bit of plastic out there, soft plastic, hard plastics from things such as plastic furniture, gardening pots, etc. Aim for 0% plastics, metals and food in landfill. More recycling please.
- One idea is to consume less...buy less stuff. If an item has a lot of packaging...don't buy it. Composting in your backyard is very easy if you have a small amount of yard. People need to take more responsibility for the waste they produce.
- how about stopping companies from over-packaging goods? maybe it's time to take all the extra plastic and cardboard and let the companies pay to dispose of it instead of the taxpayers?
- So work with the Canadian gov to make a garbage burning electricity producer like they have in bc kill 2 birds with 1 stone. Also create jobs.
- Buy quality products and you will spend and waste less.
Support businesses that up-cycle and recycle.
Return products that fall apart before their time. Businesses need to offer quality, long lasting products and this is the only way to get them to stop offering stuff that clutters up the landfill.
- Other city's have had green bins for years It's proven to be successful ... It's an absolute embarrassment that the city of London still doesn't offer this programSend just 1 person from London's environmental waste management board to Sweden...
- Out west there is a deposit charged when buying plastic containers such as milk, pop cans etc and are recycling depots to take them back and receive money. This would be a great incentive. Also if we implemented green boxes, it seems to work well for t...
- We were part of the green bin pilot program and it diverted 2/3 of our garbage otherwise going to the landfill.
Please bring it back.
- Enforce recycling. Require use of clear garbage bags, if there's recycling in the garbage bags then don't pick it up. I see lots of folks doing zero recycling.
- If the city doesn't recycle styrofoam or plastic bags, why aren't they banned. Also, why don't we have a composting stream? We are light years behind compared with other cities of the world , even other provinces.
- Why is London not using green bins. Our pickup of black bag garbage is every two weeks so it forces people to use green bins more. Green bin usage is up 125%!!!!!!
- Get compost bins for people and collecting bins each week. Limit 1 bag of garbage each week. I use to have a compost bin in Ancaster, only had 1/2 bag of garbage each week with a family of 4.
- Travelling in Europe I realized very quickly how wasteful Canada is when it comes to garbage and recycling. For example beer cases come in plastic containers that are

reusable. Water bottles pop bottles are recycled at a machine that takes the recyclin...

- I put out one bag a week. I recycle everything I can. I'd have even less paper recycling if they didn't put out store flyers every week. Waste of our trees. They only need to be out once a month get two of everything every week in the mail box. What a waste
- A neighbour has a doctorate in soy bean insemination with the Fed, this wit if nits simply tosses his trash in the back yard. 100% green except for the wild animal dung, all this would fit with our wacky city council!
- The dump won't get filled up from my garbage this week. Apparently my rubbish bin was "too heavy". Yes, I put 3 bags in one bin because if I leave it at the curb the animals get into it. Simple solution, take the bag off the top and chuck it in the tru...
- The link described as "Quick Feedback" begins with a question containing the following, "The Residual Waste Disposal Strategy, 'including a proposed landfill expansion'..."... For those opposed to future landfill expansion, at any point in time, there ...
- Use of bins as provided by BRA in various municipalities around us or Waste Management as in Florida.
Restricts garbage to amount per bin size (no argument as to # bags each year on council) and recycle bins easier to use and less blowing around on windy days.
Thus more recycling.
Automated lift truck use and less Workers Comp claims, sick days etc. Less manpower needed.
- How about allowing Styrofoam recycling? Then I wouldn't have any garbage except pet waste (which will compost) since I compost and recycle everything else!
- We live in Orangeville ...we have the green food waste bins, blue bins and we r only allowed one open regular sized can or one clear bag of garbage (that way people can't hide recyclables in their garbage) ...the only time we have anymore waste then a
- Condos & apartment bldgs NEED TO do their part. They still just throw everything down the chute. It's convenient.
Home owners Should have/ use a compost. My sunny spot is on the front lawn so there it stands. Ugly as all hell But it works. Only garbage I really have ... cat litter
Go after apt/condo users.
- What ever you do this plan isn't working. So many dump things into our community bins. The these rude people tell us you F off it's not our business. Plus there are less scrappers on the roads these days. I use to see truck full of stuff/junk. Who would have thought trash and limits could mess things up for everyone. Unless everyone sticks to a program for trash, nothing will work.
- I live next to a "student house" in a single family neighborhood and the volume of refuse is incredible. the three containers they use hold the same as 4 green garbage bags of garbage and there is enough "blue box" garbage" for three households EVERY WEEK .The City of London is blind to any thing caused by UWO and

Fanshawe Collage and deaf to citizens concerns that these posts a lip service and seen as a joke

- Every one should be charged for having their garbage taken. It is coming because people in the country are paying already. Second composting. Have areas around the city where people can take that material. Themselves at no cost to the city. Pay as you ...
- People have had fire pits for years but now it's a money grab for our city councillors. Why can't people burn the paper and cardboard as before. The answer is the city councillors wouldn't make any money. Some people don't have the excess money to pay ...
- Buy items in compostable, recyclable or biodegradable packaging. Boycott the other stuff. Companies need to be responsible as well!
Any blue bins or green bins need to be clearly labeled with what can go in them!
And some education on waste reduction would be useful!
- There should be NO fire burns in city limits!! It's awful when you see that "just close your windows" if your neighbour is burning something. Really!! That's stupidity! Why should we be forced to close our windows and turn off our air exchangers just s...
- Until you change shopping habits nothing will change, re-use is the best way. The only reason why pop comes in plastic is the companies decided to do it, go back to glass (give the kids the fun we had trading bottles in for candy) with most people not caring about the environment or caring when suitable we will continue to have waste. A family of 6 needs only two bags trash weekly
- Green bins would be great. Also, being able to recycle styrofoam would help, lots of businesses use styrofoam containers for their take away meals. Perhaps if it can't be recycled, the use of those containers could be phased out.
- Time to start the GREEN BIN Program ... small towns ie. St. Thomas have this program ! London should be ashamed !
- I think the city should have a better Recycling program as I have found since moving to the city that my bin is often left outside because I have put Recycled material in there that the city does not take. Most of my garbage isn't garbage....i would say 80% is and can be recycled but it ends up in the trash because the city wont take it.
- What about the refuse generated from apartment buildings? After just moving into one I can tell you there's a lot of garbage! I miss composting and feel guilty putting kitchen waste in the trash.
- Tell Toronto and other places to look after their own in their community instead of polluting London.
- All the composting, recycling or incinerating in the world won't solve the problem in the long run. Everyone seems so concerned about the world we leave for our grandchildren, but we're just handing down to them a problem we're too bashful to solve ourselves
- We should be burning garbage. Sweden recycles everything possible and burns everything else. They started taking garbage from other countries because they don't have enough of their own.

- How about if we go to all the old land fills and processes the stuff in it ,look at the way London England does it
- Well we recycle, however if my son accidentally doesn't put the right thing in the container such as paper with plastic it is left at the curb with a terse little reminder to put it in the right bin. Than its in the garbage
- In St Thomas any plastic with the recycle symbol goes in the grey bins with the tins and glass
paper and cardboard go in the blue bins
compostables go in the green wheeley bins...
- Tackle it from the other end and change packaging practises ... stop production of packaging that isn't biodegradable or glass... change distribution practises... bulk style...? Want less mess to clean up - give less crap to play with. We've got the t...
- allow backyard chickens which people can grow their own chickens and wont have to have egg cartons. ..and be a city which encourages off grit (less dependent on government) and won't have so much garbage.
- Green bins for organic waste. Recycling for downtown businesses.
Penalties for residents (and students) who don't recycle or leave a house worth of furniture at the road.
- Green Bins, companies MUST recycle, construction materials/furniture/appliances should be RESTORED depots = free to public for recycling and ALL plastics reduced/recycled ALL!
- Every one wants everything easy. Pick up my garbage, pick up my recycling. We would be happy to take all of these items to a location within the city if we had too. Remember when we had the strike a few years ago???
- Quick feedback?
How can a city continue to grow and not create waste?
Another food franchise, another factory, another big box store.....????...
- Get rid of disposable diapers, and make bottled water of all shapes and sizes refillable, and include milk, soft drinks, etc. Reduce the packaging of food items.
- GREEN BINS. It's ridiculous that a city this size has yet to introduce these. Like Katie Brown said, get with the times already.
- Start developing Hemp made plastics already.
We're so screwed.
I knew it would happen. ...
- you need to incorporate compost recycling pick up like Guelph does - we compost and recycle and only put out, generally, one bag of garbage every two weeks or so.
- Why don't you have what Guelph has 3 bins that food Recycling and garbage bins are better and easier
- We had a solution. It was called the Energy From Waste plant and it was killed by uneducated NIMBYists.
- Residents who reside in a home pay a fee for garbage, and green bins!! Composting saves so much on garbage!

- yup.. keep sinking your money City Of London into BRT....that probably will not be ready by 2025....just sayin.
- How about pay per bag like most other surrounding municipalities....as a former Londoner I now pay per bag household of 4 and we put 4 bags of recycling out which is FREE....and 1 bag a week....you learn quickly to properly recycle and doesn't take any t...
- Buy quality products and you will spend and waste less.
Support businesses that up-cycle and recycle.
- Years ago, before the Brewers Retail, I took the empty liquor bottles from Robinson Hall to the recycling plant that was taking them at the time. The person there confided to me that there was no market for the glass bottles, so they were just going to...
- Bring back the green bins
- Bring back the green bins it would be a great idea for the citizens of London and the rest of London residents
- I vote green bins! Get with the times already, London!
- Green bins!! How is this not already in place?! ALSO businesses should have recycling pick up!!!!
- How about composting? The city of Pembroke composts. Why can't we? I do it anyway in my backyard
- Recycle more. I am always astounded by the number of garbage bags at the curb
- Please implement the green bin food waste system to reduce waste
- bull and barrel have to dump their wings somewhere
- We need to add the Green Bin.
- Our coop has a strick recycle program
- Thsts because you folks take Toronto's garbage
- We pay you for planning and strategy , why are you asking me. Don't waver my confidence.
- Ah hell, just pile it higher and turn it into a ski hill.
- So... where is our green bin service already?!?
- Green bins! Catch up with other cities!
- Does this include the city dumping their asphalt, concrete, etc? Or just residential garbage?
- So it's not gonna be full until 2025 but you only have the next 10 days to give feedback?
- Energy from waste...oh wait..we had one of those didn't we
- Sounds like someone needs some recycling.
- Let's get with the program..Its all about composting
- Follow edmontons lead, they are the top in the country !
- How about a green bin program?!!!! Isn't it time?
- On site composting, I do it, encourage it, and don't support more fleets of trucks.
- People have been asking for green bins for more than 10 years. It's way past time.

- Shouldn't had let Toronto use it!
- Compost where you live if possible not another fleet of trucks.
- By from bulk food stores to reduce packaging waste
- Yes green bin . Want them to do it here in Stratford too .
- Start packaging with biodegradable hemp plastics.
- More recycling, green bins picked up weekly and regular garbage every 2 weeks! It works great In Oakville. London needs to wake up!
- Send the recycling to China so they can reuse and reproduce stuff like the states do.
- Is this because Toronto has been using the same landfill for a number of years?
- Clear garbage bags made mandatory and ppl charged extra if recyclables are thrown into trash.
- Nursing homes need to compost. Retirement homes need to recycle and compost.
- Compost green bins will reduce waste
- Bring green bins to London!
- I would be happy to see London get into composting. Even in the apartment complexes.
- Might also be an idea for London not to take any more of Toronto's garbage.
- we have many option that the city is not doing so it on them,,also get garbage men to pick up properly
- I want to go zero-waste. Yes, that's a real thing. Ha
- Compost!!!!!! Works great in Markham, why wouldn't here?
- we need to re look at the way we recycle - take a page out of the European's process of recycling
- We must compost our fruit and veggie scraps!
- Green bins!!
- I agree with Green bins
- Green bins please!!!
- Green bin!!!
- Let's make a new ski hill!!
- pile it higher
- Green bins please!
- Incinerators are needed.
- Duhhh find another landfill site ...
- Green bins!
- recycle foam and plastic wrap
- Quit taking Toronto's garbage
- Green bins!
- Need a good waste program!!!!
- Did the survey. Thanks for asking!
- Green bins!
- Green program

- Composting!
- Incinerator
- Compost
- Green bins!!
- RecycleOffer composting

Comments from ES Mail or direct emails

August 30, 2017

When resident first bought her home in the 1980s the city gave out free composters. She had not composted before that but has composted since with 3 units now and composts most yard waste in addition to kitchen scraps. Perhaps an initiative for the city to consider again....

August 25, 2017

I am fairly new to London, and concerned about the amount of household waste we produce, as I had become used to organic waste recycling elsewhere; I had gotten used to having only 1 tiny bag of trash per week. It's shocking how much organic matter we "waste" and I hope to see that change.

I have a question about the information on the city website,
<https://getinvolved.london.ca/WhyWasteResource>

This page shows a pie graph of "London's Household Residual waste", which shows recyclables at 10 % and 15 % which would be a total of 25%. Scrolling down just a bit, I read:

The Resource Recovery Strategy will identify:
 areas of continuous improvement to maximize waste diversion and resource recovery including increasing the current London household waste diversion rate to 60% by 2022 from the current rate of 45%; I am wondering, where does the 45% figure come from, as we do not recycle any of the household organics currently?

Another question I have is: Are there smaller, dated targets to increase this recycling BEFORE the 2022 deadline, to ensure that smaller goals are being met on an increasing basis well before 2022 arrives?

Thank You for any information you can provide on these 2 questions.

July 29, 2017

I find it exciting that London is finally thinking about increasing the recycling. When I moved here my garbage amount doubled from what I was generating in Sudbury. The biggest amount is that you do not have a green box program. The remainder is that you do not recycle everything you can. Styrofoam is the biggest thing I noticed.

It is important that you include the cost of replacing the landfill when you start to pay for a recycling or green box program. Once you take this into account the extra cost becomes bearable.

I find it exciting that London is finally thinking about increasing the recycling. When I moved here my garbage amount doubled from what I was generating in Sudbury. The biggest amount is that you do not have a green box program. The remainder is that you do not recycle everything you can. Styrofoam is the biggest thing I noticed.

It is important that you include the cost of replacing the landfill when you start to pay for a recycling or green box program. Once you take this into account the extra cost becomes bearable.

July 23, 2017

So London Ontario's landfill is expected to reach capacity in 2025!
Are we the ONLY community in Ontario, or could it be all of Canada, that does not have a green bin pick up policy in place??

Out of province and even out of area visitors are shocked that this lack can still exist.
A not to be lauded fact about London the 'Forest City', to be sure.

June 10, 2017

It would be great to have an instagram account and facebook event about the green bin vote. Create a social media frenzy over people's opinion and encourage them to vote and to become aware a vote is even possible! Provide statistics and information on cost both for and against the green bin program and what the alternatives are when landfill becomes full Attend more events. The event you attended at Gathering on the green did not expose that a vote or opinion was needed on the green bin program. There was a great board about clotheslines and getting people curious about it but there was no display of a green bin or any information to suggest that was even up for debate...the sign about the landfill doesn't give enough information or attract enough attention.

Attend more events - Forest City Flea, Inspiration Fest, Folk Fest and have a ballot box for people to sign up on the spot for more information to be sent them. handing them a card and letting them walk away means they will never follow through. collect their details on the spot! Even create a mock poll where people put in a vote prior to receiving any information but include their email address so can send them more facts!

Comment from Lambeth Ratepayer's Association June 1, 2017

As we discussed, I fully endorse and support stream/separation of organic waste. From what I understand of organic waste treatment options, the City believes it can process organic waste through anaerobic means, thereby virtually eliminating odour issues. The City sees successful organic waste treatment as a key to reducing landfill volume.

Unfortunately, recent local history of waste treatment odours creates a substantial headwind of mistrust for communities to take on faith that 'this one will be different'. I hope you can make a compelling case for your scenario.

Another contentious matter is in the policy of accepting waste from other jurisdictions, who have decided it is in their best interest to export their problem to London. Wes, you make a 'for the better good' case that London has engineering, critical mass and site-environment advantages that serve this part of the province over the prospect of many small, inefficient sites dotting the landscape. Given the several large sites already in this area (Lambton, Elgin and London), how will the City of London protect the very real interests of the city and its residents, that London does not continue a trajectory to becoming 'the best little dumpsite in Ontario'? Will it be necessary to update London's logo from Forest City to Dumpsites City?

I suppose one way to thread that needle might be to re-word the Proposed Project proposal to read, "Development of a Resource Recovery Strategy to maximize waste reduction, reuse, recycling, composting and resource recovery in an environmentally responsible manner. Consideration will be given to maximizing the operating life of the W12-A site, to providing limited access to neighbouring communities in crisis under strict inflow controls and costing that will encourage responsible waste management by those communities'.

The re-worded project would then provide City of London with tools to cap total external neighbours inbound flows (at no more than current percentage levels) with a target of reduction to 60% of those flows after 2025. Delivering larger than capped volumes would be dealt with on an exponential, upward sliding pricing scale. This simple mechanism will dispel the concern (and possible temptation) by communities to 'buy their way out of their own environmental obligations at the expense of London's quality of life and reputation.

As you can see, as neighbouring communities grow (and prosper), they will find it to their benefit to make the hard decisions that London is making, to treat their waste in an environmentally responsible way, giving up their capacity to those smaller communities who do not generate a great deal of waste and who have no prospect of the needed infrastructure investment. Fair to all concerned, beneficial to all concerned...

I note, buried deep in the proposal, is incineration. Incineration is hot-button issue with a history of inadequate attention to the science of small particulate matter. Incineration units do exist which do not emit particulate of any size. My perception has been that they are expensive and of limited capacity. Maybe this has changed; if so, then I assume London intends to adopt zero emission incineration technology.

The health issues around incomplete incineration are now so well documented that I won't bother to dwell on them. I believe they are common knowledge in public health circles, energy and general industry.

I trust London's interest in the environment extends to not making its citizens, nor its neighbours, the unwilling recipients of tons of microns of heavy metals, toxins, etc. etc. This one waste management practice, if any, is fraught. In other jurisdictions it is becoming a can for litigation-worms that would make previous suits against our fair City look like 'chump-change'.

Another matter is also on my mind. Raccoons. London's raccoon population is eagerly awaiting a service that will separate organic waste from miscellaneous (inedible) trash, for them. They anticipate easier grazing, less waste-handling and with containers dedicated to organic waste, a readily accessible nightly buffet!

The City of Toronto has apparently designed a collection bin that raccoons are having considerable difficulty getting into. Please consider offering every (participating) resident of London a container of this design - not as a gift, but as a City-owned loan/resource. Like a cell phone or a mutual fund fee, early replacement redemption would be at the expense of the property owner, with a single free replacement on a seven-year cycle. In addition to the public relations & public health benefits, standardized units would improve pick-up safety and efficiency.

Comments from Open House 1 (questions from Comment Booklet) and virtual Open House on getinvolved.london.ca

Q – Should the City commit to increasing the current household waste diversion rate to 60% by 2022

- Yes. The greatest percentage of waste diversion is always a good thing for our future generations.
- Yes but how? Don't want waste in ditches.
- Yes. A "no-brainer" for the planet. We can't keep throwing stuff away (where is "away").
- Yes. This should be a priority instead of pushed to the background. Other municipalities have successful recycling/green bin programmes outstripping London ie Guelph, PEI. Kingston has had a green bin program for years with a similar geographic make-up.
- Yes. We must be serious about recycling and reusing for a city our size.

Q – Is new organic management program(s) the key to reaching 60% diversion by 2022?

- Yes I think so because a lot of food waste, yard materials and other compost end up in landfill.
- Yes please get this program started
- Yes but only in large places of organic waste
- Yes. Critical!
- Yes. All types of recycling, composting should be considered and priced. The aim is to get as little waste for landfilling as possible.
- Yes. I think we can do better than 60%!

- Maybe. Effective education/promotion of new management programs will be needed; Source-separated organics program will improve public understanding of waste management

Q - Do you think it is acceptable to allow neighbouring municipalities to use any new waste resource recovery facilities developed by the City of London?

- Yes because neighbouring communities don't have many alternative to disposing of waste.
- Yes the more users that can participate the better ideas and ability to incorporate these into practice will happen
- No. Not in my backyard!
- Yes. Reusing resources is the goal.
- No. Green bin management and recycling facilities could be used at a price but not landfill space.
- Yes. Improve environmental responsibility for all!

Q - Do you think that Resource Recovery Strategy needs to be able to accommodate transition to new technology in the future, if appropriate?

- Yes any new technologies are a good thing in the waste industry
- Yes. Put the bright minds out there developing better killing weapons to work on saving the planet for our great-grandchildren.
- Yes. There is no use building a programme which is not cutting edge.
- Yes. Think about tech 20 years ago (1997)... you can see strategies need to adapt faster than that!
- Yes. Always allow for adaptation/evolution for long term plans such as this, especially as the city continues to grow.

Q - Do you have any suggestions, comments or concerns for consideration in the development of the Resource Recovery Strategy?

- Don't turn away some of the newer ideas before having fully explored
- Larger blue boxes. Make private homes responsible for clean up of their own spillage of garbage and blue box.
- Stop garbage at its source by taxing garbage-intensive products and services. Make sure you have a truly 'local' information session for nearby Glanworth community.
- The administration (political and bureaucratic) must stop vacillating about ultimately recycling or repurposing as much as possible. Get with it!! Then the need for landfill expansion will drastically decline. People must be educated as well that the toss away society is dead!
- Taxes are already very high in the city, so changes to waste management/diversion should not require additional money per household as implied above (Question 4). However, individuals/households should be willing to take on additional responsibility (e.g., increased recycling, source-separated organics programs).

Extensive public education/promotion of the new programs will be needed to encourage individuals/households to take on those responsibilities.

Comments from Facebook post May 23, 2017 advertising Open House 1

- Why not start to go no waste instead building more places to throw garbage. And you would save tax payer dollar. Instead of fixing the problem, you want to find another place to put it.
- Where are our green bins? You don't need a load of meetings to take action on waste reduction.
- We need to stop manufacturers from over-packaging products. We are drowning in garbage.
- Lmao, first off, in your pic if that was at somebodys house they wouldn't take the cardboard because it's not in a blue box, maybe if your workers were all on the same page on what to take
- Can you say green bin?

Comments from Facebook post May 21, 2017 advertising Open House 1

- We are a family of 4. We generally have one bag of garbage per week and 2-3 blue boxes. A Green Box Program is the next best step, in my opinion.
- In Guelph and Toronto, we have Gray, Blue and Green bins. The grey is for regular garbage, we rarely fill the grey bin and it only goes out when it is full. Green bin goes out weekly, and our blue bin is collected every other week here in Guelph.
- It's a stupid system. In today's world not recycling as much as possible is not acceptable.
- London needs to start using the green boxes. We lived in London 21 years and moved to Hamilton a year ago. We have the green boxes and our actual garbage is next to nothing!!
- The green boxes would make a huge difference. The city "tried" to do green bins. They picked a few random neighbourhoods and dropped them off but didn't educate people as to what should go in them (we had one in my complex and the...
- We just moved to London from Burlington where our blue bins & green carts were collected weekly & the garbage every other week. We rarely had a full garbage can, even after 2 weeks, even with a little one in diapers & two cats' litter waste. London's waste collection schedule & no green cart is very wasteful.
- my family use their blue boxes for everything that is allowed, they do our best, wash out everything, sort everything out the best they can but the recycle truck keeps leaving our boxes if they miss one thing on top, it makes them upset cause of it...
- We should have a garbage system that promotes composting, recycling in glass plastic cans and paper form and as little garbage as possible... after we do all of that 1 bin or bag of garbage collection per week seems reasonable... with the population our city has we should have a better system in place like compost pick up!

- Composting would go a long way! Other municipalities practice it for a long time already and I don't understand why London is so far behind...
- We have one bag of garbage, 2 blue boxes per week, Green boxes should be next step. Guelph and other cities have been using for over 17 years
- Council after council has delayed: composing, enforcing recycling and reducing bag limits. We need political courage, not a study.
- They're almost all very smart people but they know that garbage collection is one of the radioactive issues of municipal politics and they avoid messing with it at all costs. Did you see the outcry when they reduced garbage collection a little bit this year? People were losing their minds.
- We need to do something with our garbage, besides burying it. Expand the recycling program.
- I'd like to see the city stop stalling on the implementation of the green bin.
- Simple answers. The only question here is when is this city going to invest in its environment.
- Check out the system St. Thomas has been using for years.
- Green Boxes!!!
- Give us green bins... now.
- London needs to use green bin technology
- simple, stop using stuff you can't recycle
- TEXTILE recycling!!
- London needs green carts. Super easy.
- Is there anywhere that gives out free recycling boxes ?
- Burn it!
- Introduce green bins.

Appendix D
IPSOS Survey Report

This page has intentionally been left blank.



© 2018 Ipsos. All rights reserved.
Contains Ipsos' Confidential and Proprietary information
and may not be disclosed or reproduced without the prior written consent of Ipsos.

Ipsos Public Affairs



London
CANADA

City of London Waste Diversion

JUNE 2018

FINAL REPORT

GAME CHANGERS 

Contents

03	METHODOLOGY & SAMPLING
05	KEY FINDINGS
08	WASTE DIVERSION ATTITUDES & BEHAVIOUR

12	WASTE DIVERSION INITIATIVES
19	DROPPING OFF MATERIALS AT RECYCLING DEPOT
24	DEMOGRAPHICS

METHODOLOGY & SAMPLING





METHODOLOGY

- This report presents the findings from a survey of City of London residents about their attitudes and behaviours towards waste diversion.
- In total, n=301 London residents participated in this survey between May 31 and June 4, 2018. The precision of Ipsos online surveys is calculated via a credibility interval. In this case, the sample is considered accurate within +/- 6.4 percentage points, 19 times out of 20, had all London residents been surveyed.
- Significant differences among subgroups are identified using shaded boxes:

Significantly higher



Significantly lower



KEY FINDINGS



KEY FINDINGS (1)



Overall, residents are supportive of the City of London's efforts to increase its waste diversion from 45 percent to 60 percent, and are willing to pay for it and change their behaviour to assist in these efforts.

- There is an almost universal view (93%) among City of London residents that waste diversion is important to them, including more than half (53%) who say this is *very important*.
- When residents were informed that increasing the proportion of waste diversion will require additional financial investments, three-quarters (76%) say that they would be willing to pay more for increased waste diversion, with the highest proportion (47%) being prepared to pay between \$1 to \$25 per household per year.
- Residents were presented with different initiatives to help in waste diversion efforts.
- About six in ten (57%) prefer investing significant resources on waste diversion initiatives, while three in ten (31%) choose a moderate program, and one in ten (12%) prefer no change.
- When presented with options for a City-wide Organics Curbside Program, more than four in ten (43%) prefer a Curbside Green Bin Program, while one-third (32%) choose a Mixed Waste Program, and one-quarter (24%) prefer no change.
- When presented with options for a City-wide Organics Multi-residential Program, opinion is divided with four in ten (40%) who prefer a Multi-residential Green Bin Program and a similar number (41%) choose a Mixed Waste Program. Two in ten (19%) do not want change to the current program.

KEY FINDINGS (2)



- When residents were informed that items such as electronics, scrap metal, Christmas trees and tires are no longer picked up curbside and have to be dropped off at a depot, two-thirds (65%) indicate that they are prepared to deliver more materials to drop-off depots.
- Six in ten (60%) residents support banning additional materials from garbage pickup, such as old furniture, carpet, small appliances, mattresses, etc., if they could drop them off at a depot for recycling.

WASTE DIVERSION ATTITUDES & BEHAVIOURS

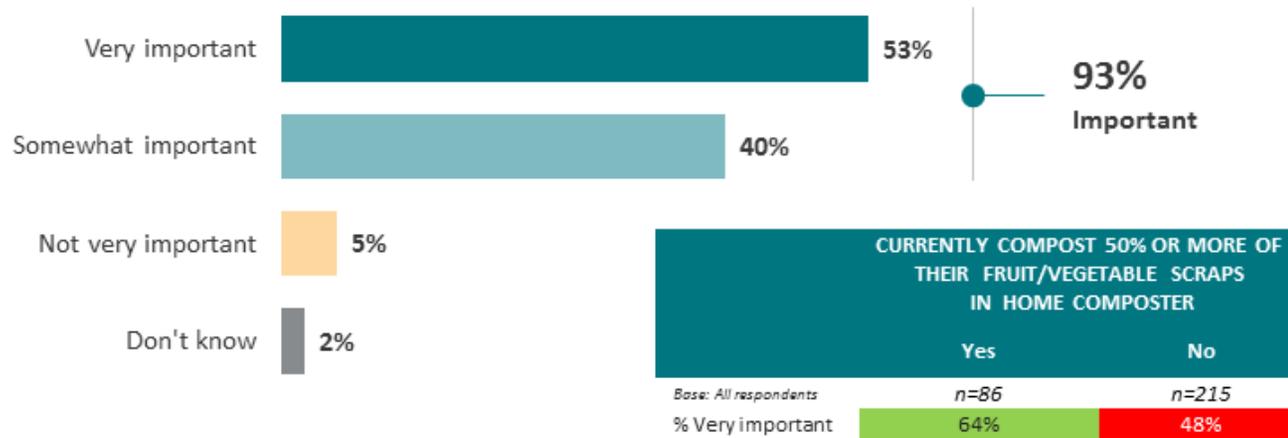




IMPORTANCE OF WASTE DIVERSION

The vast majority (93%) of London residents say that waste diversion is at least somewhat important to them, including over half (53%) who feel it is *very important*.

Those who currently compost 50 percent or more of their fruit and vegetable scraps in a home composter are more likely than those who do not to think waste diversion is *very important* (64% vs. 48%).



© 2018 Ipsos Q.1. Waste diversion is the process of reducing the quantity of waste landfilled and creating new materials of value. How important is waste diversion to you? Base: All Respondents (n=301)

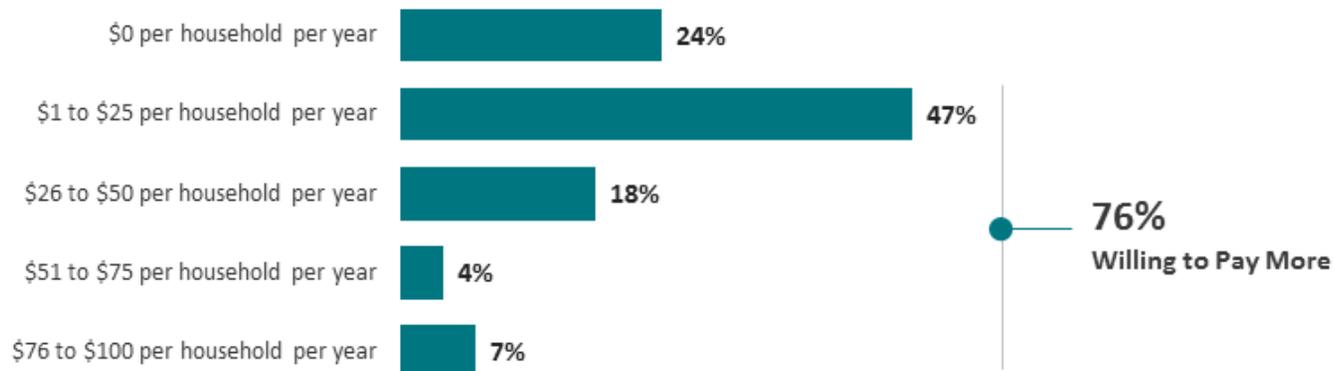


WILLINGNESS TO PAY MORE FOR INCREASED WASTE DIVERSION

Residents were informed that the City of London has set a goal of increasing its waste diversion from 45 percent to 60 percent by 2022, and that reaching this goal will require additional financial investments.

Three-quarters (76%) say that they would be willing to pay more for increased waste diversion, of which the highest proportion (47%) are prepared to pay between \$1 to \$25 per household per year.

*Currently, the residents of London divert 45% of all residential waste.
In 2017, city of London council set A goal to increase this to 60% by 2022.*



Q.2. Reaching this goal, will require additional financial investments. On a per household basis, how much more would you be prepared to pay in municipal taxes and fees per year to pay for increased waste diversion? (select one). Base: All Respondents (n=301)

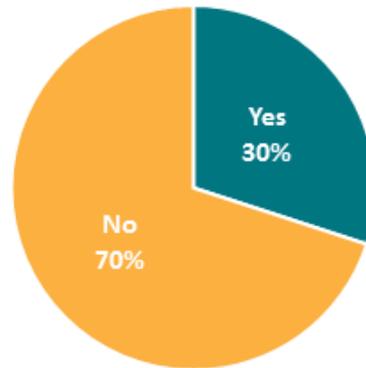
© 2018 Ipsos



10

CURRENT COMPOSTING BEHAVIOUR

Three in ten (30%) residents currently compost 50 percent or more of their fruit and vegetable scraps in a home composter. Women are more likely than men to engage in this behaviour (37% vs. 23%).



Compost 50% or more of fruit/vegetable scraps in home composter	GENDER	
	Male	Female
Base: All respondents	n=118	n=183
% Yes	37%	23%

© 2018 Ipsos Q.4. Do you currently compost 50% or more of your fruit and vegetable scraps in a home composter?
Base: All Respondents (n=301)

**Small base*
***Extremely small base*



WASTE DIVERSION INITIATIVES



On average, each London household wastes about \$600 worth of food each year.

This represents food waste that could have been avoided through actions such as better planning for grocery shopping and meals and use of leftovers.

In London, this food waste ends up in landfill. In municipalities with green bin programs [add clickable information icon: Includes weekly collection of organic waste from households, where this waste is separated by homeowners and placed out for separate organic waste pickup], some of the waste is composted. Both options represent a cost to municipalities to handle food waste.

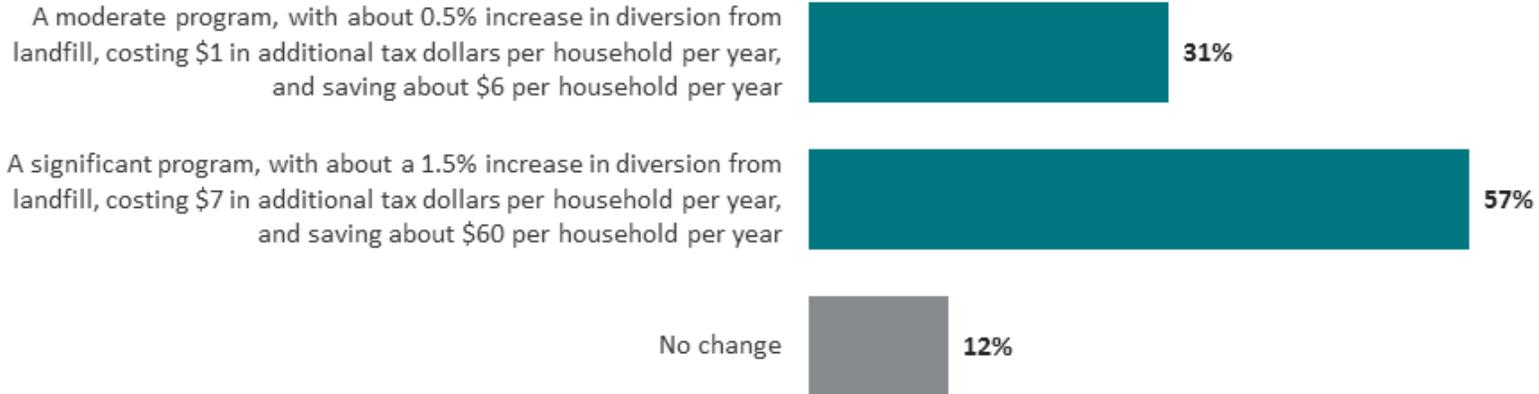
However, reducing food waste, generated by households, from ending up in landfill will save money for households and for municipalities.

The City is considering some food waste reduction initiatives.

PREFERRED INVESTMENT OPTIONS FOR CITY

Residents were presented with two options as to whether the City should invest moderate or significant resources on these waste diversion initiatives.

About six in ten (57%) prefer investing significant resources on waste diversion initiatives, while three in ten (31%) choose a moderate program, and one in ten (12%) prefer no change.



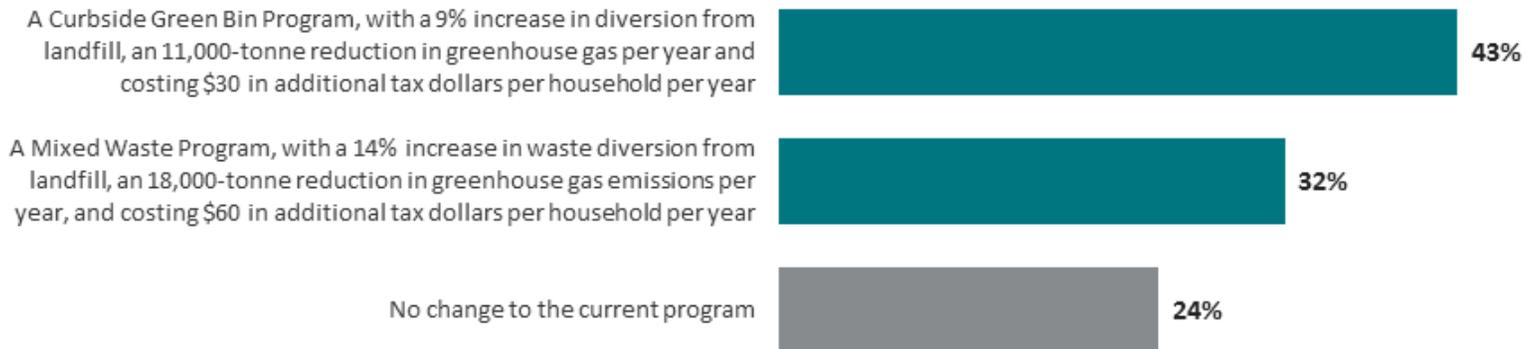
Q.3. The City could invest moderate or significant resources on these initiatives. Which do you prefer? (select one)
© 2018 Ipsos Base: All Respondents (n=301)



PREFERRED CITY-WIDE ORGANICS CURBSIDE PROGRAM

When presented with options for a City-wide Organics Curbside Program, more than four in ten (43%) prefer a Curbside Green Bin Program, while one-third (32%) choose a Mixed Waste Program and one-quarter (24%) prefer no change.

Another initiative is a city-wide organics curbside program which would provide the biggest boost to waste diversion.



© 2018 Ipsos Q.5. The City is considering two options for a City-wide Organics Curbside Program. Which would you prefer?
Base: All Respondents (n=301)



PREFERRED CITY-WIDE ORGANICS CURBSIDE PROGRAM – BY SUBGROUPS

There are no significant differences among subgroups in preference for a Mixed Waste Program. Renters and those who do not currently compost 50% or more of their fruit/vegetable scraps in a home composter are more likely to prefer a Curbside Green Bin Program. Homeowners are more likely to prefer no change to the current program.

	HOME OWNERSHIP		CURRENTLY COMPOST 50% OR MORE OF THEIR FRUIT/VEGETABLE SCRAPS IN HOME COMPOSTER	
	Rent	Own	Yes	No
<i>Base: All respondents</i>	n=118	n=183	n=85*	N=215
A Curbside Green Bin Program: [includes weekly collection of organic waste from approximately 120,000 households, where it is separated by homeowners and placed out for separate organic waste pickup], with a 9% increase in diversion from landfill, an 11,000-tonne reduction in greenhouse gas per year and costing \$30 in additional tax dollars per household per year.	51%	38%	32%	48%
A Mixed Waste Program: Residents would continue to place organic waste in the garbage and it would be separated out at a mixed waste processing facility to be composted or digested., with a 14% increase in waste diversion from landfill, an 18,000-tonne reduction in greenhouse gas emissions per year, and costing \$60 in additional tax dollars per household per year.	32%	32%	38%	30%
No change to the current program	17%	30%	30%	22%

© 2018 Ipsos Q.5. The City is considering two options for a City-wide Organics Curbside Program. Which would you prefer?
Base: All Respondents (n=301)

*Small base (under n=100)

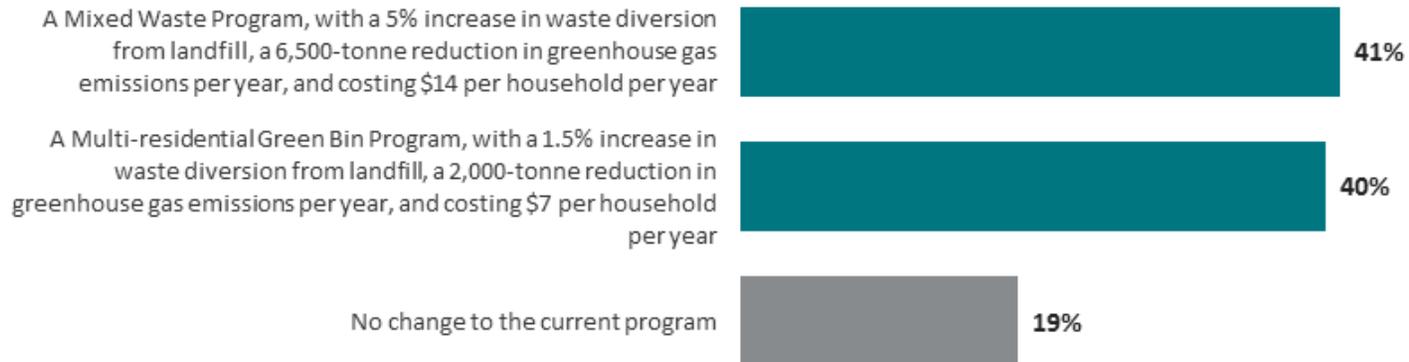


PREFERRED ORGANICS MULTI-RESIDENTIAL PROGRAM

When presented with options for a City-wide Organics Multi-residential Program, opinion is divided with four in ten (40%) who prefer a Multi-residential Green Bin Program and a similar number (41%) choose a Mixed Waste Program. Two in ten (19%) do not want change to the current program.

About 30% of London's households live in multi-residential buildings (apartment/condo) and generate approximately 22,000 tonnes of garbage per year.

Another initiative is a City-wide Organics Multi-residential Program similar to curbside.



Q.6. The City is considering two options for a City-wide Organics Multi-residential Program. Which would you prefer? (select one)
Base: All Respondents (n=301)

© 2018 Ipsos



17

PREFERRED ORGANICS MULTI-RESIDENTIAL PROGRAM – BY SUBGROUPS

There are no significant differences among subgroups in preference for a Mixed Waste Program. Preference for a Multi-residential Green Bin is higher among renters, those who have lived fewer than 20 years in London, and those with household income of below \$50K. Preference for no change to the current program is higher among those age 35 to 54, homeowners, and those with household income of \$100K or above.

	AGE			HOME OWNERSHIP		TIME LIVED IN LONDON		HOUSEHOLD INCOME BEFORE TAXES		
	18-34	35-54	55+	Rent	Own	Less than 20 years	20+ years	<\$50K	\$50K-<\$100K	\$100K+
<i>Base: All respondents</i>	<i>n=48*</i>	<i>n=85*</i>	<i>n=168</i>	<i>n=118</i>	<i>n=183</i>	<i>n=101</i>	<i>n=200</i>	<i>n=145</i>	<i>n=106</i>	<i>n=50*</i>
A Mixed Waste Program , with a 5% increase in waste diversion from landfill, a 6,500-tonne reduction in greenhouse gas emissions per year, and costing \$14 per household per year	43%	36%	45%	41%	42%	39%	43%	38%	48%	38%
A Multi-residential Green Bin Program , with a 1.5% increase in waste diversion from landfill, a 2,000-tonne reduction in greenhouse gas emissions per year, and costing \$7 per household per year	49%	36%	36%	47%	34%	48%	34%	48%	33%	26%
No change to the current program	9%	28%	20%	12%	24%	14%	23%	14%	18%	36%

Q.6. The City is considering two options for a City-wide Organics Multi-residential Program. Which would you prefer? (select one)

© 2018 Ipsos

Base: All Respondents (n=301)

*Small base (under n=100)



18

DROPPING OFF MATERIALS AT RECYCLING DEPOT

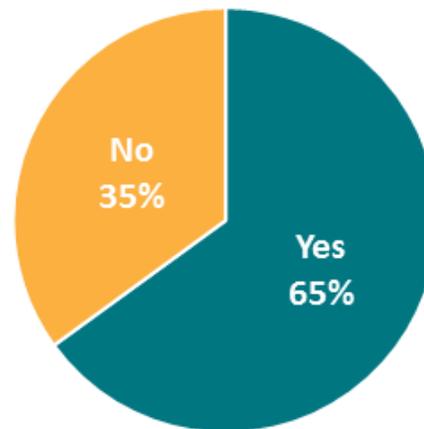


Over the last number of years, the City has started recycling programs for items such as electronics, scrap metal, Christmas trees and tires.

These items are no longer collected at the curb with garbage and should not be placed in bins at high-rise buildings. Instead, they can be dropped off at depots for recycling.

PREPARED TO DELIVER MORE MATERIALS TO DROP-OFF DEPOTS

When residents were informed that items such as electronics, scrap metal, Christmas trees and tires are no longer picked up curbside and have to be dropped off at a depot, two-thirds (65%) indicate that they are prepared to deliver more materials to drop-off depots.



© 2018 Ipsos Q.7. Are you prepared to deliver more materials (e.g., old furniture, carpet, small appliances, mattresses, etc.) to drop off-depots?
Base: All Respondents (n=301)



PREPARED TO DELIVER MORE MATERIALS TO DROP-OFF DEPOTS – BY SUBGROUPS

Openness to deliver more materials to drop-off depots is higher among those aged 18 to 34 and 55+, and among those who have household incomes of between \$50K and lower than \$100K.

Prepared To Deliver More Materials	AGE			TIME LIVED IN LONDON		HOUSEHOLD INCOME BEFORE TAXES		
	18-34	35-54	55+	Less than 20 years	20+ years	<\$50K	\$50K-<\$100K	\$100K+
<i>Base: All respondents</i>	<i>n=48*</i>	<i>n=85*</i>	<i>n=168</i>	<i>n=101</i>	<i>n=200</i>	<i>n=145</i>	<i>n=106</i>	<i>n=50*</i>
%Yes	74%	53%	67%	74%	59%	60%	75%	59%

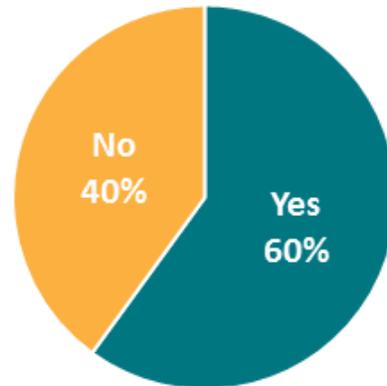
© 2018 Ipsos Q.7. Are you prepared to deliver more materials (e.g., old furniture, carpet, small appliances, mattresses, etc.) to drop off-depots?
 Base: All Respondents (n=301)

**Small base*  22

BANNING ADDITIONAL MATERIALS FROM GARBAGE PICKUP

Six in ten (60%) residents support banning additional materials from garbage pickup, such as old furniture, carpet, small appliances, mattresses, etc., if they could drop them off at a depot for recycling.

Residents who are prepared to deliver more materials to drop-off depots are more likely to support banning additional materials from garbage pickup.



Support banning additional materials from garbage pickup	Prepared to deliver more materials to drop-off depots	
	Yes	No
Base: All respondents	n=195	n=106
% Yes	80%	22%

Q.8. Would you support banning additional materials from garbage pickup (e.g., old furniture, carpet, small appliances, mattresses, etc.) if you could drop them off at a depot for recycling? Base: All Respondents (n=301)



DEMOGRAPHICS

© 2017 Ipsos



DEMOGRAPHICS

LIVED IN CITY OF LONDON		RESIDENTIAL PROPERTY		RENT OR OWN	
Less than 1 year	4%	House (single family dwelling)	49%	Rent	44%
1 to less than 5 years	12%	House (multiple family dwelling)	9%	Own	56%
5 to less than 10 years	8%	Apartment	27%	GENDER	
10 to less than 20 years	17%	Condominium	12%	Men	48%
20 years or more	59%	Other (please specify)	3%	Women	52%
EDUCATION		HOUSEHOLD INCOME		AGE	
Less than high school graduation	3%	Less than \$25,000	21%	18-34	31%
Completed high school	18%	\$25,000 to less than \$50,000	30%	35-54	32%
Some/completed trade/technical school	7%	\$50,000 to less than \$75,000	19%	55+	37%
Some/completed college	30%	\$75,000 to less than \$100,000	14%		
Some/completed university	23%	\$100,000 to less than 150,000	11%		
Graduate/professional studies	18%	\$150,000 or more	5%		

This page has intentionally been left blank.

Appendix E

Residential Waste Composition

**Table E1: Estimated 2017 Curbside and Multi-Residential Garbage
Composition**

**Table E2: Estimated 2017 Curbside Garbage and Recycling
Composition**

**Table E3: Estimated 2017 Multi-Residential Garbage and Recycling
Composition**

**Table E4: Estimated 2017 Combined Curbside and Multi-Residential
Garbage and Recycling Composition**

This page has intentionally been left blank.

This appendix provides a summary of the composition of the City's waste (including organics, compostables) and Blue Box recyclables.

Waste composition audits of garbage and Blue Box recyclables were conducted in London 2016/2017 and winter 2018 (with funding, coordination and sampling methodology provided by Stewardship Ontario (SO) and the Resource Productivity and Recovery Authority (RPRA). The waste audits consisted of four separate sets of audits conducted at specific time periods throughout the year (i.e., spring, summer, fall, winter) to address any issues of seasonality. Each audit included two samples taken over two consecutive waste collections to take into account issues of sporadic set out. The audit sample consisted of 100 curbside homes and multi-residential homes to achieve statistical significance. The same households were sampled for each of the four sets of audits.

The audit data was combined with other City data (quantities of garbage and Blue Box recyclables collected from single family homes and multi-residential, multi-residential waste and Blue Box audits from 2017, etc.) to create the following tables:

- Table E1: Estimated 2017 Curbside and Multi-Residential Garbage Composition
- Table E2: Estimated 2017 Curbside Garbage and Recycling Composition
- Table E3: Estimated 2017 Multi-Residential Garbage and Recycling Composition
- Table E4: Estimated 2017 Combined Curbside and Multi-Residential Garbage and Recycling Composition

Waste auditing has been performed and paid for every couple of years in London for more than 15 years by Stewardship Ontario. This work helps London (or other) staff:

- understand the changing composition of the waste stream;
- determine what materials are being captured by London and at what percentages;
- determine what materials should be focused on for waste diversion and recovery;
- determine the calorific value of the waste stream for the purpose of recovering energy through solid recovered fuel, creation of syngas, etc.;
- compare with other communities in Ontario and other areas of Canada; and
- provide data for researchers and academics to pursue additional analysis.

Table E1: Estimated 2017 Curbside and Multi-Residential Garbage Composition

Material Category	Curbside			Multi-Residential			Total
	Per Household kg/yr	Total tonne/yr	%	Per Household kg/yr	Total tonne/yr	%	Total tonne/yr
1. Paper							
Newsprint	2	227	0.4	10	541	2.4	768
Magazines & Catalogues	1	130	0.2	3	148	0.7	278
Directories/Telephone Books	0.1	9	0.0	0.1	3	0.0	12
Other Printed Paper – Recyclable	4	525	0.9	5	300	1.3	825
Other Printed Materials – Non-Recyclable	4	507	0.8	4	227	1.0	734
Total Paper	11	1,397	2.3	22	1,219	5.4	2,616
2. Paper Packaging							
Gable Top Containers	1	76	0.1	1	69	0.3	145
Aseptic Containers	1	70	0.1	0.4	23	0.1	93
Spiral Wound Containers	0.3	35	0.1	0.3	16	0.1	52
Corrugated Cardboard	4	454	0.7	11	615	2.7	1,069
Boxboard/Cores (Tubes)	9	1,112	1.8	12	647	2.9	1,758
Polycoat Cups/Ice Cream Containers	2	232	0.4	2	104	0.5	336
Other Bleached Long Polycoat Fibre	3	370	0.6	2	101	0.4	471
Other Paper Laminate Categories – Non-Recyclable	1	103	0.2	1	29	0.1	132
Total Paper Packaging	20	2,452	4.0	29	1,604	7.1	4,055
3. Plastics							
#1 PET	4	440	0.7	6	348	1.5	789
#2 HDPE	1	147	0.2	2	108	0.5	255
#3 - #7 Mixed Plastics	4	472	0.8	4	224	1.0	697
#6 PS - Expanded Polystyrene	3	340	0.6	2	99	0.4	439
Large HDPE & PP Pails & Lids	0.2	21	0.0	0.4	23	0.1	45
LDPE/HDPE Film	17	2,124	3.5	15	858	3.8	2,982
Plastic Laminates – Mostly Non-Recyclable	9	1,082	1.8	6	330	1.5	1,412
Other Rigid Plastic Packaging– Mostly Non-Recyclable	3	401	0.7	2	138	0.6	539
Other Plastic-Non-Packaging/ Durable – Non-Recyclable	8	985	1.6	5	298	1.3	1,283
Total Plastics	49	6,014	9.8	44	2,426	10.8	8,440

Table E1: Estimated 2017 Curbside and Multi-Residential Garbage Composition (Continued)

Material Category	Curbside			Multi-Residential			Total
	Per Household kg/yr	Total tonne/yr	%	Per Household kg/yr	Total tonne/yr	%	Total tonne/yr
4. Metals							
Aluminum – Food/Beverage Containers	1	138	0.2	2	104	0.5	243
Aluminum - Foil & Trays	2	192	0.3	1	80	0.4	272
Steel – Food & Beverage Containers	2	190	0.3	2	132	0.6	322
Steel/Aluminum – Aerosol Containers (Non-MHSW)	0.4	56	0.1	1	28	0.1	84
Other Aluminum– Non-Blue Box	0.1	13	0.0	0.1	3	0.0	16
Other Steel – Non-Blue Box	3	432	0.7	4	211	0.9	643
Total Metals	8	1,022	1.7	10	559	2.5	1,581
5. Glass							
Clear Glass	3	408	0.7	4	248	1.1	656
Coloured Glass	1	86	0.1	1	65	0.3	151
Other Glass – Non-Blue Box	5	575	0.9	2	131	0.6	706
Total Glass	9	1,069	1.7	8	444	2.0	1,513
6. Municipal Hazardous and Special Waste							
Paint & Stain Containers	0.1	8	0.0	0.1	7	0.0	14
Batteries	0.2	31	0.0	0.2	9	0.0	40
Other MHSW	0.5	60	0.1	0.1	4	0.0	63
Total MHSW	1	98	0.2	0	19	0.1	118
7. Organic Materials							
Avoidable Food Waste	118	14,586	23.8	84	4,700	20.9	19,286
Unavoidable Food Waste	60	7,437	12.1	48	2,693	12.0	10,129
Yard Waste	13	1,619	2.6	8	458	2.0	2,077
Tissue/Towelling – Non-Recyclable	26	3,202	5.2	22	1,243	5.5	4,445
Diapers & Sanitary Products	38	4,665	7.6	21	1,142	5.1	5,808
Pet Waste	51	6,282	10.3	40	2,200	9.8	8,482
Total Organic Materials	305	37,791	61.7	224	12,435	55.2	50,226
8. Other Materials							
Textiles	15	1,826	3.0	16	877	3.9	2,703
C,R&D	25	3,122	5.1	28	1,531	6.8	4,653
Electronics	3	395	0.6	3	177	0.8	571
Other Non-Recyclable Materials	30	3,724	6.1	22	1,229	5.5	4,952
Bulky Items	19	2,300	3.8	0.0	0.0	0.0	2,300
Total Other Materials	92	11,367	18.6	69	3,814	16.9	12,881
Grand Total	495	61,210	100	405	22,520	100	81,430

Table E2: Estimated 2017 Curbside Garbage and Recycling Composition

Material Category	Materials Accepted in London's Blue Box Program	Estimated Curbside Composition						
		City				Per Household		
		Blue Box Material Recycled	Material in Garbage	Total	Capture Rate of Blue Box Materials	Blue Box Material Recycled	Material in Garbage	Total
		tonne/yr	tonne/yr	tonne/yr	%	kg/hhld/yr	kg/hhld/yr	kg/hhld/yr
1. Paper								
Newsprint	X	4,656	227	4,883	95	38	2	39
Magazines & Catalogues	X	1,044	130	1,175	89	8	1	9
Directories/ Telephone Books	X	80	9	89	90	1	0.1	1
Other Printed Paper – Recyclable	X	680	525	1,205	56	5	4	10
Other Printed Materials – Non-Recyclable		584	507	1,091	54	5	4	9
Total Paper		7,045	1,397	8,442	83	57	11	68
Targeted BB Paper		6,460	891	7,351	88	52	7	59
2. Paper Packaging								
Gable Top Containers	X	286	76	362	79	2	1	3
Aseptic Containers	X	94	70	163	57	1	1	1
Spiral Wound Containers	X	39	35	74	52	0	0	1
Corrugated Cardboard	X	4,191	454	4,645	90	34	4	38
Boxboard/Cores (Tubes)	X	2,429	1,112	3,541	69	20	9	29
Polycoat Cups/Ice Cream Containers	X	134	232	366	37	1	2	3
Other Bleached Long Polycoat Fibre		63	370	433	15	1	3	3
Other Paper Laminate Categories – Non-Recyclable		32	103	135	24	0	1	1
Total Paper Packaging		7,267	2,452	9,719	75	59	20	79
Targeted BB Paper Packaging		7,172	1,979	9,151	78	58	16	74

Table E2: Estimated 2017 Curbside Garbage and Recycling Composition (Continued)

Material Category	Materials Accepted in London's Blue Box Program	Estimated Curbside Composition						
		City				Per Household		
		Blue Box Material Recycled tonne/yr	Material in Garbage tonne/yr	Total tonne/yr	Capture Rate of Blue Box Materials %	Blue Box Material Recycled kg/hhd/yr	Material in Garbage kg/hhd/yr	Total kg/hhd/yr
3. Plastics								
#1 PET	X	1,443	440	1,883	77	12	4	15
#2 HDPE	X	473	147	620	76	4	1	5
#3 - #7 Mixed Plastics	X	398	472	870	46	3	4	7
#6 PS – Expanded Polystyrene		14	340	354	4	0.1	3	3
Large HDPE & PP Pails & Lids	X	46	21	67	68	0.4	0.2	0.5
LDPE/HDPE Film		80	2,124	2,204	4	1	17	18
Plastic Laminates – Mostly Non-Recyclable		27	1,082	1,109	2	0.2	9	9
Other Rigid Plastic Packaging – Mostly Non-Recyclable		157	401	559	28	1	3	5
Other Plastics - Non-Packaging/Durable – Non-Recyclable		193	985	1,178	16	2	8	10
Total Plastics		2,831	6,014	8,844	32	23	49	71
Targeted BB Plastics		2,360	1,081	3,441	69	19	9	28
4. Metals								
Aluminum – Food/Beverage Containers	X	389	138	527	74	3	1	4
Aluminum - Foil & Trays	X	26	192	219	12	0.2	2	2
Steel - Food & Beverage Containers	X	557	190	747	75	5	2	6
Steel/Aluminum - Aerosol Containers (Non-MHSW)	X	43	56	98	43	0.3	0.4	1
Other Aluminum – Non-Blue Box		2	13	15	12	0.0	0.1	0.1
Other Steel – Non-Blue Box		129	432	561	23	1	3	5
Total Metals		1,146	1,022	2,168	53	9	8	18
Targeted BB Metals		1,016	576	1,592	64	8	5	13

Table E2: Estimated 2017 Curbside Garbage and Recycling Composition (Continued)

Material Category	Materials Accepted in London's Blue Box Program	Estimated Curbside Composition						
		City				Per Household		
		Blue Box Material Recycled tonne/yr	Material in Garbage tonne/yr	Total tonne/yr	Capture Rate of Blue Box Materials %	Blue Box Material Recycled kg/hhld/yr	Material in Garbage kg/hhld/yr	Total kg/hhld/yr
5. Glass								
Clear Glass	X	1,794	408	2,202	81	14	3	18
Coloured Glass	X	653	86	739	88	5	1	6
Other Glass – Non-Blue Box		82	575	658	13	1	5	5
Total Glass		2,530	1,069	3,599	70	20	9	29
Targeted BB Glass		2,447	494	2,941	83	20	4	24
6. Municipal Hazardous and Special Waste								
Paint & Stain Containers	X	12	8	20	60	0.1	0.1	0.2
Batteries		0.1	31	31	0	0.0	0.2	0.2
Other MHSW		0.0	60	60	0	0.0	0.5	0.5
Total MHSW		12	98	110	11	0.1	1	1
Targeted BB MHSW		12	8	20	60	0.1	0.1	0.2
7. Organic Materials								
Avoidable Food Waste		104	14,586	14,689	1	1	118	119
Unavoidable Food Waste		5	7,437	7,442	0	0.0	60	60
Yard Waste		0.0	1,619	1,619	0	0.0	13	13
Tissue/Towelling – Non-Recyclable		0.0	3,202	3,202	0	0.0	26	26
Diapers & Sanitary Products		0.0	4,665	4,665	0	0.0	38	38
Pet Waste		0.0	6,282	6,282	0	0.0	51	51
Total Organic Materials		109	37,791	37,900	0	1	305	306
8. Other Materials								
Textiles		0.0	1,826	1,826	0	0.0	15	15
C,R&D		0.0	3,122	3,122	0	0.0	25	25
Electronics		0.0	395	395	0	0.0	3	3
Other Non-Recyclable Materials		337	3,724	4,060	8	3	30	33
Bulky Items		0.0	2,300	2,300	0	0.0	19	19
Total Other Materials		337	11,367	11,704	3	3	92	95
Grand Total - Targeted BB		19,467	5,029	24,495	79	157	41	198
Grand Total		21,275	61,210	82,485	26	172	495	666

Table E3: Estimated 2017 Multi-Residential Garbage and Recycling Composition

Material Category	Materials Accepted in London's Blue Box Program	Estimated Multi-Residential Composition (Excludes Bulky Items)								
		City						Per Household		
		Blue Box Material Recycled	Garbage			Total Garbage and Recycling	Capture Rate of Blue Box Materials Units with Recycling	Recycling Units		
			Units with Recycling (51,440)	Units without Recycling (4,180)	Total			Blue Box Material Recycled	Material in Garbage	Total
tonne/yr	tonne/yr	tonne/yr	tonne/yr	tonne/yr	kg/hhld/yr	kg/hhld/yr	kg/hhld/yr	kg/hhld/yr		
1. Paper										
Newsprint	X	935	430	111	541	1,476	69%	18	8	27
Magazines & Catalogues	X	184	123	25	148	331	60%	4	2	6
Directories/ Telephone Books	X	5	2	1	3	8	66%	0.1	0.0	0.1
Other Printed Paper-Recyclable	X	157	266	34	300	457	37%	3	5	8
Other Printed Materials - Non-Recyclable		140	200	28	227	367	41%	3	4	7
Total Paper		1,420	1,021	198	1,219	2,639	54%	28	20	47
Targeted BB Paper		1,280	821	171	992	2,272	56%	23	16	39
2. Paper Packaging										
Gable Top Containers	X	64	59	10	69	133	52%	1	1	2
Aseptic Containers	X	12	20	3	23	35	38%	0.2	0.4	1
Spiral Wound Containers	X	11	14	2	16	28	44%	0.2	0.3	0.5
Corrugated Cardboard	X	378	541	75	615	993	41%	7	11	18
Boxboard/Cores (Tubes)	X	440	565	82	647	1,087	44%	9	11	20
Polycoat Cups/Ice Cream Containers	X	16	95	9	104	119	14%	0.3	2	2
Other Bleached Long Polycoat Fibre		6	93	8	101	107	6%	0.1	2	2
Other Paper Laminate Categories - Non-Recyclable		2	27	2	29	31	6%	0.0	1	1
Total Paper Packaging		929	1,413	190	1,604	2,533	37%	18	27	46
Targeted BB Paper Packaging		921	1,294	180	1,474	2,395	42%	18	25	43

Table E3: Estimated 2017 Multi-Residential Garbage and Recycling Composition (Continued)

Material Category	Materials Accepted in London's Blue Box Program	Estimated Multi-Residential Composition (Excludes Bulky Items)								
		City						Per Household		
		Blue Box Material Recycled	Garbage			Total Garbage and Recycling	Capture Rate of Blue Box Materials Units with Recycling	Recycling Units		
			Units with Recycling (51,440)	Units without Recycling (4,180)	Total			Blue Box Material Recycled	Material in Garbage	Total
tonne/yr	tonne/yr	tonne/yr	tonne/yr	tonne/yr	kg/hhld/yr	kg/hhld/yr	kg/hhld/yr	kg/hhld/yr		
3. Plastics										
#1 PET	X	307	299	49	348	655	51%	6	6	12
#2 HDPE	X	92	93	15	108	200	50%	2	2	4
#3 - #7 Mixed Plastics	X	77	202	23	224	302	28%	2	4	5
#6 PS - Expanded Polystyrene		5	91	8	99	104	5%	0.1	2	2
Large HDPE & PP Pails & Lids	X	2	21	2	23	26	10%	0.0	0.4	0.5
LDPE/HDPE Film		43	790	68	858	900	5%	1	15	16
Plastic Laminates – Mostly Non-Recyclable		12	304	26	330	342	4%	0	6	6
Other Rigid Plastic Packaging – Mostly Non-Recyclable		30	125	13	138	168	19%	1	2	3
Other Plastic- Non-Packaging/Durable -Non-Recyclable		40	272	25	298	338	13%	1	5	6
Total Plastics		608	2,198	228	2,426	3,034	22%	12	43	55
Targeted BB Plastics		479	615	89	704	1,182	44%	9	12	21
4. Metals										
Aluminum – Food/Beverage Containers	X	62	92	13	104	167	40%	1	2	3
Aluminum – Foil & Trays	X	7	74	7	80	87	9%	0.1	1	2
Steel - Food & Beverage Containers	X	125	113	19	132	257	53%	2	2	5
Steel/Aluminum – Aerosol Containers (Non-MHSW)	X	8	26	3	28	37	25%	0.2	0.5	1
Other Aluminum – Non-Blue Box		1	3	0	3	4	22%	0.0	0.1	0.1
Other Steel – Non-Blue Box		10	195	17	211	221	5%	0	4	4
Total Metals		213	501	58	559	772	30%	4	10	14
Targeted BB Metals		203	304	41	345	547	40%	4	6	10

Table E3: Estimated 2017 Multi-Residential Garbage and Recycling Composition (Continued)

Material Category	Materials Accepted in London's Blue Box Program	Estimated Multi-Residential Composition (Excludes Bulky Items)								
		City						Per Household		
		Blue Box Material Recycled	Garbage			Total Garbage and Recycling	Capture Rate of Blue Box Materials Units with Recycling	Recycling Units		
			Units with Recycling (51,440)	Units without Recycling (4,180)	Total			Blue Box Material Recycled	Material in Garbage	Total
tonne/yr	tonne/yr	tonne/yr	tonne/yr	tonne/yr	kg/hhd/yr	kg/hhd/yr	kg/hhd/yr	kg/hhd/yr		
5. Glass										
Clear Glass	X	234	213	35	248	482	52%	4	4	8
Coloured Glass	X	53	57	9	65	118	48%	1	1	2
Other Glass – Non-Blue Box		61	117	14	131	192	34%	1	2	3
Total Glass		348	386	58	444	792	47%	7	8	14
Targeted BB Glass		287	270	43	313	600	52%	6	5	11
6. Municipal Hazardous and Special Waste										
Paint & Stain Containers	X	1	6	1	7	7	12%	0.0	0.1	0.1
Batteries		0.1	9	1	9	9	1%	0.0	0.2	0.2
Other MHSW		0.0	3	0	4	4	0%	0.0	0.1	0.1
Total MHSW		1	18	2	19	20	5%	0.0	0.3	0.4
Targeted BB MHSW		1	6	1	7	7	12%	0.0	0.1	0.1
7. Organic Materials										
Avoidable Food Waste		10	4,346	354	4,700	4,709	0%	0.2	84	85
Unavoidable Food Waste		1	2,490	202	2,693	2,694	0%	0.0	48	48
Yard Waste		0.0	423	34	458	458	0%	0.0	8	8
Tissue/Towelling – Non-Recyclable		0.0	1,149	93	1,243	1,243	0%	0.0	22	22
Diapers & Sanitary Products		0.0	1,057	86	1,142	1,142	0%	0.0	21	21
Pet Waste		0.0	2,035	165	2,200	2,200	0%	0.0	40	40
Total Organic Materials		11	11,500	935	12,435	12,446	0%	0	224	224
8. Other Materials										
Textiles		0.0	811	66	877	877	0%	0.0	16	16
C,R&D		0.0	1,416	115	1,531	1,531	0%	0.0	28	28
Electronics		0.0	163	13	177	177	0%	0.0	3	3
Other Non-Recyclable Materials		81	1,130	98	1,229	1,310	7%	2	22	24
Bulky Items		0.0	0.0	0.0	0.0	0.0	0%	0.0	0.0	0.0
Total Other Materials		81	3,521	293	3,814	3,895	2%	2	68	70
Grand Total - Targeted BB		3,170	3,309	525	3,834	7,004	49%	62	64	126
Grand Total		3,613	20,558	1,962	22,520	26,132	15%	70	400	470

Table E4: Estimated 2017 Combined Curbside and Multi-Residential Garbage and Recycling Composition

Material Category	Materials Accepted in London's Blue Box Program	Estimated Overall Composition						
		City				Per Household		
		Blue Box Material Recycled	Material in Garbage	Total	Capture Rate of Blue Box Materials	Blue Box Material Recycled	Material in Garbage	Total
		tonne/yr	tonne/yr	tonne/yr	%	kg/hhld/yr	kg/hhld/yr	kg/hhld/yr
1. Paper								
Newsprint	X	5,591	768	6,359	88	31	4	35
Magazines & Catalogues	X	1,228	278	1,506	82	7	2	8
Directories/ Telephone Books	X	85	12	97	88	0.5	0.1	1
Other Printed Paper – Recyclable	X	837	825	1,662	50	5	5	9
Other Printed Materials – Non-Recyclable		724	734	1,458	50	4	4	8
Total Paper		8,465	2,616	11,081	76	47	15	62
Targeted BB Paper		7,741	1,882	9,623	80	43	10	54
2. Paper Packaging								
Gable Top Containers	X	350	145	495	71	2	1	3
Aseptic Containers	X	106	93	199	53	1	1	1
Spiral Wound Containers	X	50	52	102	49	0.3	0.3	1
Corrugated Cardboard	X	4,569	1,069	5,638	81	25	6	31
Boxboard/Cores (Tubes)	X	2,869	1,758	4,627	62	16	10	26
Polycoat Cups/Ice Cream Containers	X	149	336	485	31	1	2	3
Other Bleached Long Polycoat Fibre		69	471	540	13	0.4	3	3
Other Paper Laminate Categories – Non-Recyclable		34	132	166	20	0.2	1	1
Total Paper Packaging		8,196	4,055	12,251	67	46	23	68
Targeted BB Paper Packaging		8,093	3,453	11,546	70	45	19	64

Table E4: Estimated 2017 Combined Curbside and Multi-Residential Garbage and Recycling Composition (Continued)

Material Category	Materials Accepted in London's Blue Box Program	Estimated Overall Composition						
		City				Per Household		
		Blue Box Material Recycled tonne/yr	Material in Garbage tonne/yr	Total tonne/yr	Capture Rate of Blue Box Materials %	Blue Box Material Recycled kg/hhld/yr	Material in Garbage kg/hhld/yr	Total kg/hhld/yr
3. Plastics								
#1 PET	X	1,750	789	2,538	69	10	4	14
#2 HDPE	X	565	255	820	69	3	1	5
#3 - #7 Mixed Plastics	X	476	697	1,172	41	3	4	7
#6 PS - Expanded Polystyrene		20	439	459	4	0	2	3
Large HDPE & PP Pails & Lids	X	48	45	93	52	0	0	1
LDPE/HDPE Film		122	2,982	3,104	4	1	17	17
Plastic Laminates – Mostly Non-Recyclable		39	1,412	1,451	3	0.2	8	8
Other Rigid Plastic Packaging – Mostly Non-Recyclable		187	539	726	26	1	3	4
Other Plastic – Non-Packaging/Durable-Non-Recyclable		232	1,283	1,515	15	1	7	8
Total Plastics		3,439	8,440	11,879	29	19	47	66
Targeted BB Plastics		2,838	1,785	4,623	61	16	10	26
4. Metals								
Aluminum - Food/Beverage Containers	X	451	243	694	65	3	1	4
Aluminum - Foil & Trays	X	34	272	306	11	0.2	2	2
Steel – Food & Beverage Containers	X	682	322	1,004	68	4	2	6
Steel/Aluminum – Aerosol Containers (Non-MHSW)	X	51	84	135	38	0.3	0.5	1
Other Aluminum – Non-Blue Box		3	16	19	13	0.0	0.1	0
Other Steel – Non-Blue Box		139	643	782	18	1	4	4
Total Metals		1,359	1,581	2,940	46	8	9	16
Targeted BB Metals		1,218	921	2,139	57	7	5	12
5. Glass								
Clear Glass	X	2,028	656	2,684	76	11	4	15
Coloured Glass	X	706	151	857	82	4	1	5
Other Glass – Non-Blue Box		144	706	850	17	1	4	5
Total Glass		2,878	1,513	4,390	66	16	8	24
Targeted BB Glass		2,734	806	3,541	77	15	4	20

Table E4: Estimated 2017 Combined Curbside and Multi-Residential Garbage and Recycling Composition (Continued)

Material Category	Materials Accepted in London's Blue Box Program	Estimated Overall Composition						
		City				Per Household		
		Blue Box Material Recycled tonne/yr	Material in Garbage tonne/yr	Total tonne/yr	Capture Rate of Blue Box Materials %	Blue Box Material Recycled kg/hhld/yr	Material in Garbage kg/hhld/yr	Total kg/hhld/yr
6. Municipal Hazardous and Special Waste								
Paint & Stain Containers	X	13	14	27	47%	0.1	0.1	0.2
Batteries		0.2	40	40	0%	0.0	0.2	0.2
Other MHSW		0.0	63	63	0%	0.0	0.4	0.4
Total MHSW		13	118	130	10%	0.1	1	1
Targeted BB MHSW		13	14	27	47%	0.1	0.1	0.2
7. Organic Materials								
Avoidable Food Waste		113	19,286	19,399	1%	1	108	108
Unavoidable Food Waste		7	10,129	10,136	0%	0	56	56
Yard Waste		0.0	2,077	2,077	0%	0	12	12
Tissue/Towelling – Non-Recyclable		0.0	4,445	4,445	0%	0	25	25
Diapers & Sanitary Products		0.0	5,808	5,808	0%	0	32	32
Pet Waste		0.0	8,482	8,482	0%	0	47	47
Total Organic Materials		120	50,226	50,346	0%	1	280	281
8. Other Materials								
Textiles		0.0	2,703	2,703	0%	0.0	15	15
C,R&D		0.0	4,653	4,653	0%	0.0	26	26
Electronics		0.0	571	571	0%	0.0	3	3
Other Non-Recyclable Materials		418	4,952	5,370	8%	2	28	30
Bulky Items		0.0	2,300	2,300	0%	0.0	13	13
Total Other Materials		418	15,181	15,599	3%	2	85	87
Grand Total - Targeted BB		22,637	8,862	31,499	72%	126	49	176
Grand Total		24,887	83,730	108,617	23%	139	467	605

Appendix F

Overview of Key Environmental, Social, Financial and Technical Considerations for Various Waste Diversion Programs/Initiatives

Food Waste Avoidance
Home (Backyard) Composting
Community Composting
Curbside Organics Collection
Multi-Residential Organics Collection
Carpet
Electrical Equipment/Small Metal
Mattresses
Bulky Plastics
Textiles
Wooden Furniture

This page has intentionally been left blank.

Source of GHG reduction estimates

GHG reductions estimates have been estimated using the Environment Canada's GHG Calculator for Waste Management model and the U.S Environmental Protection Agency's Waste Reduction Model (WARM, version 14 released March 2016). Environment Canada created the GHG Calculator for Waste Management in 2005 to help municipalities and other users estimate lifecycle GHG emission reductions from different waste management practices, including recycling, composting, anaerobic digestion, combustion, and landfilling. This model is based on the EPA WARM lifecycle emissions estimating tool, which has been in use and updated since 1993.

Various models exist worldwide and may produce different results. For the purpose of the 60% Waste Diversion Action Plan, both models were used for the potential waste diversion programs and initiatives. The EPA WARM was used to estimate GHG reductions for carpet, electrical equipment/ small metal, mattresses, bulky plastics and wooden furniture. The Environment Canada model was used to estimate GHG reductions for food waste avoidance, home composting, community composting, curbside organics collection and multi-residential organics collection. Textiles GHG reductions were estimated using the reduction factor provided in the scientific journal article *Environmental Sustainability through Textile Recycling* published in the Journal of Textile Science & Engineering Environmental Sustainability (Chavan, J Textile Sci Eng 2014, S2 <https://www.omicsonline.org/open-access/environmental-sustainability-through-textile-recycling-2165-8064.S2-007.pdf>).

Program estimates

The information in this appendix is consistent with the information provided to the public for feedback. Please note that some of the program estimates in the main body are for pilot or reduced programs and therefore will be different than the estimates in this appendix for a fully implemented program.

Consideration			Food Waste Avoidance	
			Moderate Outreach Program	Significant Outreach Program
Environmental	Change in Diversion	Annual Tonnes Diverted	200 to 600	800 to 2,100
		Contribution to 60% Target	0.1% to 0.4%	0.5% to 1.3%
	GHG Benefits	Reduction per Tonne Diverted	2.9 tonnes	
		Annual Reduction (tonnes)	580 to 1,750 (145 to 440 cars removed from the road ^a)	2,300 to 6,100 (580 to 1,500 cars removed from the road ^a)
Social	Public Support		Strong support for some kind of program	
	Resident Benefits/ Issues		<ul style="list-style-type: none"> Potential homeowner savings of \$900,000 to \$2,700,000 	<ul style="list-style-type: none"> Potential homeowner savings of \$4,000,000 to \$10,000,000
Financial	Cost ^b	Collection	\$0	\$0
		Processing	\$0	\$0
		Other	\$150,000 to \$200,000	\$1,100,000 to \$1,200,000
		Total	\$150,000 to \$200,000	\$1,100,000 to \$1,200,000
	Cost per Household		\$0.9 to \$1.1	\$6.5 to \$7.0
	Market/Revenue		Not applicable	Not applicable
Technical	Collection Issues		Not applicable	Not applicable
	Processing Issues		Not applicable	Not applicable
	Other		<ul style="list-style-type: none"> Pilot project completed, lower cost program more effective in reducing avoidable food waste in garbage Effectiveness on large scale unknown 	
Notes				
<p>(a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.</p> <p>(b) Based on industry estimates, literature review and data from other municipalities.</p>				

Consideration			Home Composting	
			Moderate Outreach Program, 50% Subsidy	Significant Outreach Program, 75% Subsidy
Environmental	Change in Diversion	Annual Tonnes Diverted	320 to 640	800 to 1,200
		Contribution to 60% Target	0.2% to 0.4%	0.5% to 0.7%
	GHG Benefits	Reduction per Tonne Diverted	0.8 tonnes	
		Annual Reduction (tonnes)	260 to 500 (65 to 125 cars removed from the road ^a)	640 to 960 (160 to 240 cars removed from the road ^a)
Social	Public Support		General support for some subsidy program	
	Resident Benefits/ Issues		<ul style="list-style-type: none"> • Compost for use by homeowner • Homeowner must purchase composter unit 	<ul style="list-style-type: none"> • Compost for use by homeowner • Homeowner must purchase composter unit
Financial	Cost ^b	Collection	\$0	\$0
		Processing	\$0	\$0
		Other	\$80,000 to \$170,000	\$220,000 to \$250,000
		Total	\$80,000 to \$170,000	\$220,000 to \$250,000
	Cost per Household		\$0.44 to \$0.94	\$1.2 to \$1.4
	Market/Revenue		No revenue	No revenue
Technical	Collection Issues		Not Applicable	Not Applicable
	Processing Issues		Not Applicable	Not Applicable
	Other		Not Applicable	Not Applicable
Notes (a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year. (b) Based on industry estimates, literature review and data from other municipalities.				

Consideration			Community Composting		
			Low Tech Program Public	Low Tech Program Private	High Tech Program Public
Environmental	Change in Diversion	Annual Tonnes Diverted	10 to 19	10 to 19	80 to 240
		Contribution to 60% Target	0.01%	0.01%	0.05% to 0.14%
	GHG Benefits	Reduction per Tonne Diverted	0.8 tonnes		
		Annual Reduction (tonnes)	8 to 15 tonnes (2 to 4 cars removed from the road ^a)	8 to 15 tonnes (2 to 4 cars removed from the road ^a)	64 to 200 tonnes (16 to 50 cars removed from the road ^a)
Social	Public Support		General support for community composting program		
	Resident Benefits/ Issues		<ul style="list-style-type: none"> • Simple design and access • Public access may cause quality issues 	<ul style="list-style-type: none"> • Simple design and access 	<ul style="list-style-type: none"> • More knowledge required • Public access may cause quality issues
Financial	Cost ^b	Collection	\$0	\$0	\$0
		Processing	\$0	\$0	\$0
		Other	\$1,500 to \$3,000	\$5,000 to \$10,000	\$52,000 to \$78,000
		Total	\$1,500 to \$3,000	\$5,000 to \$10,000	\$52,000 to \$78,000
	Cost per Household		\$0.01 to \$0.02	\$0.03 to \$0.06	\$0.30 to \$0.45
	Market/Revenue		No revenue	No revenue	No revenue
Technical	Collection Issues		Not Applicable	Not Applicable	Not Applicable
	Processing Issues		Not Applicable	Not Applicable	Not Applicable
	Other		<ul style="list-style-type: none"> • City responsible for maintenance 	<ul style="list-style-type: none"> • Private maintenance 	<ul style="list-style-type: none"> • City responsible for maintenance

Notes

(a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.

(b) Based on industry estimates, literature review and data from other municipalities.

Consideration			Curbside Organics Collection	
			Curbside Green Bin Program	Mixed Waste Program
Environmental	Change in Diversion	Annual Tonnes Diverted	13,000 to 20,000	18,000 to 35,000
		Contribution to 60% Target	8% to 12%	11% to 22%
	GHG Benefits	Reduction per Tonne Diverted	0.8 tonnes	
		Annual Reduction (tonnes)	10,400 to 16,000 (2,600 to 4,000 cars removed from the road ^a)	14,400 to 28,000 (3600 to 5,800 cars removed from the road ^a)
Social	Public Support		Strong Support	General Interest
	Resident Benefits/ Issues		<ul style="list-style-type: none"> Homeowner has to source separate organics 	<ul style="list-style-type: none"> Convenient Homeowner does not have to source separate
Financial	Cost ^b	Collection	\$2,500,000 to \$3,000,000	\$0
		Processing	\$1,400,000 to \$2,500,000	\$9,000,000 to \$14,000,000
		One Time Capital Cost	\$12,000,000 over 10 years	\$0
		Total	\$3,900,000 to \$5,500,000	\$9,000,000 to \$14,000,000
	Cost per Household		\$20 to \$30	\$50 to \$80
	Market/Revenue		Potential to produce compost or renewable natural gas	
Technical	Collection Issues		New collection vehicles required	Incorporated with current pick up schedule
	Processing Issues		None	Compost/digestate product may have difficulty meeting Ontario standards
	Other		Odour concerns with facility locations	

Notes

- (a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.
- (b) Based on industry estimates, literature review and data from other municipalities.

Consideration			Multi-Residential Organics Collection	
			Multi-Residential Green Cart Program	Mixed Waste Program
Environmental	Change in Diversion	Annual Tonnes Diverted	2,000 to 2,500	6,000 to 10,000
		Contribution to 60% Target	1.2% to 1.4%	4.0% to 6.0%
	GHG Benefits	Reduction per Tonne Diverted	0.8 tonnes	
		Annual Reduction (tonnes)	1,600 to 2,000 (400 to 500 cars removed from the road ^a)	4,800 to 8,000 (1,200 to 2,000 cars removed from the road ^a)
Social	Public Support		Strong Support	Strong Support
	Resident Benefits/Issues		• Odour from large scale collection	• Not Applicable
Financial	Cost ^b	Collection	\$1,100,000 to \$1,400,000	\$0
		Processing	\$220,000 to \$275,000	\$3,000,000 to \$5,000,000
		Other	\$0	\$0
		Total	\$1,300,000 to \$1,675,000	\$3,000,000 to \$5,000,000
	Cost per Household		\$7.2 to \$9.3	\$20 to \$30
	Market/Revenue		Potential to produce compost or renewable natural gas	
Technical	Collection Issues		New collection vehicles required	Incorporated with current pick up schedule
	Processing Issues		None	Compost/digestate product may have difficulty meeting Ontario standards
	Other		Odour concerns with facility locations	
Notes				
(a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.				
(b) Based on industry estimates, literature review and data from other municipalities.				

Consideration			Carpet	
			Collection at EnviroDepots (on a cost recovery basis)	Curbside and EnviroDepot Collection (no user fee)
Environmental	Change in Diversion	Annual Tonnes Diverted	200 to 300	600 to 800
		Contribution to 60% Target	0.12% to 0.18%	0.35% to 0.45%
	GHG Benefits	Reduction per Tonne Diverted	2.6 tonnes	
		Annual Reduction (tonnes)	520 to 780 (130 to 195 cars removed from the road ^a)	1,550 to 2,100 (390 to 520 cars removed from the road ^a)
Social	Public Support		Strong Support	Strong Support
	Resident Benefits/ Issues		• Inconvenience of transporting to EnviroDepot	• Convenience of curb side pick up
Financial	Cost ^b	Collection	\$8,000 to \$15,000	\$96,000 to \$112,000
		Processing	\$60,000 to \$93,000	\$180,000 to \$248,100
		Other	\$0	\$0
		Total	\$68,000 to \$108,000	\$276,000 to \$360,000
	Cost per Household		\$0.38 to \$0.60	\$1.5 to \$2.0
	Market/Revenue		Outside processor at cost to City	Outside processor at cost to City
Technical	Collection Issues		Not applicable	Not applicable
	Processing Issues		Currently only one option in province	
	Other		Not applicable	Not applicable
Notes				
(a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.				
(b) Based on industry estimates, literature review and data from other municipalities.				

Consideration			Electrical Equipment/Small Metal
			Collection at the Curb
Environmental	Change in Diversion	Annual Tonnes Diverted	250 to 400
		Contribution to 60% Target	0.15% to 0.25%
	GHG Benefits	Reduction per Tonne Diverted	4.4 tonnes
		Annual Reduction (tonnes)	1,100 to 1,760 (275 to 440 cars removed from the road ^a)
Social	Public Support		Strong Support
	Resident Benefits/ Issues		Convenience of curbside pick up
Financial	Cost ^b	Collection	\$70,000 to \$80,000
		Processing	\$0
		Other	\$20,000 to \$40,000
		Total	\$90,000 to \$120,000
	Cost per Household		\$0.50 to \$0.67
	Market/Revenue		\$40,000 to \$60,000
Technical	Collection Issues		Incorporated with current pickup schedule
	Processing Issues		Private processor
	Other		Strong markets, commodity prices fluctuate
Notes (a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year. (b) Based on industry estimates, literature review and data from other municipalities.			

Consideration			Mattresses	
			Collection at EnviroDepots (on a cost recovery basis)	Curbside and EnviroDepot Collection (banned for curbside collection)
Environmental	Change in Diversion	Annual Tonnes Diverted	200 to 300	600 to 800
		Annual Units Diverted	10,000 to 15,000	30,000 to 40,000
		Contribution to 60% Target	0.12% to 0.18%	0.35% to 0.50%
	GHG Benefits	Reduction per Tonne Diverted	2.6 tonnes	
		Annual Reduction (tonnes)	520 to 780 (130 to 195 cars removed from the road ^a)	1,550 to 2,100 (390 to 520 cars removed from the road ^a)
Social	Public Support		Strong Support	Strong Support
	Resident Benefits/ Issues		• Inconvenience of transporting to Envirodepot	• Convenience of curbside pick up
Financial	Cost ^b	Collection	\$40,000 to \$60,000	\$192,000 to \$232,000
		Processing	\$160,000 to \$240,000	\$480,000 to \$640,000
		Other	\$0	\$0
		Total	\$200,000 to \$300,000	\$600,000 to \$870,000
	Cost per Household		\$1.1 to \$1.7	\$3.7 to \$4.8
	Market/Revenue		No revenue	No revenue
Technical	Collection Issues		Not applicable	Incorporated with current pickup schedule
	Processing Issues		Private processor	Private processor
	Other		Not applicable	Not applicable
Notes				
(a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.				
(b) Based on industry estimates, literature review and data from other municipalities.				

Consideration			Bulky Plastics
			Collection at EnviroDepots
Environmental	Change in Diversion	Annual Tonnes Diverted	50 to 100
		Contribution to 60% Target	0.03% to 0.06%
	GHG Benefits	Reduction per Tonne Diverted	1.0 tonnes
		Annual Reduction (tonnes)	50 to 100 (15 to 25 cars removed from the road ^a)
Social	Public Support		Strong Support
	Resident Benefits/ Issues		<ul style="list-style-type: none"> • Inconvenience of transporting to EnviroDepot
Financial	Cost ^b	Collection	\$8,000 to \$16,000
		Processing	\$50,000 to \$100,000 ^c
		Other	\$0
		Total	\$8,000 to \$16,000
	Cost per Household		\$0.05 to \$0.09
	Market/Revenue		\$50,000 to \$100,000 ^c
Technical	Collection Issues		Not applicable
	Processing Issues		Private processor
	Other		Not applicable
Notes <p>(a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.</p> <p>(b) Based on industry estimates, literature review and data from other municipalities.</p> <p>(c) Cost of processing material will be covered by the revenue from market</p>			

Consideration			Textiles	
			Enhanced Awareness and Drop-off Program	Enhanced Awareness, Drop-off and Curbside Collection Program
Environmental	Change in Diversion	Annual Tonnes Diverted	245 to 380	640 to 760
		Contribution to 60% Target	0.15% to 0.23%	0.38% to 0.45%
	GHG Benefits	Reduction per Tonne Diverted	14 tonnes	
		Annual Reduction (tonnes)	3,400 to 5,300 (850 to 1325 cars removed from the road ^a)	9,000 to 10,600 (2,250 to 2,650 cars removed from the road ^a)
Social	Public Support		Moderate Support	Moderate Support
	Resident Benefits/Issues		<ul style="list-style-type: none"> Inconvenience of transporting to drop-offs 	<ul style="list-style-type: none"> Convenience of curbside pick up
Financial	Cost ^b	Collection ^c	\$0	\$72,000 to \$86,000
		Processing	\$0	\$0
		Other	\$15,000 to \$40,000	\$20,000 to \$40,000
		Total	\$15,000 to \$40,000	\$92,000 to \$126,000
	Cost per Household		\$0.08 to \$0.23	\$0.41 to \$0.49
	Market/Revenue		No revenue	No revenue
Technical	Collection Issues		Not applicable	Incorporated with current pickup schedule
	Processing Issues		Private processor	Private processor
	Other		Not applicable	Not applicable

Notes

- (a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.
- (b) Based on industry estimates, literature review and data from other municipalities.
- (c) Costs covered by vendor

Consideration			Wooden Furniture	
			Collection at EnviroDepots	Curbside and EnviroDepot Collection
Environmental	Change in Diversion	Annual Tonnes Diverted	100 to 150	100 to 150
		Contribution to 60% Target	0.06% to 0.06%	0.06% to 0.09%
	GHG Benefits	Reduction per Tonne Diverted	3.8 tonnes	
		Annual Reduction (tonnes)	380 to 570 (95 to 145 cars removed from the road ^a)	380 to 570 (95 to 145 cars removed from the road ^a)
Social	Public Support		Moderate Support	Moderate Support
	Resident Benefits/Issues		• Inconvenience of transporting to EnviroDepot	• Convenience of curbside pickup
Financial	Cost ^b	Collection	\$0	\$60,000 to \$70,000
		Processing	\$9,000 to \$12,000	\$10,000 to \$12,000
		Other	\$0	\$0
		Total	\$9,000 to \$12,000	\$70,000 to \$82,000
	Cost per Household		\$0.05 to \$0.07	\$0.40 to \$0.50
	Market/Revenue		No revenue	No revenue
Technical	Collection Issues		Not applicable	Incorporated with current pick-up schedule
	Processing Issues		Private processor	Private processor
	Other		Not applicable	Not applicable

Notes

- (a) The diversion of these materials has avoided the Greenhouse Gas (GHG) emissions equivalent to removing the identified number of vehicles per year.
- (b) Based on industry estimates, literature review and data from other municipalities.

Appendix G

Summary of Ontario Green Bin Programs

Table G1: Ontario Green Bin Programs - Operational Details

Table G2: Ontario Green Bin Programs

This page has intentionally been left blank.

This appendix provides a summary of Ontario municipal Green Bin programs (Tables G-1 and G-2). The summary provides operational details categorized by:

- municipalities allowing plastic bags, sanitary products and pet waste
- municipalities not allowing plastic bags, sanitary products or pet waste
- municipalities allowing pet waste but not plastic bags or sanitary products

The Ontario municipalities surveyed had the following common collection challenges:

- Source separated organics (SSO) freezes in collection bin
- Wildlife overturning bins and creating mess
- Leachate leaks from collection vehicle
- Loose organics in bin not emptying
- Broken bins in winter
- Overweight bins
- Placement of unacceptable materials in bin (plastic, glass)

Data was collected from Resource Productivity & Recovery Authority (RPRA) and other municipalities and compiled by 2cg Consulting and City of London staff.

Table G-1: Ontario Green Bin Programs – Operational Information

Municipality	Quantity of Households		Eligibility of Multi-Family Households for Green Bin Collection ¹	Collection Container Size (litres)	Allowable liner (plastic, certified compostable plastic, paper)	Collection Details		
	Single Family	Multi-Family				(All, Some, None)	SSO Collection Frequency	Garbage Collection Frequency
Municipalities allowing plastic bags, sanitary products and pet waste								
Toronto	461,089	649,194	All	97	-plastic -paper -compostable plastic	Weekly	Bi-Weekly	No
York Region	315,025	51,290	Some, lower tier municipalities provide collection services (e.g., Markham) and others do not	46	-paper & compostable plastic (preferred) -plastic (accepted)	Weekly	Bi-Weekly	No

Municipality	Quantity of Households		Eligibility of Multi-Family Households for Green Bin Collection ¹	Collection Container Size (litres)	Allowable liner (plastic, certified compostable plastic, paper)	Collection Details		
	Single Family	Multi-Family				(All, Some, None)	SSO Collection Frequency	Garbage Collection Frequency
Municipalities NOT allowing plastic bags, sanitary products and pet waste								
Barrie	42,436	11,200	None ²	46	-paper -compostable plastic	Weekly	Bi-weekly	No
Durham	200,192	24,298	None	46	-paper -compostable plastic	Weekly	Bi-Weekly	No
Hamilton	173,349	50,445	All	-46 downtown -120	-paper -compostable plastic	Weekly	Weekly	No
Halton Region	165,787	39,674	All	-46 -360 some townhomes	-paper -compostable plastic	Weekly	Bi-Weekly	No
Kingston	45,062	8,456	All	-46 Downtown -80 residential	-paper -compostable plastic	Weekly	Weekly	Yes
Ottawa	285,541	117,376	None	-80 single family - 240 multi-family	-paper	Weekly	Bi-weekly	Yes
Ottawa Valley	16,743	1,647	None	120	-paper	Weekly	Bi-weekly	Yes
Peel Region	338,362	98,656	None	100	-paper -compostable plastic	Weekly	Bi-weekly	Yes
Simcoe County	123,730	5,852	None ³	46	-paper -compostable plastic	Weekly	Weekly	No

Municipality	Quantity of Households		Eligibility of Multi-Family Households for Green Bin Collection ¹	Collection Container Size (litres)	Allowable liner (plastic, certified compostable plastic, paper)	Collection Details		
	Single Family	Multi-Family				(All, Some, None)	SSO Collection Frequency	Garbage Collection Frequency
City of St. Thomas	13,427	3,576	None	240	-paper -compostable plastic	Bi-Weekly	Weekly	Yes
Municipalities NOT allowing plastic bags or sanitary products and accept pet waste								
Waterloo	150,201	59,039	Some, multi-family households with 6 units or less	46	-paper -compostable plastic	Weekly	Bi-Weekly	No
Guelph	29,901	26,026	All	80	-paper -compostable plastic	Weekly	Bi-weekly	Yes
Niagara Region	165,301	31,527	Some, multi-family households with 6 units or less	-46 residential -80 small business	-paper -compostable plastic	Weekly	Weekly	Yes

Notes:

1. Some municipalities only provide curbside green bin collection service, therefore multi-family households are ineligible to participate.
2. Household quantities from 2016, multi-family green bin collection service implemented January 2017, therefore multi-family households ineligible to receive green bin collection service.
3. Multi-family households may be eligible for curbside green bin collection, eligibility determined by municipality on an application process.

Table G-2: Ontario Green Bin Programs – Collection and Processing Information

Municipality	Quantity of Households Eligible for Service			SSO Collection 2016 Quantity		Processing Facility
	Single Family	Multi-Family ¹	Total	Tonnes	Kilograms per household	
Municipalities allowing plastic bags, sanitary products and pet waste						
Toronto	461,089	649,194	1,110,283	132,560	119	-majority at Disco Road Organics Processing Facility -small portion processed by contractors
York Region	315,025	25,645 ²	340,670	97,044	285	-Orgaworld (London) -LaFleche Environmental (Moose Creek)
Municipalities NOT allowing plastic bags, sanitary products and pet waste						
Barrie	42,436	0 ³	52,436	4,123	97	-All Treat Farms (Walker Environmental Group)
Durham	200,192	0	224,490	27,612	138	-Durham Region (Miller Compost)
Hamilton	173,349	50,445	223,794	30,025	134	-Hamilton Central Composting Facility
Halton Region	165,787	39,674	205,461	27,682	135	-Hamilton Central Composting Facility
Kingston	45,062	8,456	53,518	3,959	74	-Norterra (Kingston)
Ottawa	285,541	117,376	402,943	70,918	176	-Orgaworld (Ottawa)
Ottawa Valley	16,743	0	16,743	3,878	232	-Ottawa Valley Waste Recovery Centre (Pembroke)
Peel Region	338,362	0	338,362	59,726	177	-Peel Region (Brampton, Caledon)

Municipality	Quantity of Households Eligible for Service			SSO Collection 2016 Quantity		Processing Facility
	Single Family	Multi-Family ¹	Total	Tonnes	Kilograms per household	
Simcoe County	123,730	0	123,730	10,798	87	-Hamilton Central Composting Facility
City of St. Thomas	13,427	0	13,427	4,046	301	-Orgaworld (London)
Municipalities NOT allowing plastic bags or sanitary products and accept pet waste						
Waterloo	150,201	2,952 ⁴	153,153	10,364	68	-Guelph Organic Waste Processing Facility
Guelph	29,901	26,026	55,927	9,744	174	-Guelph Organic Waste Processing Facility
Niagara Region	165,301	1,576 ⁴	166,877	11,508	69	-Walker Environmental Group (Niagara)

Notes:

1. For calculation purposes, municipalities that do not provide multi-family households green bin collection service are assumed zero. Participation may be minimal and would not significantly contribute to the kilograms per household quantity.
2. The region provides some green bin collection service to lower tier municipalities. This quantity of multi-family households that receive green bin collection service is estimated at 50% of eligible multi-family households.
3. Multi-family green bin collection service implemented January 2017, kilograms per household calculation does not include multi-family units as the tonnage is from 2016 prior to program implementation.
4. Multi-family units with 2-6 units are eligible for green bin collection service. For calculation purposes 5% of the total multi-family units is assumed.

This page has intentionally been left blank.

Appendix H
Mixed Waste Processing Pilot Project Results

Waste Composition of Mixed Waste Streams (2cg Consulting, 2017)
High Diversion MRF Results (Canada Fibers, 2017)

This page has intentionally been left blank.

REPORT
Waste Composition of Mixed Waste Streams

City of London

September 2017



159 Ridout Street South, London, Ont. N6C 3X7
Paul van der Werf Tel: 519-645-7733
Email: 2cg@sympatico.ca

Table of Contents

1.0 INTRODUCTION	0
2.0 METHODOLOGY	0
2.1 Sample Collection	0
2.2 Sample Sorting.....	0
3.0 RESULTS AND DISCUSSION.....	2
3.1 Curbside “Lights” Fraction	2
3.2 Curbside & Multi-Residential “Lights” Fraction	3
3.3 Curbside “Medium-Heavies” Fraction	4
3.4 Curbside & Multi-Residential “Medium-Heavies” Fraction	5
3.5 Curbside “Heavies” Fraction.....	6
3.6 Curbside & Multi-Residential “Heavies” Fraction	7
3.6 Curbside Overall Data Analysis.....	8
3.4 Curbside & Multi-Residential Overall Data Analysis	11
4.0 SUMMARY	15

Appendix 1- Material Categories and Description

Appendix 2- Audit “Fines” Category Visual Analysis

1.0 Introduction

2cg Inc. (2cg) was retained by the City of London (City) to undertake a waste composition analysis of municipal solid waste (MSW) loads delivered by the City of London to Canada Fibers Ltd. Dongara mixed waste processing facility. Inbound loads of MSW (curbside single family or curbside single family/multi-residential) were processed and divided into a number of fractions through mechanical means. 2cg undertook a composition analysis of the three waste fractions: “lights”; “medium-heavies”; and “heavies” (i.e. low to high density). Fieldwork took place on 31 August and 1 September 2017.

2.0 Methodology

Canada Fibers staff collected the waste stream samples according to the waste fractions and a crew of two 2cg staff were used to collect and sort the sub-samples.

2.1 Sample Collection

Large samples of the three waste fractions from the two waste generation sources were collected directly off the line and delivered to a sorting area by Canada Fibers staff in an approximately 1-3 cubic metre bin. 2cg extracted 10-25 kg sub-samples from all three streams (increasing sample size as wastes became heavier). A total of five curbside sub-samples of “lights”; three curbside & multi-residential sub-samples of “lights”; five curbside sub-samples of “medium-heavies”; four curbside & multi-residential sub-samples of “medium heavies”; four curbside sub-samples of “heavies”; and four curbside & multi-residential sub-samples of “heavies” were extracted and sorted.

2.2 Sample Sorting

The typical sorting set up is shown in Photos 1 and 2. Each sub-sample was sorted into 18 categories (Table 2.1) and the data was entered into an Excel spreadsheet for analysis.



Photo 1. Scale set up

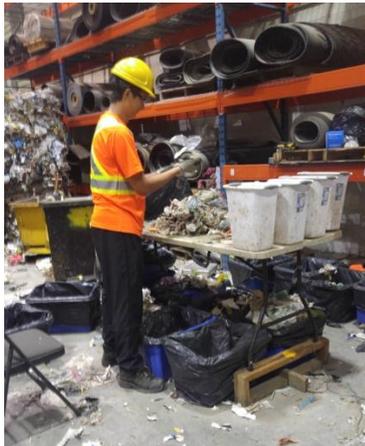


Photo 2. Waste sorting set up

Table 2.1 Sorting Categories

Category
Recyclable Fiber
Non-Recyclable Fiber
Recyclable Plastic
Non-Recyclable Plastic
Recyclable Metals
Non-Recyclable Metals
Glass
Organics
Sanitary & Pet Waste
C&D
Ceramics
Tires & Rubber
Textiles
MHSW
WEEE
Bulky Items
Other
Fines

3.0 Results and Discussion

3.1 Curbside “Lights” Fraction

Five sub-samples of curbside “lights” fraction weighing a total of 45.12 kg were sorted (Photo 3). The overall results of the curbside “lights” fraction can be found in Table 3.1 in Appendix 1.

Figure 3.1 depicts the overall composition of the “lights”. It consisted largely of recyclable plastic, non-recyclable plastic, fines and organics.

The recyclable plastic was primarily grocery bags and recyclable film plastic. The non-recyclable plastic was primarily laminated plastic packaging and rigid plastic packaging. The fines were primarily small pieces of mostly paper and plastic (see Appendix 2 for definition). The organics were primarily soiled tissue and yard waste.

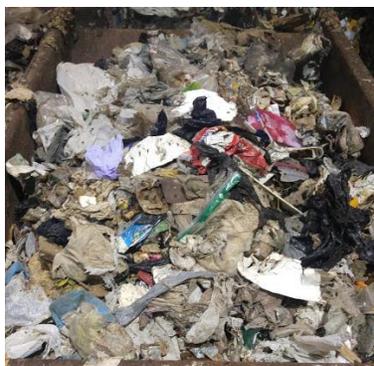
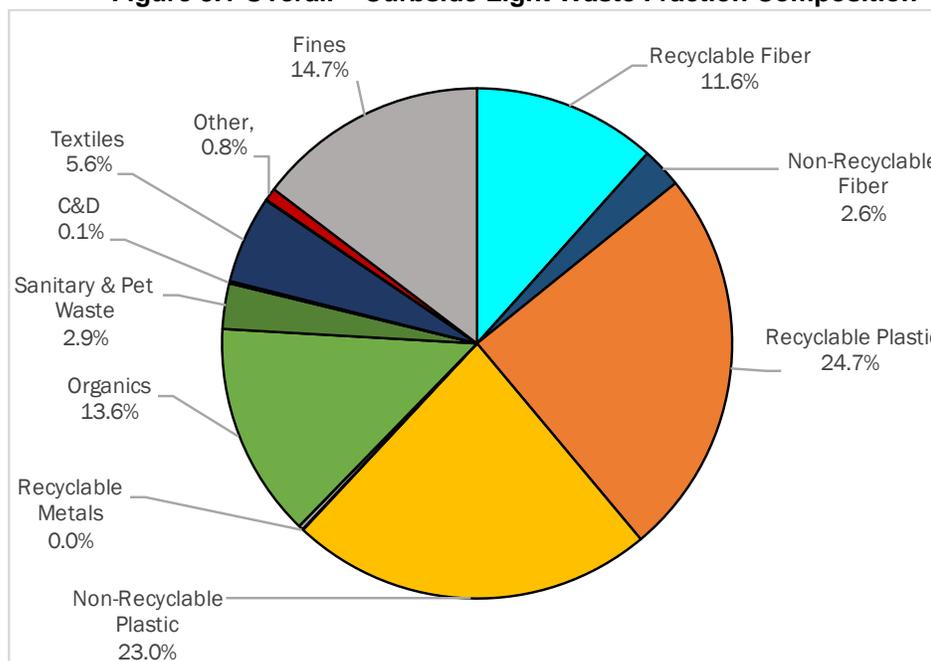


Photo 3. “Lights” curbside sample bin

Figure 3.1 Overall – Curbside Light Waste Fraction Composition



3.2 Curbside & Multi-Residential “Lights” Fraction

Three sub-samples of curbside & multi-residential “lights” fraction weighing a total of 30.62 kg was sorted (Photo 3). The overall results of the curbside & multi-residential “lights” fraction can be found in Table 3.2 in Appendix 1.

Figure 3.2 depicts the overall composition of the “lights”. It consisted largely of recyclable plastic, non-recyclable plastic and recyclable fiber.

The recyclable plastic was primarily grocery bags and recyclable film plastic. The non-recyclable plastic was primarily durable plastic product and rigid plastic packaging. The recyclable fiber was primarily mixed office paper and cardboard.



Photo 3. Curbside & Multi-Residential “Lights” organic waste

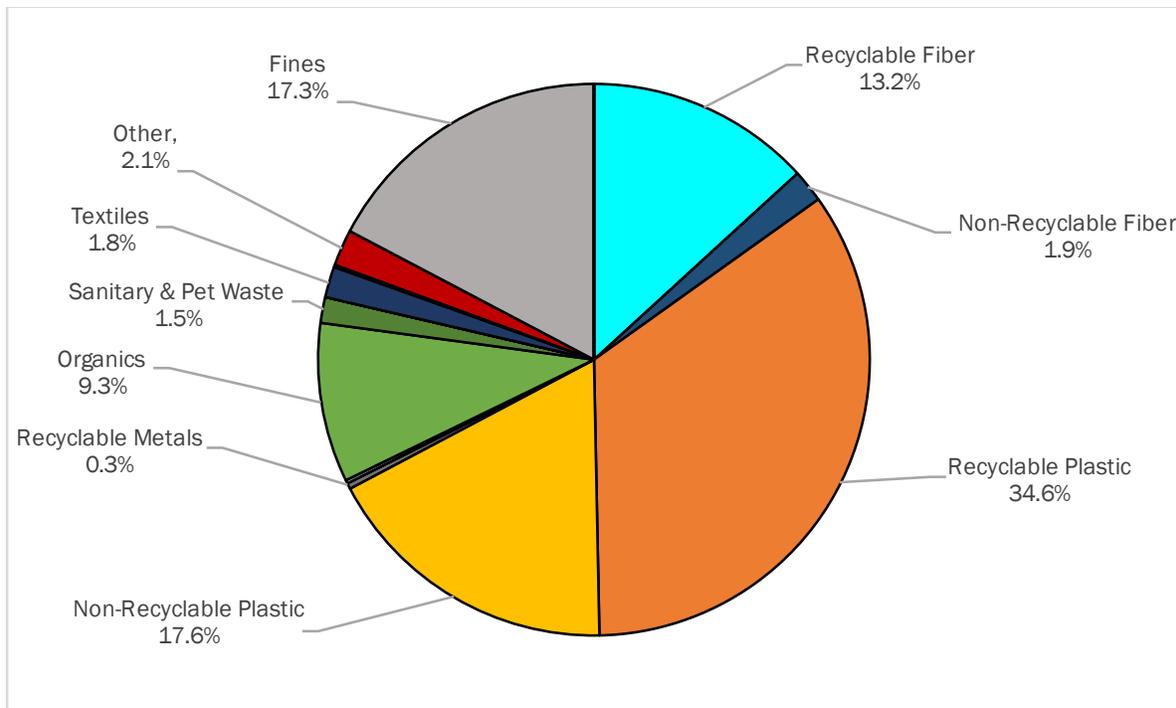


Figure 3.2 Overall Curbside & Multi-Residential Light Waste Fraction Composition

3.3 Curbside “Medium-Heavies” Fraction

Five curbside sub-samples of “medium-heavies” weighing a total of 73.16 kg were sorted (Photo 4). The overall results of the curbside “medium-heavies” fraction can be found in Table 3.3 in Appendix 1.

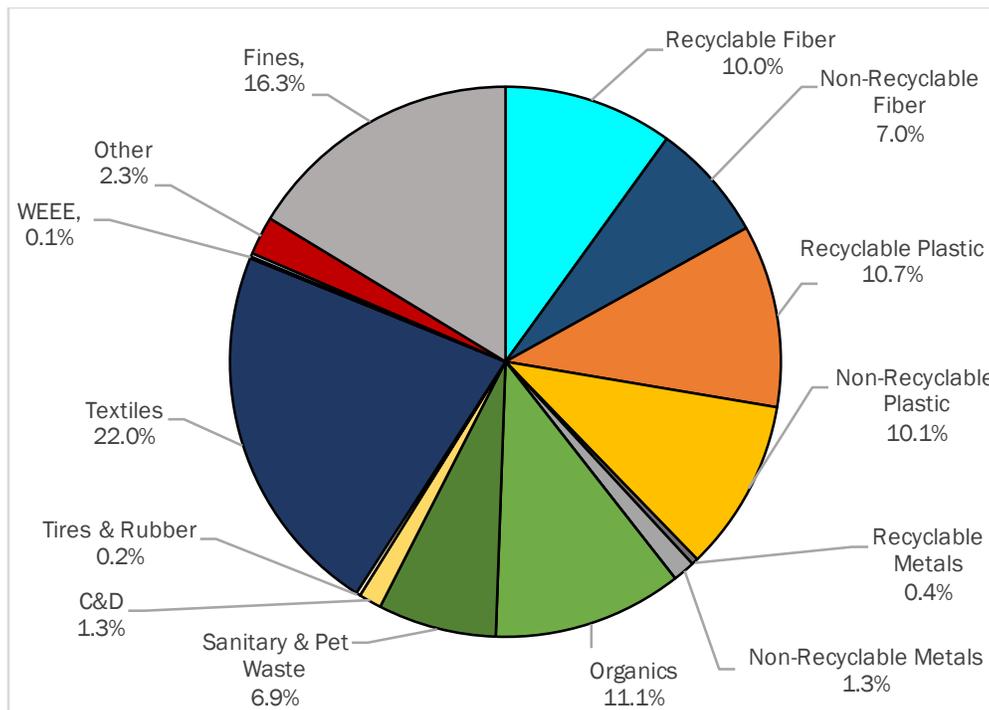
Figure 3.3 depicts the overall composition of the “medium-heavies”. It consisted largely of textiles, fines and organic waste.

The textiles were primarily clothing items. The fines consisted of unidentifiable materials due to the process of shredding waste (Appendix 2). The organic waste was primarily tissues and food waste.



Photo 4. “Medium-Heavies” Organic Waste

Figure 3.3 Overall Curbside Medium-Heavies Waste Fraction Composition



3.4 Curbside & Multi-Residential “Medium-Heavies” Fraction

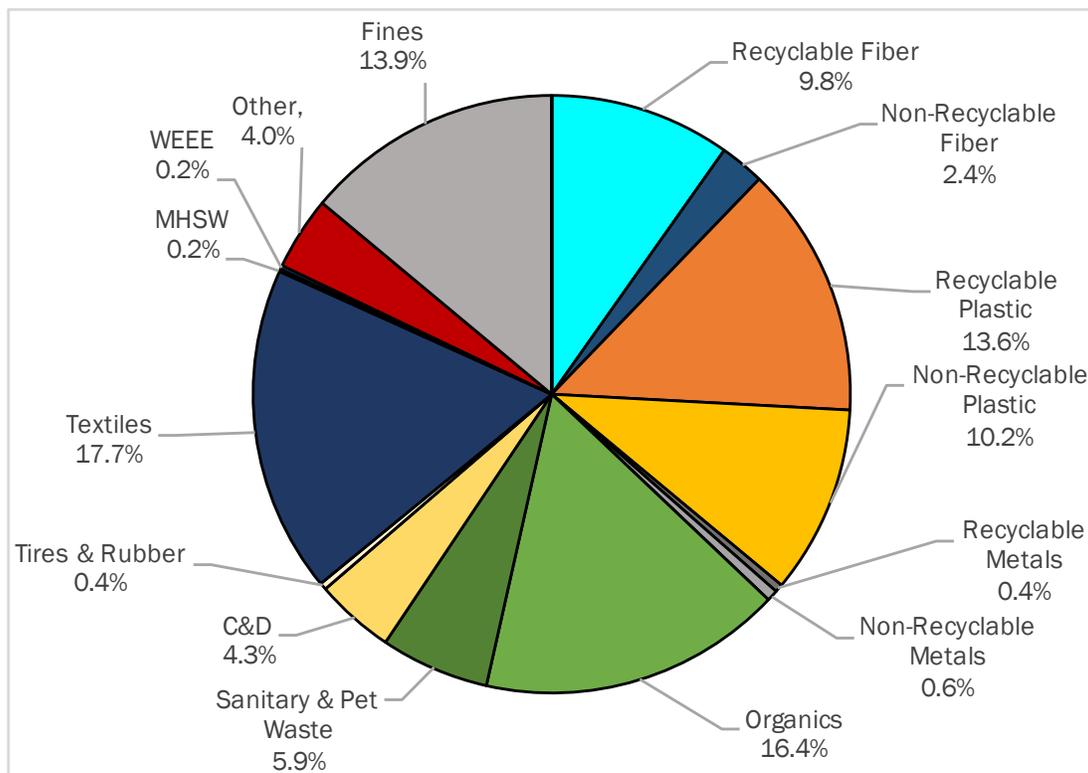
Four curbside & multi-residential sub-samples of “medium-heavies” weighing a total of 64.14 kg were sorted. The overall results of the “medium-heavies” fraction can be found in Table 3.4 in Appendix 1.

Figure 3.4 depicts the overall composition of the curbside & multi-residential “medium-heavies”. It consisted largely of textiles, organics, fines and recyclable plastic.



The textiles were primarily clothing items. The organic waste was primarily tissue toweling and food waste. The fines consisted of unidentifiable materials due to the process of shredding waste (see Appendix 2 for definition). The recyclable plastic was primarily rigid plastic packaging and film packaging.

Figure 3.4 Overall Curbside & Multi-Residential Medium-Heavies Waste Fraction Composition



3.5 Curbside “Heavies” Fraction

Four curbside sub-samples of curbside “heavies” fraction weighing a total of 69.26 kg were sorted (Photo 5). The overall results of the curbside “heavies” fraction can be found in Table 3.5 in Appendix 1.

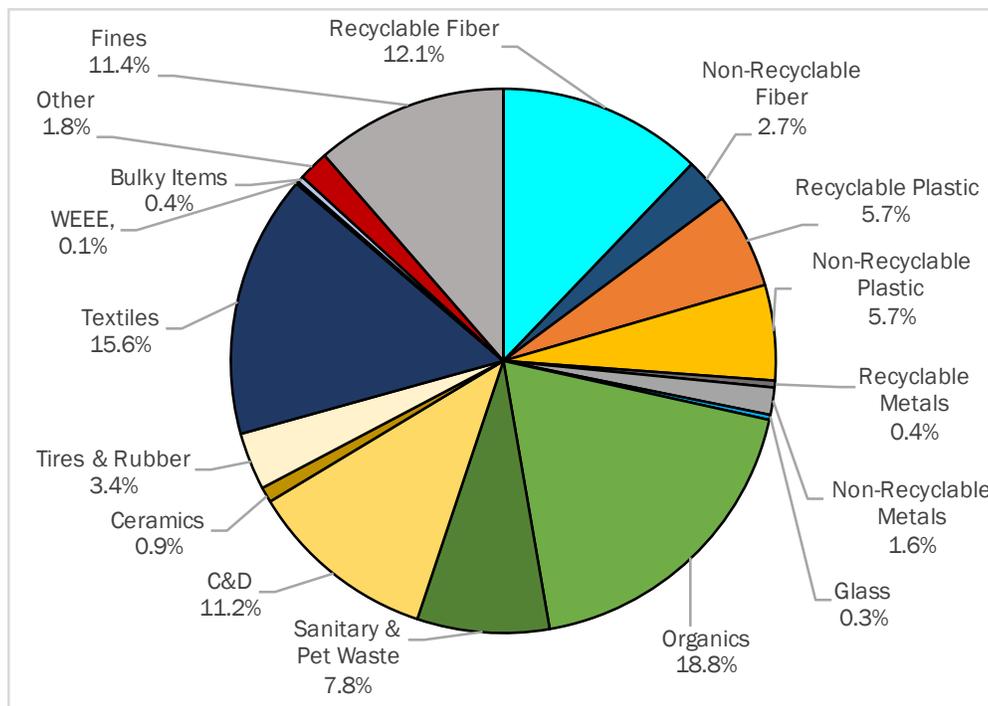
Figure 3.5 depicts the overall composition of the “heavies”. It consisted largely of organics, recyclable fiber, fines and C&D waste.

The organics consisted largely of tissue and unavoidable food waste (i.e. corn husks). The recyclable fiber consisted largely of cardboard and boxboard. The fines consisted of unidentifiable materials due to the process of shredding waste (Appendix 2). The C&D consisted largely of chunks of wood and brick.



Photo 5. Curbside “Heavies” Sample

Figure 3.5 Overall Curbside Heavy Waste Fraction Composition



3.6 Curbside & Multi-Residential “Heavies” Fraction

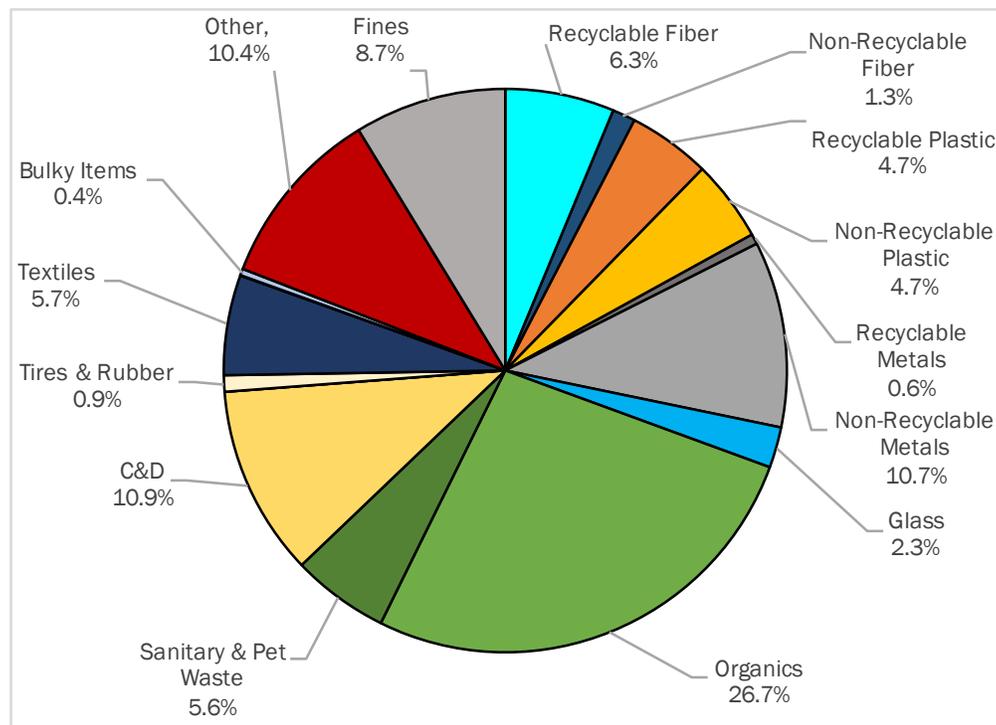
Four curbside & multi-residential sub-samples of the “heavies” fraction weighing a total of 85.92 kg were sorted. The overall results of the curbside & multi-residential “heavies” fraction can be found in Table 3.6 in Appendix 1.

Figure 3.6 depicts the overall composition of the “heavies”. It consisted of organics, C&D, non-recyclable metals and other waste.



The organics largely consisted of avoidable food waste. The C&D consisted largely of chunks of cement and tile. The non-recyclable metal consisted largely of other metal and other aluminum. The other waste consisted largely of various toys (e.g. baseballs, tennis balls) and bathtub mats.

Figure 3.6 Overall Curbside & Multi-Residential Heavy Waste Fraction Composition



3.7 Curbside Overall Data Analysis

Tables 3.1, 3.3 and 3.5 show that there is considerable variability (i.e., see min and max) with the three waste fractions in curbside samples.

Figure 3.7 shows the proportion of recyclable materials compared for the three waste fractions. It shows that recyclable waste varied per waste stream during this audit. Recyclable Fiber was found to be most prominent in “heavies”, followed by “medium-heavies” and “lights”. This is likely due to the soiled nature of the recyclable fiber. Recyclable Plastic was found to be most prominent in “lights”, followed by “medium-heavies” and “heavies”. This is likely due to the light weight of carry out bags (the most prominent recyclable plastic). Recyclable Metals were found to be most prominent in the “heavies” and “medium-heavies” waste fraction, which was primarily aluminum and steel cans.

Figure 3.7 Comparison of Recyclable Material in Waste Fractions

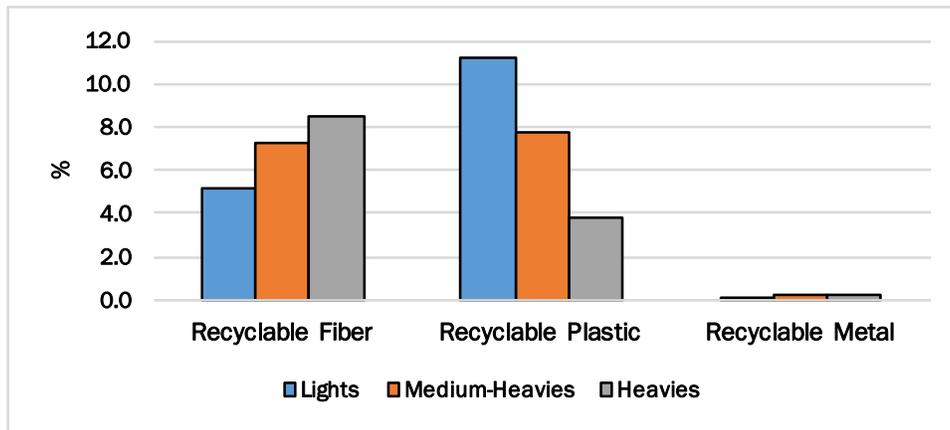


Figure 3.8 shows the proportion of non-recyclable materials compared for the three curbside waste fractions. It shows that non-recyclable fiber was primarily found in “medium-heavies”. Non-recyclable plastic is most prominent in “lights” and “medium-heavies”. Non-recyclable metals are most prominent in “heavies” and “medium-heavies”. Non-recyclable glass was most prominent in “heavies”. This is likely due to the round and heavy nature of the glass food containers and other glass products.

Figure 3.8 Comparison of Non-Recyclable Material in Waste Fractions

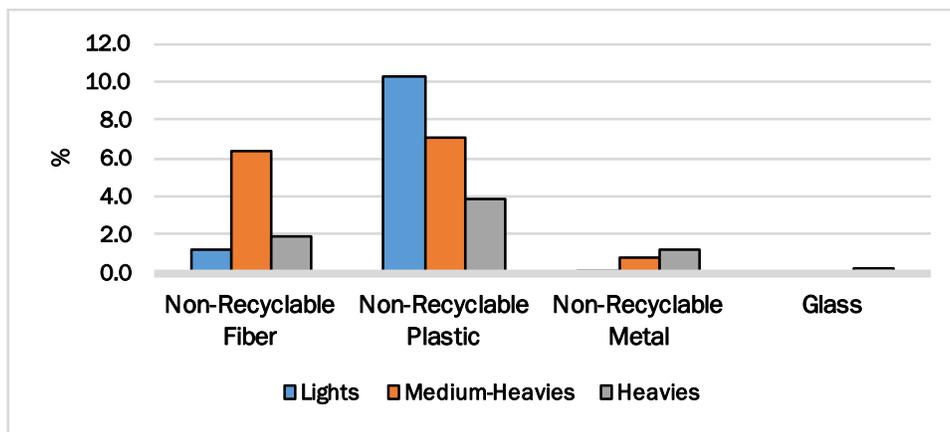


Figure 3.9 shows the proportion of residual materials compared for the three waste fractions. It shows that there is a considerable amount of textiles, which are most prominent in “medium-heavies” fraction.

Figure 3.9 Comparison of Residual Material in Waste Fractions

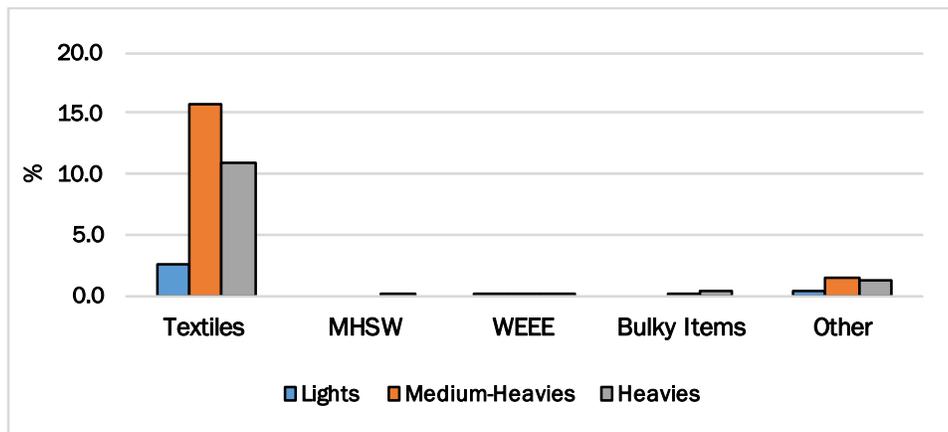


Figure 3.10 shows the proportion of organic materials compared for the three waste fractions. It shows that organic waste is more prominent in “heavies”. This is largely due to the roll-off (round organics enter the “heavies” roll-off bin). Sanitary & pet waste was found to be equally prominent in “medium-heavies” and “heavies”. This is largely due to the heavy nature of sanitary and pet waste.

Figure 3.10 Comparison of Organic Material in Waste Fractions

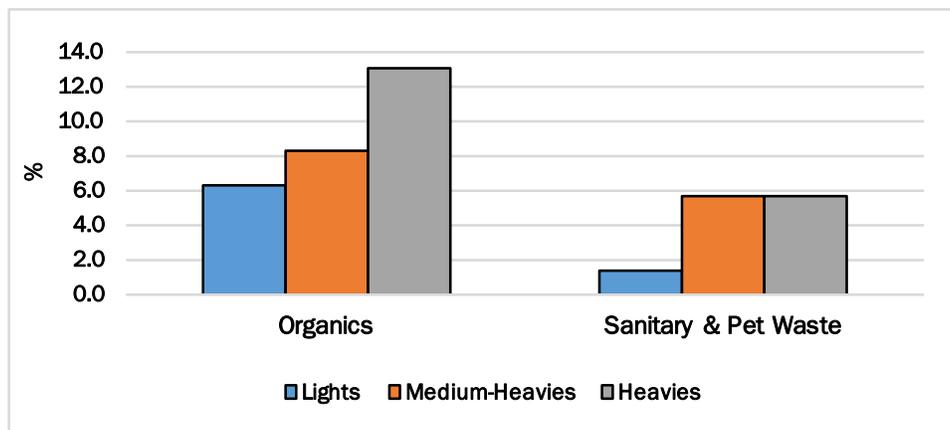


Figure 3.11 shows the proportion of construction materials compared for the three waste fractions. It shows that the majority of construction materials were found in the “heavies”, followed by “medium-heavies”. There was no ceramic or tires & rubber in “lights”.

Figure 3.11 Comparison of Construction Material in Waste Fractions

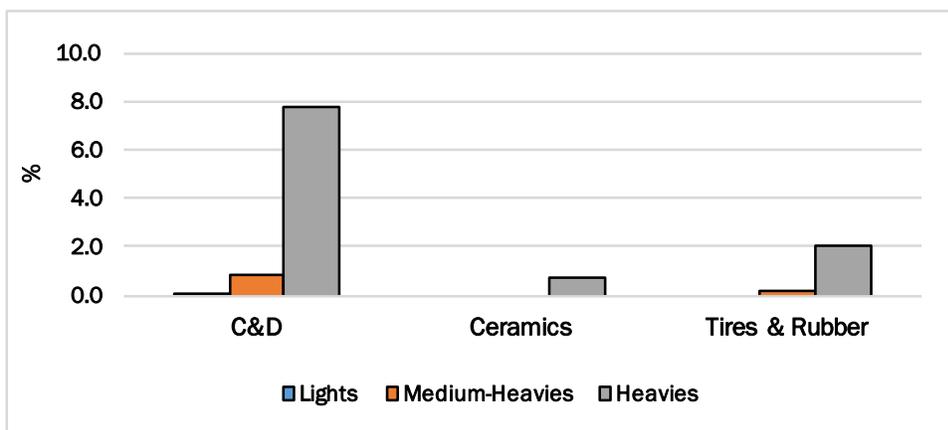
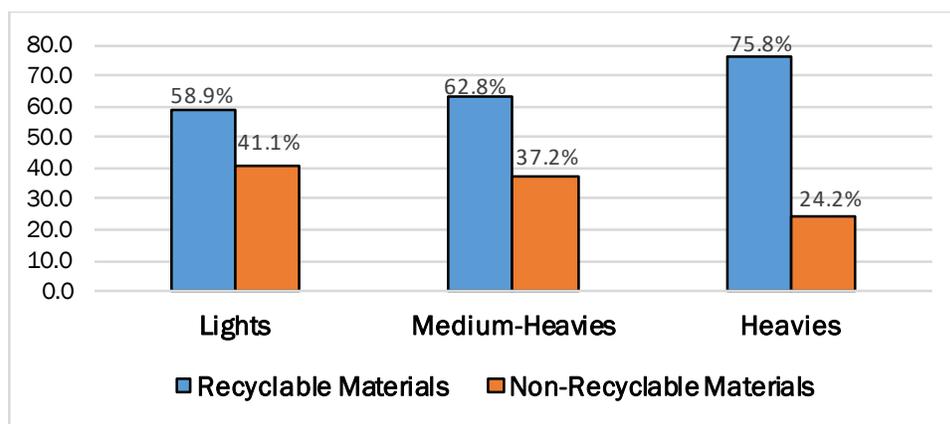


Figure 3.12 shows the overall proportion of recyclable and non-recyclable materials compared for the three waste fractions. It shows that as wastes became heavier, there was an increase in recyclable material and a decrease in non-recyclable materials, with all fractions representing over 55% divertible materials.

Figure 3.12 Overall Comparison of Recyclable Vs. Non-Recyclable Materials in Waste Fractions



3.4 Curbside & Multi-Residential Overall Data Analysis

Tables 3.2, 3.4 and 3.6 show that there is considerable variability (i.e., see min and max) with the three waste fractions in curbside & multi-residential samples.

Figure 3.13 shows the proportion of recyclable materials compared for the three waste fractions. It shows that recyclable waste varied per waste stream during this audit depending on the waste fraction. Recyclable fiber and recyclable plastic was most prominent in “medium-heavies”. The recyclable metal was most prominent in “heavies”.



Figure 3.13 Comparison of Recyclable Material in Waste Fractions

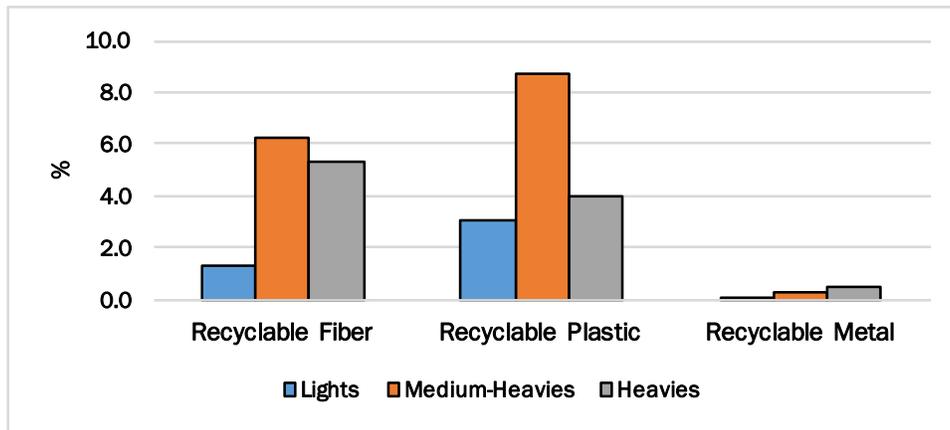


Figure 3.14 shows the proportion of non-recyclable materials compared for the three waste fractions. It shows that non-recyclable fiber and non-recyclable plastic were most prominent for “medium-heavies”, followed by “heavies”. Non-recyclable metal and glass waste proportions were most prominent for “heavies”, with no glass or metal found in the “lights” fraction.

Figure 3.14 Comparison of Non-Recyclable Material in Waste Fractions

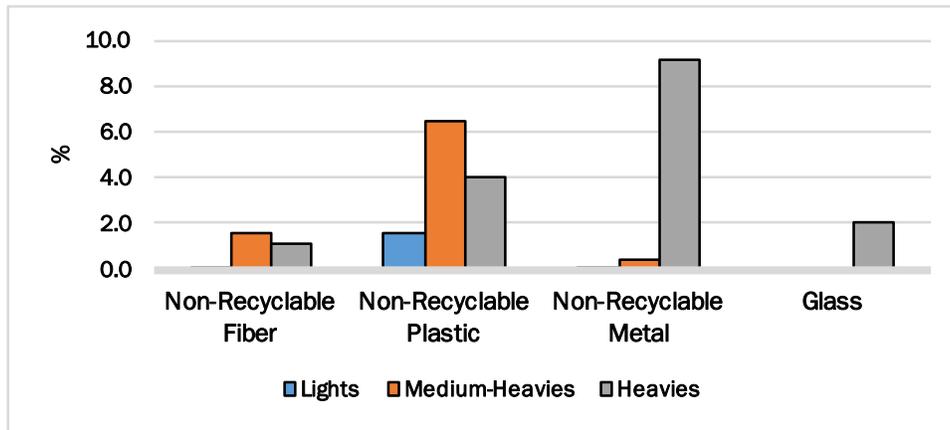


Figure 3.15 shows the proportion of residual materials compared for the three waste fractions. It shows that there is a considerable amount of textiles, which are most prominent in “medium-heavies” fraction. The amount of Other residuals increases with waste fraction.

Figure 3.15 Comparison of Residual Material in Waste Fractions

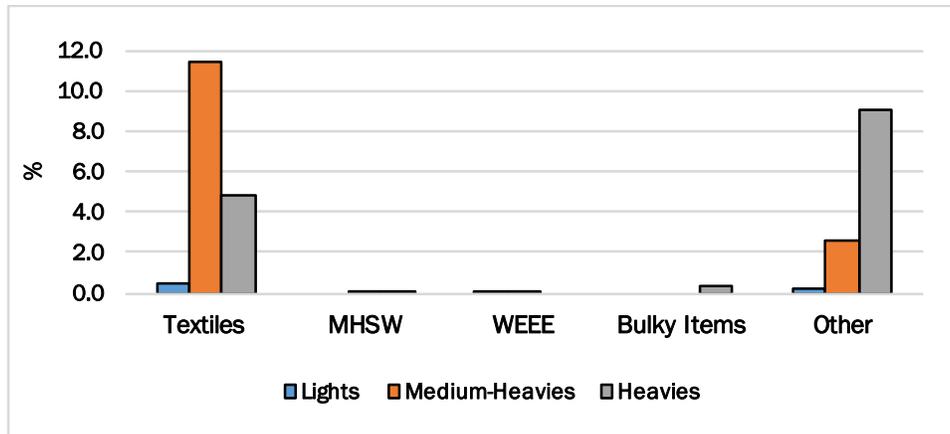


Figure 3.16 shows the proportion of organic materials compared for the two waste fractions. It shows that organic waste and sanitary & pet waste proportions increased as wastes became heavier.

Figure 3.16 Comparison of Organic Material in Waste Fractions

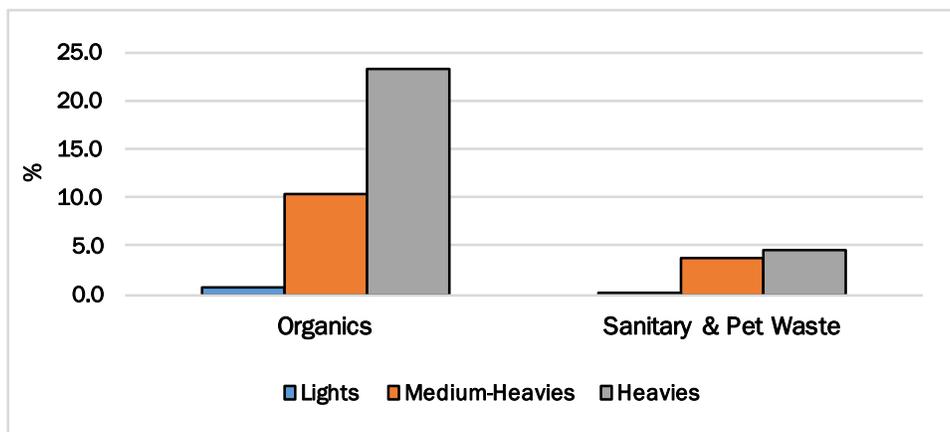


Figure 3.17 shows the proportion of construction materials compared for the two waste fractions. It shows that C&D and tires & rubber are most prominent in the “medium-heavies” waste stream. No ceramic was found in curbside & multi-residential waste.

Figure 3.17 Comparison of Construction Material in Waste Fractions

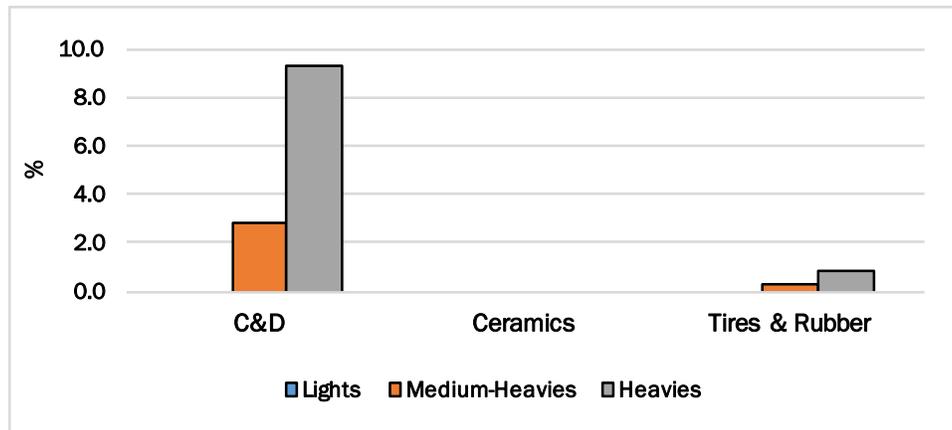
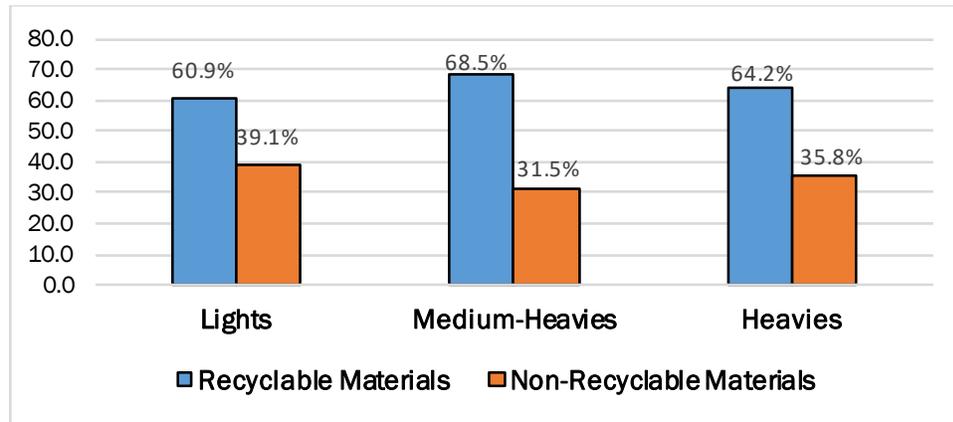


Figure 3.18 shows the overall proportion of recyclable and non-recyclable materials compared for the two waste fractions. It shows that the highest amount of recyclable materials occurred in the medium-heavies fraction. However, all fractions had more than 60% of potentially recyclable materials.

Figure 3.18 Overall Comparison of Recyclable Vs. Non-Recyclable Materials in Waste Fractions



4.0 Summary

2cg staff collected and sorted 24 samples weighing a total of 368.22 kg from three waste fractions:

- All three waste fraction samples were collected directly off the line using an approximate 1-3 cubic metre bin by Canada Fibers staff, with sub-samples extracted by 2cg staff;
- The curbside “lights” sub-samples were primarily composed of: recyclable plastic (24.7%), non-recyclable plastic (23.0%) and organics (13.6%);
- The curbside & multi-residential “lights” sub-samples were primarily composed of: recyclable plastic (34.6%), non-recyclable plastic (17.6%), and fines (17.3%);
- The curbside “medium-heavies” sub-samples were primarily composed of: textiles (22.0%), fines (16.3%), and recyclable plastic (10.7%);
- The curbside & multi-residential “medium-heavies” sub-samples were primarily composed of: textiles (17.7%), organics (16.4%) and recyclable plastic (13.6%);
- The curbside “heavies” sub-samples were primarily composed of: organics (18.8%), textiles (15.6%) and recyclable fiber (12.1%);
- The curbside & multi-residential “heavies” sub-samples were primarily composed of: organics (26.7%), C&D (10.9%), other waste (10.4%) and non-recyclable metals (10.7%);
- The curbside “lights” fraction contained approximately 59% divertible material, the “medium- heavies” contained approximately 63% divertible material, and the “heavies” fraction contained approximately 76% divertible material.
- The curbside & multi-residential “lights” contained approximately 61% divertible material, the “medium- heavies” contained approximately 69% divertible material, and the “heavies” fraction contained approximately 64% divertible material

Appendix 1

Table 3.1- Curbside Light Fraction Sample Sort Results

Lights Fractions Sorting	Sample Number									Average	Min	Max
	%											
Category	1	2	3	4	5	6	7	8	9			
Recyclable Fiber	14.3	6.7	14.6	12.7	9.8					11.6	6.7	14.6
Non-Recyclable Fiber	1.5	1.9	1.2	2.6	5.6					2.6	1.2	5.6
Recyclable Plastic	18.4	22.4	28.5	27.9	26.5					24.7	18.4	28.5
Non-Recyclable Plastic	39.5	17.8	16.3	20.0	21.6					23.0	16.3	39.5
Recyclable Metals	0.0	0.0	0.2	0.0	0.0					0.0	0.0	0.2
Non-Recyclable Metals	0.2	0.4	0.0	0.2	0.6					0.3	0.0	0.6
Glass	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0
Organics	9.4	24.5	10.0	14.7	9.4					13.6	9.4	24.5
Sanitary & Pet Waste	1.9	3.3	2.4	5.3	1.4					2.9	1.4	5.3
C&D	0.0	0.0	0.7	0.0	0.0					0.1	0.0	0.7
Ceramics	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0
Tires & Rubber	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0
Textiles	6.1	8.4	0.2	1.1	12.0					5.6	0.2	12.0
MHSW	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0
WEEE	0.0	0.0	0.0	0.2	0.0					0.0	0.0	0.2
Bulky Items	0.0	0.0	0.0	0.0	0.0					0.0	0.0	0.0
Other	0.2	2.1	1.5	0.2	0.0					0.8	0.0	2.1
Fines	8.5	12.6	24.1	15.1	13.0					14.7	8.5	24.1
TOTAL	100.0	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	25.0	0.0	100.0

Table 3.2- Curbside & Multi-Residential “Lights” Sample Sort Results

Lights Fractions Sorting	Sample Number									Average	Min	Max
	%											
Category	1	2	3	4	5	6	7	8	9			
Recyclable Fiber	14.2	14.5	10.9							13.2	10.9	14.5
Non-Recyclable Fiber	1.0	3.0	1.7							1.9	1.0	3.0
Recyclable Plastic	31.8	38.7	33.1							34.6	31.8	38.7
Non-Recyclable Plastic	16.1	19.4	17.2							17.6	16.1	19.4
Recyclable Metals	0.6	0.0	0.4							0.3	0.0	0.6
Non-Recyclable Metals	0.4	0.2	0.0							0.2	0.0	0.4
Glass	0.0	0.0	0.0							0.0	0.0	0.0
Organics	8.8	8.6	10.7							9.3	8.6	10.7
Sanitary & Pet Waste	1.5	0.4	2.7							1.5	0.4	2.7
C&D	0.0	0.0	0.0							0.0	0.0	0.0
Ceramics	0.0	0.0	0.0							0.0	0.0	0.0
Tires & Rubber	0.0	0.0	0.0							0.0	0.0	0.0
Textiles	5.2	0.0	0.2							1.8	0.0	5.2
MHSW	0.0	0.0	0.0							0.0	0.0	0.0
WEEE	0.2	0.0	0.2							0.1	0.0	0.2
Bulky Items	0.0	0.0	0.0							0.0	0.0	0.0
Other	2.7	0.6	3.1							2.1	0.6	3.1
Fines	17.4	14.7	19.8							17.3	14.7	19.8
TOTAL	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	100.0

Table 3.3- Curbside “Medium-Heavies” Sample Sort Results

"Medium-Heavies" Fractions Sorting	%									Average	Min	Max
	1	2	3	4	5	6	7	8	9			
Category												
Recyclable Fiber	7.7	10.9	8.0	13.2						10.0	7.7	13.2
Non-Recyclable Fiber	21.9	2.1	1.7	2.1						7.0	1.7	21.9
Recyclable Plastic	5.7	18.3	8.9	10.0						10.7	5.7	18.3
Non-Recyclable Plastic	6.7	9.9	16.7	7.0						10.1	6.7	16.7
Recyclable Metals	0.4	0.7	0.0	0.4						0.4	0.0	0.7
Non-Recyclable Metals	1.6	1.0	1.4	1.1						1.3	1.0	1.6
Glass	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Organics	12.9	10.6	10.8	10.2						11.1	10.2	12.9
Sanitary & Pet Waste	7.5	7.1	4.9	8.3						6.9	4.9	8.3
C&D	1.3	1.7	0.6	1.9						1.3	0.6	1.9
Ceramics	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Tires & Rubber	0.0	0.0	0.8	0.1						0.2	0.0	0.8
Textiles	14.6	26.7	26.3	20.6						22.0	14.6	26.7
MHSW	0.0	0.0	0.0	0.0						0.0	0.0	0.0
WEEE	0.4	0.0	0.0	0.0						0.1	0.0	0.4
Bulky Items	0.0	0.0	0.0	0.9						0.2	0.0	0.9
Other	2.8	0.4	2.5	3.3						2.3	0.4	3.3
Fines	16.5	10.5	17.3	20.9						16.3	10.5	20.9
TOTAL	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	100.0

Table 3.4- Curbside & Multi-Residential “Medium-Heavies” Sample Sort Results

"Medium-Heavies" Fractions Sorting	Sample Number									Average	Min	Max
	1	2	3	4	5	6	7	8	9			
Category												
Recyclable Fiber	8.9	11.3	10.2	8.8						9.8	8.8	11.3
Non-Recyclable Fiber	1.2	2.3	2.1	4.0						2.4	1.2	4.0
Recyclable Plastic	11.8	13.0	16.2	13.5						13.6	11.8	16.2
Non-Recyclable Plastic	8.9	9.7	14.1	8.1						10.2	8.1	14.1
Recyclable Metals	0.1	0.7	0.4	0.5						0.4	0.1	0.7
Non-Recyclable Metals	0.1	0.0	1.3	1.0						0.6	0.0	1.3
Glass	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Organics	17.5	10.8	22.9	14.5						16.4	10.8	22.9
Sanitary & Pet Waste	5.6	5.7	7.4	4.9						5.9	4.9	7.4
C&D	2.8	5.3	2.3	6.7						4.3	2.3	6.7
Ceramics	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Tires & Rubber	1.1	0.0	0.4	0.0						0.4	0.0	1.1
Textiles	25.5	10.1	15.4	19.7						17.7	10.1	25.5
MHSW	0.0	0.4	0.1	0.1						0.2	0.0	0.4
WEEE	0.5	0.0	0.1	0.1						0.2	0.0	0.5
Bulky Items	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Other	1.9	6.7	0.5	6.7						4.0	0.5	6.7
Fines	14.0	23.9	6.6	11.3						13.9	6.6	23.9
TOTAL	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	100.0

Table 3.5- Curbside “Heavies” Sample Sort Results

"Heavies" Fractions Sorting	Sample Number								Average	Min	Max
	%										
Category	1	2	3	4	5	6	7	8			
Recyclable Fiber	11.9	14.6	14.3	7.7					12.1	7.7	14.6
Non-Recyclable Fiber	3.7	1.8	0.5	4.7					2.7	0.5	4.7
Recyclable Plastic	4.0	4.7	6.8	7.1					5.7	4.0	7.1
Non-Recyclable Plastic	6.0	3.5	6.6	6.6					5.7	3.5	6.6
Recyclable Metals	0.3	0.0	0.2	1.1					0.4	0.0	1.1
Non-Recyclable Metals	0.1	3.6	2.7	0.0					1.6	0.0	3.6
Glass	0.4	0.1	0.0	0.7					0.3	0.0	0.7
Organics	19.1	18.0	15.9	22.1					18.8	15.9	22.1
Sanitary & Pet Waste	7.9	12.1	11.4	0.0					7.8	0.0	12.1
C&D	9.3	13.2	12.0	10.4					11.2	9.3	13.2
Ceramics	2.3	0.9	0.5	0.0					0.9	0.0	2.3
Tires & Rubber	0.4	1.7	0.0	11.5					3.4	0.0	11.5
Textiles	17.6	13.4	19.3	12.1					15.6	12.1	19.3
MHSW	0.0	0.0	0.1	0.0					0.0	0.0	0.1
WEEE	0.5	0.0	0.0	0.0					0.1	0.0	0.5
Bulky Items	0.0	0.0	1.5	0.0					0.4	0.0	1.5
Other	2.5	1.2	0.6	2.9					1.8	0.6	2.9
Fines	13.9	11.1	7.5	13.0					11.4	7.5	13.9
TOTAL	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	20.0	0.0	100.0

Table 3.6- Curbside & Multi-Residential “Heavies” Sample Sort Results

"Heavies" Fractions Sorting	Sample Number									Average	Min	Max
	%											
Category	1	2	3	4	5	6	7	8	9			
Recyclable Fiber	0.0	0.0	11.4	13.7						6.3	0.0	13.7
Non-Recyclable Fiber	0.0	0.0	3.0	2.2						1.3	0.0	3.0
Recyclable Plastic	0.0	1.8	8.8	8.5						4.7	0.0	8.8
Non-Recyclable Plastic	2.4	4.3	5.3	6.6						4.7	2.4	6.6
Recyclable Metals	0.0	0.0	1.6	0.7						0.6	0.0	1.6
Non-Recyclable Metals	29.1	8.8	3.2	1.6						10.7	1.6	29.1
Glass	4.2	4.2	0.0	1.0						2.3	0.0	4.2
Organics	20.6	47.7	15.7	22.9						26.7	15.7	47.7
Sanitary & Pet Waste	0.0	0.0	13.7	8.6						5.6	0.0	13.7
C&D	21.4	5.8	9.7	6.9						10.9	5.8	21.4
Ceramics	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Tires & Rubber	0.7	3.1	0.0	0.0						0.9	0.0	3.1
Textiles	0.0	0.0	13.1	9.9						5.7	0.0	13.1
MHSW	0.0	0.0	0.1	0.0						0.0	0.0	0.1
WEEE	0.0	0.0	0.0	0.0						0.0	0.0	0.0
Bulky Items	0.0	0.9	0.0	0.6						0.4	0.0	0.9
Other	17.7	19.4	2.5	2.0						10.4	2.0	19.4
Fines	4.0	4.1	11.9	14.9						8.7	4.0	14.9
TOTAL	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	100.0

Appendix 2

“Audit Fines” Category Visual Analysis

For the purpose of this particular waste audit, the sorting category of “audit fines” is used to describe material that is typically less than 1.0cm in size and impossible to sort into other waste categories because they are wet and/or soiled. Typically, the most prominent source of “audit fines” in all waste fractions are miniscule pieces of plastic, metal, textile and fiber that is combined and saturated with shredded organic waste and pet & sanitary waste to the point of being indistinguishable from one another. The photo below demonstrates the saturated nature, size and composition of typical fines found in all waste streams. The condition of this material does not vary as waste fractions get heavier.

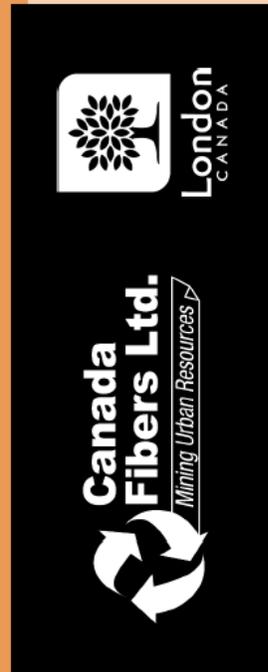


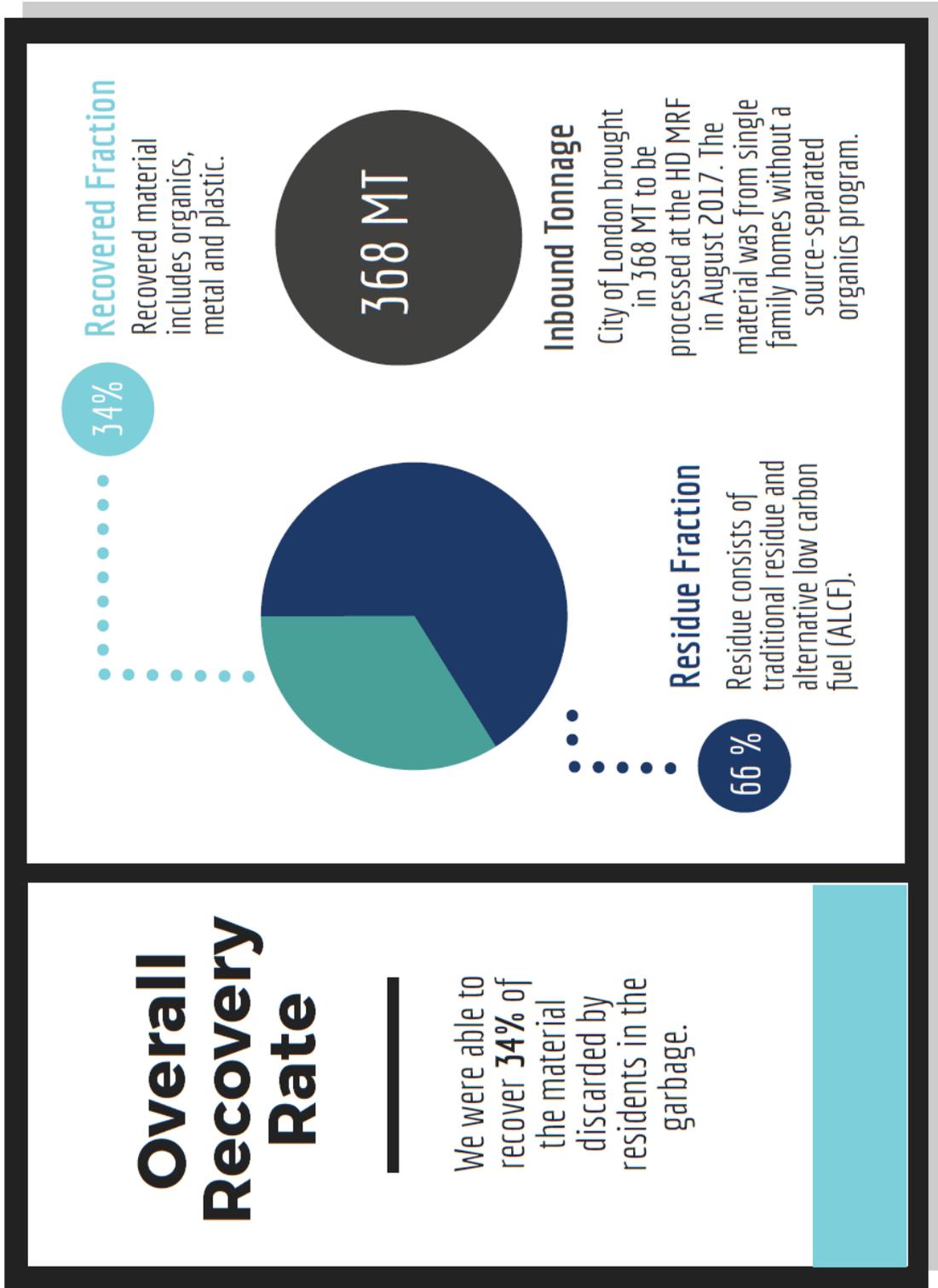
Photo 7. “Fines” Category

HIGH DIVERSION MRF PILOT RESULTS

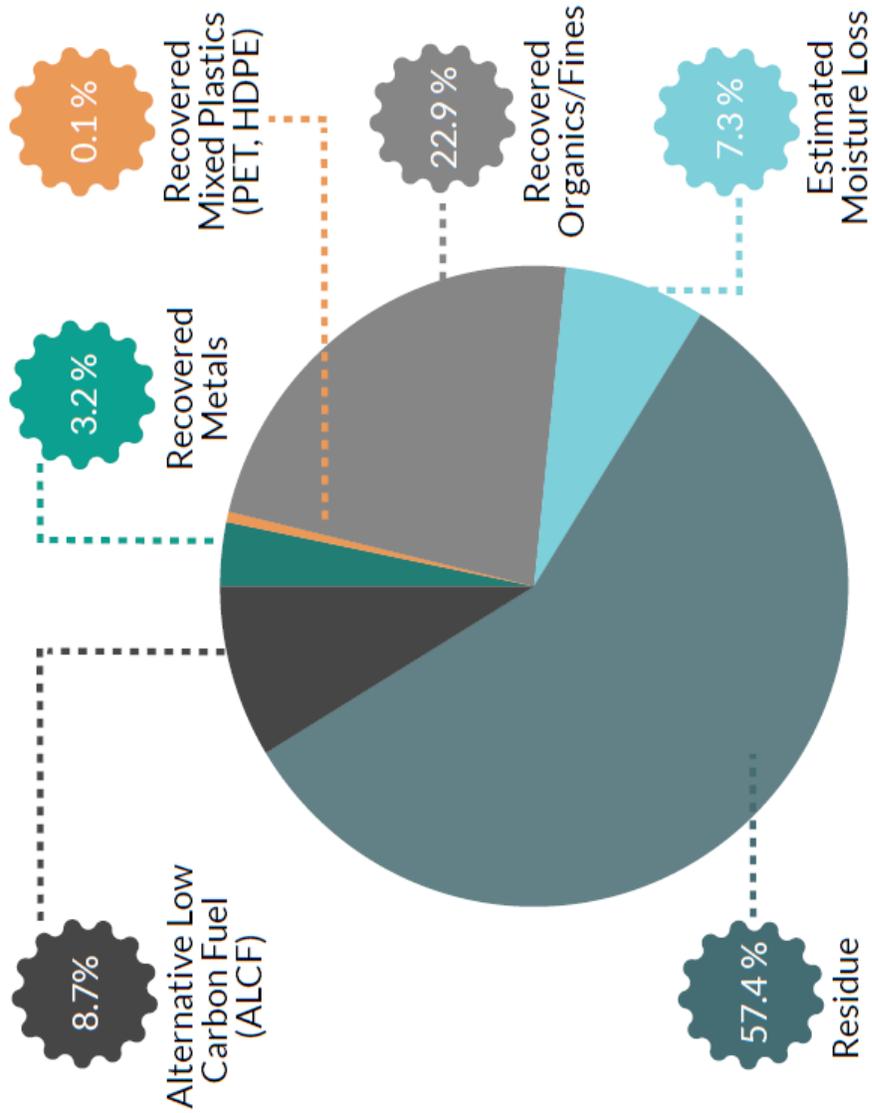
August 2017

Preliminary results from pilot to assess viability of recovering resources from City of London's mixed solid waste stream.





BREAKOUT OF RECOVERED & RESIDUE FRACTIONS



This page has intentionally been left blank.

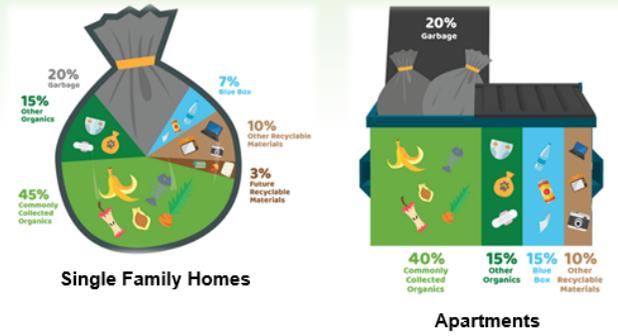
Presentation to Civic Works Committee

July 17, 2018

Environmental & Engineering Services

60% Waste Diversion Action Plan

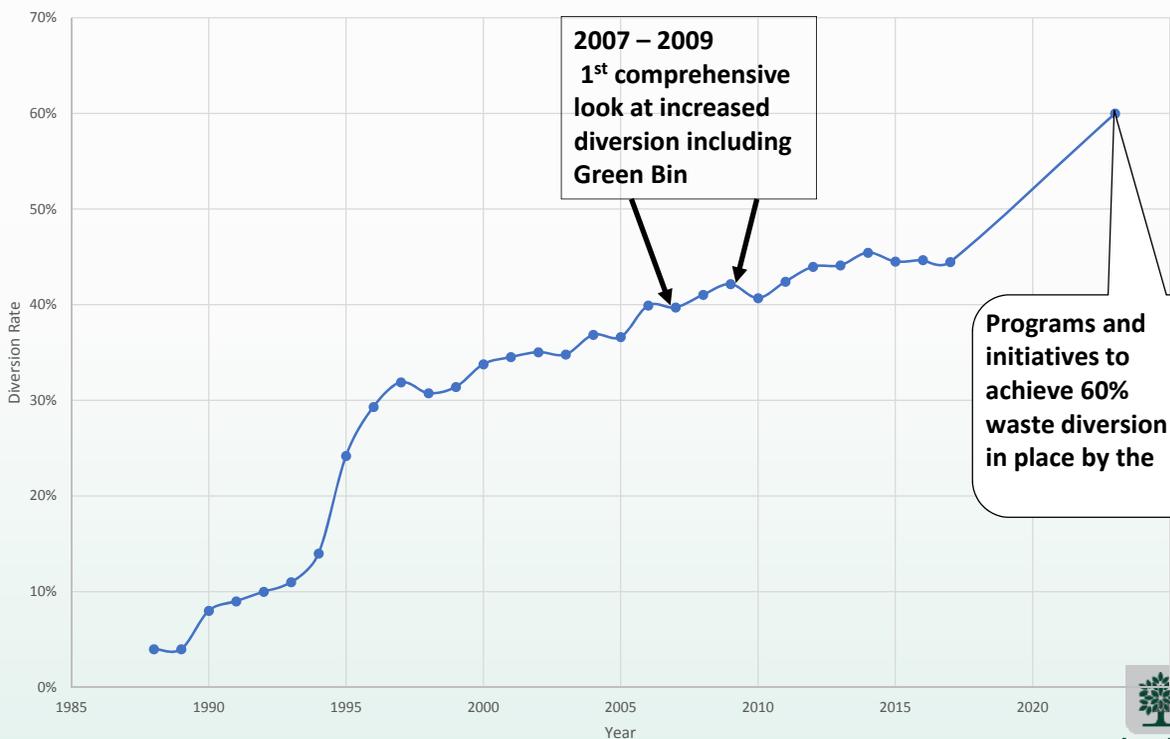
What's in the garbage?



Waste Management Working Group: July 13, 2018
 Civic Works Committee: July 17, 2018
 Municipal Council: July 24, 2018
 Community Engagement: July 25 – September 27, 2018



The Road to 60% Diversion





Council Direction(s)

October 30, 2017 Council direction:

“The W12A Landfill expansion be sized assuming the residential waste diversion rate is 60% by 2022 noting this does not prevent increasing London’s residential waste diversion rate above 60% between 2022 and 2050.”

July 13, 2018 Waste Management Working Group:

*The action plan to achieve 60% waste diversion by 2022
BE SUPPORTED IN PRINCIPLE; and,*

*The release of the report for review and comment by the
general public and other stakeholders BE SUPPORTED . .*



Council Direction(s)

Strategic Plan for the City of London (2015-2019):

Increase efforts on more resource recovery, long-term disposal capacity, and reducing community impacts of waste management.

The London Plan (December 28, 2016):

***Direction #4** Become one of the greenest cities in
Canada*

#12 Minimize waste generation, maximize resource recovery, and responsibly dispose of residual waste.





Provincial Direction(s)



Many Targets (“must”)

- 70% reduction/recovery of food and organic waste from SF homes by 2025
- 50% reduction/recovery of food and organic waste generated at the building by 2025

60% waste diversion goal is a key London commitment as part of the Environmental Assessment for the W12A Landfill expansion

To mark our progress and keep on track, we have set three interim goals:



30%

diversion rate by 2020



50%

diversion rate by 2030



80%

diversion rate by 2050



How much waste and resources?

Single Family

129,900 tonnes
50% diverted



Multi-residential

29,400 tonnes
18% diverted



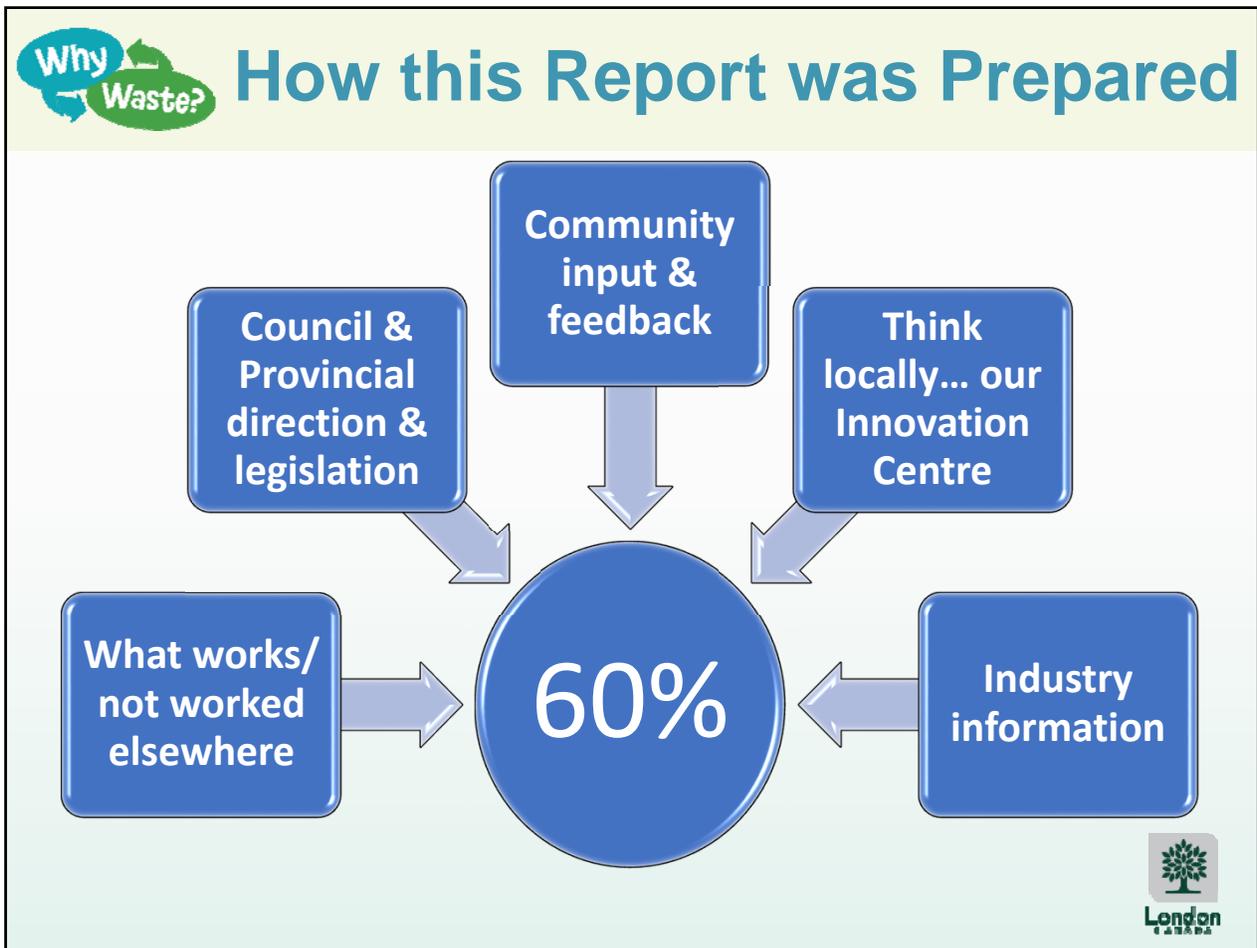
Industrial, Commercial & Institutional

~ 170,000 tonnes
~ 20% diverted

Construction, Renovation & Demolition

~ 120,000 tonnes
~ 50% diverted







Composition – *Did You Know!!*

Top 5 Diversion Opportunities	Estimated tonnes	% of Waste	Kg/hhld/year
1. Avoidable food waste	19,300	23%	107
2. Other organics	12,300	15%	68
3. Unavoidable food waste	10,100	12%	56
4. Pet waste	8,500	10%	47
5. Items for Blue Box/Cart	8,300	10%	46
Total	58,500	70%	324



Blue Box – Blue Carts

Why is this important?	<ul style="list-style-type: none"> • Provincial law - shifting to EPR is key • Industry will be funding
How many actions?	<ul style="list-style-type: none"> • None; Industry will be responsible • Council/City staff to continue to push
How much will it divert?	<ul style="list-style-type: none"> • 1% to 3% • 1,600 to 4,800 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • SAVINGS estimated at \$1.5 to \$1.8 million by 2022+ • SAVINGS \$8.00 to \$10.00 per year



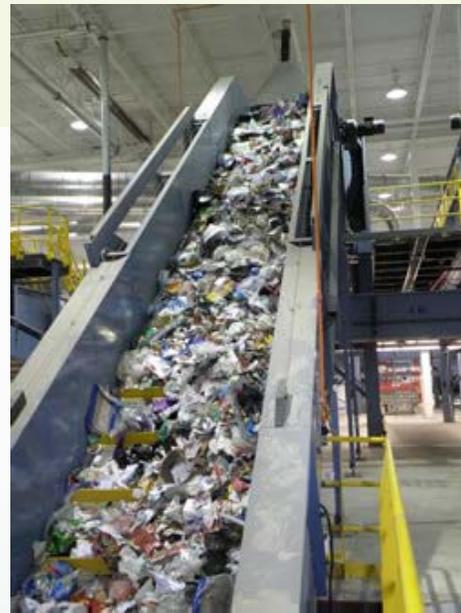
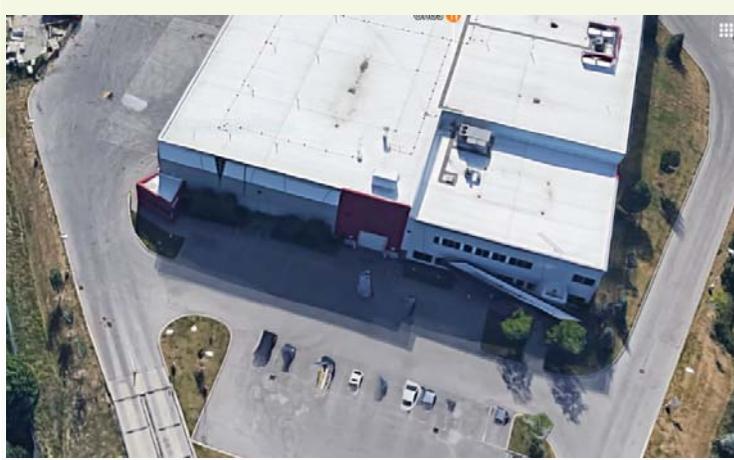
New (or Expanded) Recycling

Why is this important?	<ul style="list-style-type: none"> • Items are easy to identify/describe • Identified in provincial direction
How many actions?	<ul style="list-style-type: none"> • 7; some pilot projects • Support local jobs; potential for more • New business opportunities
How much will it divert?	<ul style="list-style-type: none"> • 0.4% to 0.8% • 640 to 1,280 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$2.00 to \$3.00 per year • Likely \$2.50



Curbside Organics

Why is this important?	<ul style="list-style-type: none"> • Largest portion of garbage (up to 60%) • Proven programs (that have improved) • Legislated
How many actions?	<ul style="list-style-type: none"> • 2 • Weekly Green Bin, recycling • Biweekly, same day garbage pickup
How much will it divert?	<ul style="list-style-type: none"> • 8% to 12% • 13,000 to 20,000 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$21.75 to \$30.50 per year • Likely \$28 (curbside home only \$40)



Mixed Waste Processing and Mechanical/Biological Treatment (MBT)



FOCUS - Green Bin vs Mixed Waste Processing

MWP Advantages

Environmental

- 25% to 80% more organics captured
- 25% to 80% more GHG reduction

Social

- More convenience
- No “Yuk” factor

MWP Disadvantages

Financial (Curbside Homes)

- Costs \$70 to \$115/hhld compared to \$30 to \$45/hhld for Green Bin

Technical

- Rules are evolving
- Uncertainty for product(s) quality



 <h2>Multi-res Organics</h2>	
Why is this important?	<ul style="list-style-type: none"> • Largest portion of the waste stream • Legislated
How many actions?	<ul style="list-style-type: none"> • 1 • Pilot project (15%) – mixed waste processing and composting/digestion • Follow progress of other communities
How much will it divert?	<ul style="list-style-type: none"> • 0.5% to 0.7% • 800 to 1,120 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$2.25 to \$4.00 per year • Likely \$2.75 (Multi-res unit only \$62.50)

 <h2>Other Organics Programs</h2>	
Why is this important?	<ul style="list-style-type: none"> • Food waste avoidance should be a priority • Lowers costs; community oriented
How many actions?	<ul style="list-style-type: none"> • 3 • Builds on 2 existing actions, BYC and community composting
How much will it divert?	<ul style="list-style-type: none"> • 0.3% to 0.6% • 480 to 960 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$1.50 to \$2.00 per year • Likely \$1.75



FOCUS – Food Waste Avoidance



Local Research (Western University), local Pilot Projects and experience in Canada, USA and Europe

- **Audits – confirmed up to 2/3rds avoidable food waste**
- **\$450 to \$600 per household (\$80 to \$100 million/year) in avoidable food**
- **10% reduced = \$8 to 10 million saved locally**





Reduction & Reuse

Why is this important?	<ul style="list-style-type: none"> • Lowers costs; community oriented • Council policies, directions and by-laws set stage
How many actions?	<ul style="list-style-type: none"> • 7, includes community investment • People are the driving force behind reduction and reuse
How much will it divert?	<ul style="list-style-type: none"> • 1% to 4% • 1,600 to 6,400 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$0.50 to \$2.00 per year • Likely \$1.50



Ipsos Survey June 2018

Parameters

- 301 respondents; Single family and a
- +/- 6.4%, 19 times out of 20



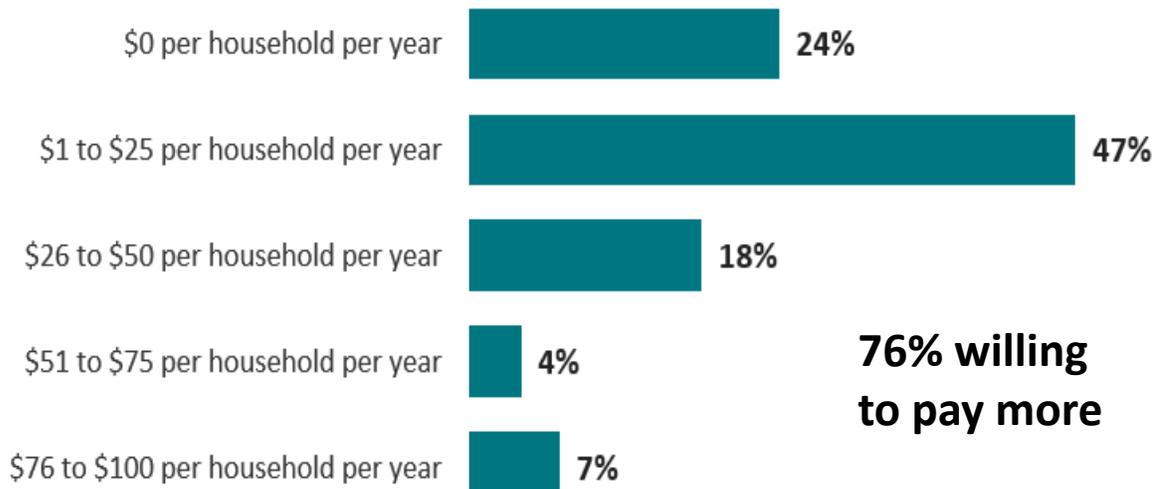
Findings

- waste diversion is somewhat or very important (93%) with 53% stating very important
- support food waste avoidance program (88%)
- support curbside/multi organics program (75%)
- prepared to deliver more to depots (65%)



Ipsos Survey June 2018

Willingness to pay more for increased waste diversion





Benefits

Environmental 

- increased waste diversion (33% more)
- reduced GHG gas emissions (equivalent of removing 4,200 to 6,800 cars)
- reduced landfill impacts (odour, traffic)
- better use of material and resources





Benefits

Social 

- creation of jobs (between 125 and 170, direct & indirect)
- satisfaction/pride of community

Financial 

- short-term landfill cost savings
- avoid long term waste export costs (\$5 to \$7 million/year)





Estimated Annual Costs

Program Category	Cost Range	Likely Cost
Blue Box/Cart Recycling	\$0	\$0
New Recycling Programs and Initiatives	\$350,000 - \$550,000	\$450,000 (\$2.50)
Curbside Organics Management Program	\$3,900,000 - \$5,500,000	\$5,000,000 (\$27.75)
Multi-Res Organics Pilot Program	\$400,000 - \$700,000	\$500,000 (\$2.75)
Other Organic Programs	\$250,000 - \$350,000	\$300,000 (\$1.75)
Waste Reduction, Reuse Initiatives and Policies	\$150,000 - \$350,000	\$250,000 (\$1.50)
Total	\$5,050,000 - \$7,450,000	\$6,500,000 (\$36.00)



Estimated Capital Costs

Program Category	Items	Estimated Cost
New Recycling Programs and Initiatives	• EnviroDepot Improvements	\$500,000 to \$2,700,000
Curbside Organics Management Program	• Green Bin Carts • Kitchen Catchers • Collection Vehicles	\$12,000,000
Other Organic Management Programs	• Community composting	\$100,000
Waste Reduction, Reuse Initiatives and Policies	• Reuse facilities	\$200,000
Total		\$12.5 - \$15 million

Why Waste? **Potential Funding Sources**

Source	Potential Amount	Possible Date	Who Controls	Level of Risk
Full EPR for Blue Box	\$1.5 M to \$1.8 M	2022 to 2025	Province	Low
Full EPR for Other Programs	\$50,000 to \$150,000	2023/2025	Province	High
W12A Landfill Levy	\$250,000 to \$1 M	2020/2022	City	Low
Total	\$1,800,000 - \$3,000,000 (\$2,000,000 likely)			

Why Waste? **Annual Cost Summary**

	Low	High	Likely (Anticipated)
Cost	\$5,050,000	\$7,450,000	\$6,500,000
Cost/hhld	\$28.00	\$41.50	\$36.00
Revenue	\$1,800,000	\$2,950,000	\$2,000,000
Revenue/hhld	\$10.00	\$16.50	\$11.00
Total Estimated Cost	Requires financing strategy as funding/revenues come later →		\$4,500,000
Total cost/hhld			\$25.00



Multi-year Budget Outlook

3 Year Investment	\$1,300,000	\$3,900,000	\$6,500,000
60% Multi-Year Budget	2020	2021	2022
Blue Box/Blue Cart Recycling	\$0	\$0	\$0
New Recycling Initiatives	\$150,000	\$300,000	\$0
Curbside Green Bin Program	\$200,000	\$2,200,000	\$2,600,000
Multi-Res Organics Pilot	\$500,000	\$0	\$0
Other Organics Programs	\$300,000	\$0	\$0
Reduction & Reuse Initiatives	\$150,000	\$100,000	\$0
Totals	\$1,300,000	\$2,600,000	\$2,600,000

Potential funding will lower these amounts



2016 Municipal Comparisons

- 49% - Ontario average waste diversion
- 66% Region of York (inc. Markham at 71%)
- 61% County of Simcoe
- 60% County of Dufferin
- 60% City of Kingston
- 50-59% - 16 communities

Source: Resource Productivity & Recovery Authority



Why Waste? **MBNC Cost Comparisons**

2016 Municipality	Cost per Household		
	Collection & Disposal	Diversion	Total
London (existing)	\$89	\$50	\$139
Hamilton (lowest Diversion & GB)	\$150	\$69	\$218
Niagara (Lowest with GB)	\$90	\$102	\$192
Average of 9 GB municipalities	\$127	\$100	\$227
London (60% - likely cost)	\$87	\$86	\$173
London (60% - high cost)	\$87	\$91	\$178

Why Waste? **Next Steps – 60%**

Next Steps	Comments	Timeline
CWC and Council "Approval in Principle"	<ul style="list-style-type: none"> CWC Meeting – July 17 Council - July 24 	July 2018
Seek Community Feedback on Action Plan	<ul style="list-style-type: none"> Interactive WhyWaste website Circulate to Stakeholder Groups Attend Gathering on the Green II Presentations to WMCLC and ACE Public Participation Meeting (Sept. 27) 	July to September, 2018
CWC and Council Approval	<ul style="list-style-type: none"> Implementation details and final cost estimates to be provided 	January/February, 2019

Dear Civic Works Committee,

Bike lanes are supposed to support and encourage bicycling, not terrify and endanger cyclist. King St is a critical East/West route for anyone entering downtown from the West.

On King St, the City Center at Dundas and Wellington, provides access to underground parking and showers for 75 cyclist who work and bike downtown every day!

Placing busses on King and refusing to clearly mark the lane, or do anything at all to protect the cyclist who were using it, will end in tragedy. No one of sound mind would feel safe or enjoy biking King. During bike to work week last week, after receiving my free gifts from generous volunteers encouraging cycling an active transit, I found myself in a box canyon of busses a block away. It's not uncommon to be a bike on King at 745am and have busses on three sides of you. The forth side is reserved for car doors, delivery vehicles and landscaping trailers.

Please fix King, between Ridout and Wellington it's already a car sewer, busses have made it a gauntlet, I just want to make it to work and home alive. A bike lane isn't, unless it's protected and separated. No one who works or shops, parks on King, it's all utilities and service vehicles.

I learned 60 percent of people “would like to ride more,” according to [Roger Geller \(Bicycle Coordinator Portland Office of Transportation\) estimated in 2005](#). “But they are afraid to ride.” And it is supported by 2012 academic study by [Portland State University's Jennifer Dill backing up Geller's hypothesis](#). For local hypothesis using Ontario population data please see...

https://www.sharetheroad.ca/str_green_paper_2010_03_02-pdf-r155217

Asking the CWC to please construct a separate protect bike lane on King, between Ridout and Wellington as soon as possible, it's already too late for some.

Thank you,

Andrew Hunniford

Dear Civic Works Committee,

I am writing to you today to plead with you for safe bike routes in our downtown core. Since the shift of bus routes onto King Street, (the most-used, and lowest-grade (least steep hill) bike access to downtown from the river valley) has become a deadly mix of heavy-volume car and bus traffic. Buses now have to cross what's left of the King Street "bike lane" (which currently isn't marked for more than half a block, total) dozens of times per hour to pick up passengers. This situation feels very dangerous on a bike, and I am sure it's uncomfortable for LTC drivers, too. I've attached a couple photos I took on Thursday last week, on a single traverse of King. It's this bad every day.

The best and safest way to make King Street Great Again would be to add a protected two-way bike lane to the left side of the street, removing parking where required, and using parking to protect the bike lane where the street is wide enough. [Jeff Speck explains this as "Road Diet #1" here: https://vimeo.com/136672997](https://vimeo.com/136672997)

A protected bike lane would make it safe for users of all ages and abilities to access downtown, enabling families to ride to festivals, visit the Market, or see a show at Bud Gardens. A protected bike lane would enable individuals to ride to work who currently don't ride because of safety concerns (32% of Ontarians would ride to work if it was safe, and a **two-thirds majority** support construction of protected bike lanes - [Share the Road Survey 2018](#)).

Two-way protected bike lanes (like the image attached) are never desirable on two-way streets, however, a two-way bike lane on a one-way street can be suitable when it is positioned on the left-hand side of a street (remember that bikes are traffic, and in North America oncoming traffic approaches from the left).

A two-way bike route on the left hand side of King Street that is connected to Colborne Street N-S would allow several positive things to occur over the short and long term.

- People on bikes gain safe access to downtown places, whereas today there is **currently no safe way to access downtown on a bike from any direction**. In the current configuration, vehicle throughput is prioritized over bicycle safety, and the result is a car sewer that's sole-designed purpose is to transport vehicles "downstream" without any consideration for vibrancy, safety, or street life. This is inconsistent with the concept of Vision Zero that was adopted by council as City policy last year. Downtown is a destination, not a "through" street, and **no amount of increased traffic flow is permitted to compromise safety of people using any street under a Vision Zero mandate**.
- A connected cycletrack into downtown will increase bike traffic to the core, [increasing business and tax revenue](#). "Connected" is the important word here - by connecting the TVP to downtown, downtown businesses will see increased traffic from families who currently shun the core for street safety reasons (this is representative of many of our customers who will ride to our shop on a weekend, and won't bring their kids on bikes, but would like to).
- With a two-way protected bike lane on King, Queens Ave downtown can be re-purposed more easily for BRT. Allowing bikes to access Riverside Drive via King -> TVP -> Harris Park Gate.
- Dundas St E protected bike lane ("Bikes on Dundas") does not interfere with Dundas Place in the future. The Dundas protected bike lane would begin at Colborne, and continue EB to link with Quebec St. There aren't any destinations on King Street east of Colborne, and the high speeds of vehicle traffic on King make it far less desirable than Dundas for people to ride bikes. Dundas is the unanimously preferred location for a protected bike lane from everyone in the community that we've spoken with, including business owners in the Old East Village.

We've checked the widths of official city maps against the Ontario street design code, and the protected bike lane solution fits legally, and logistically. So let's build it. Let's make it safe for people to ride bikes to destinations in London. Let's make the shift from "sport" to "transport" on bikes in Downtown London.

Best,

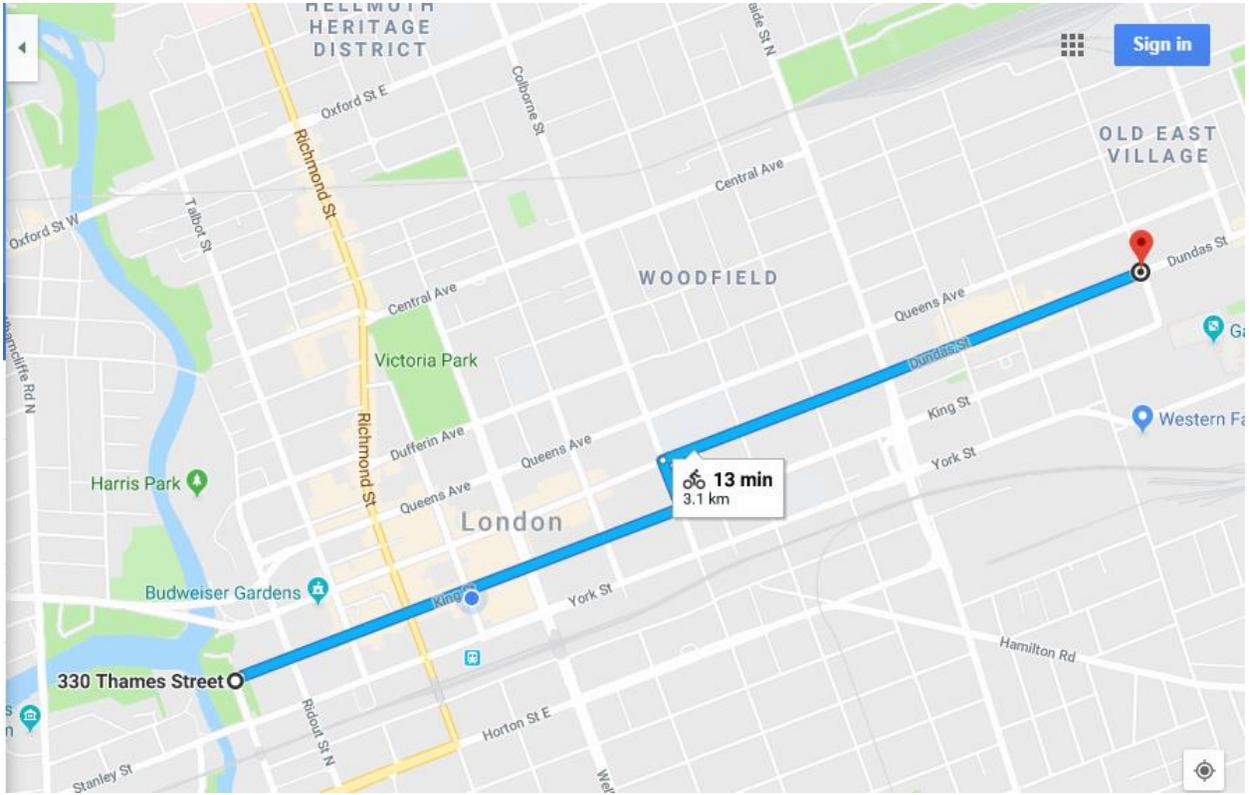
Ben

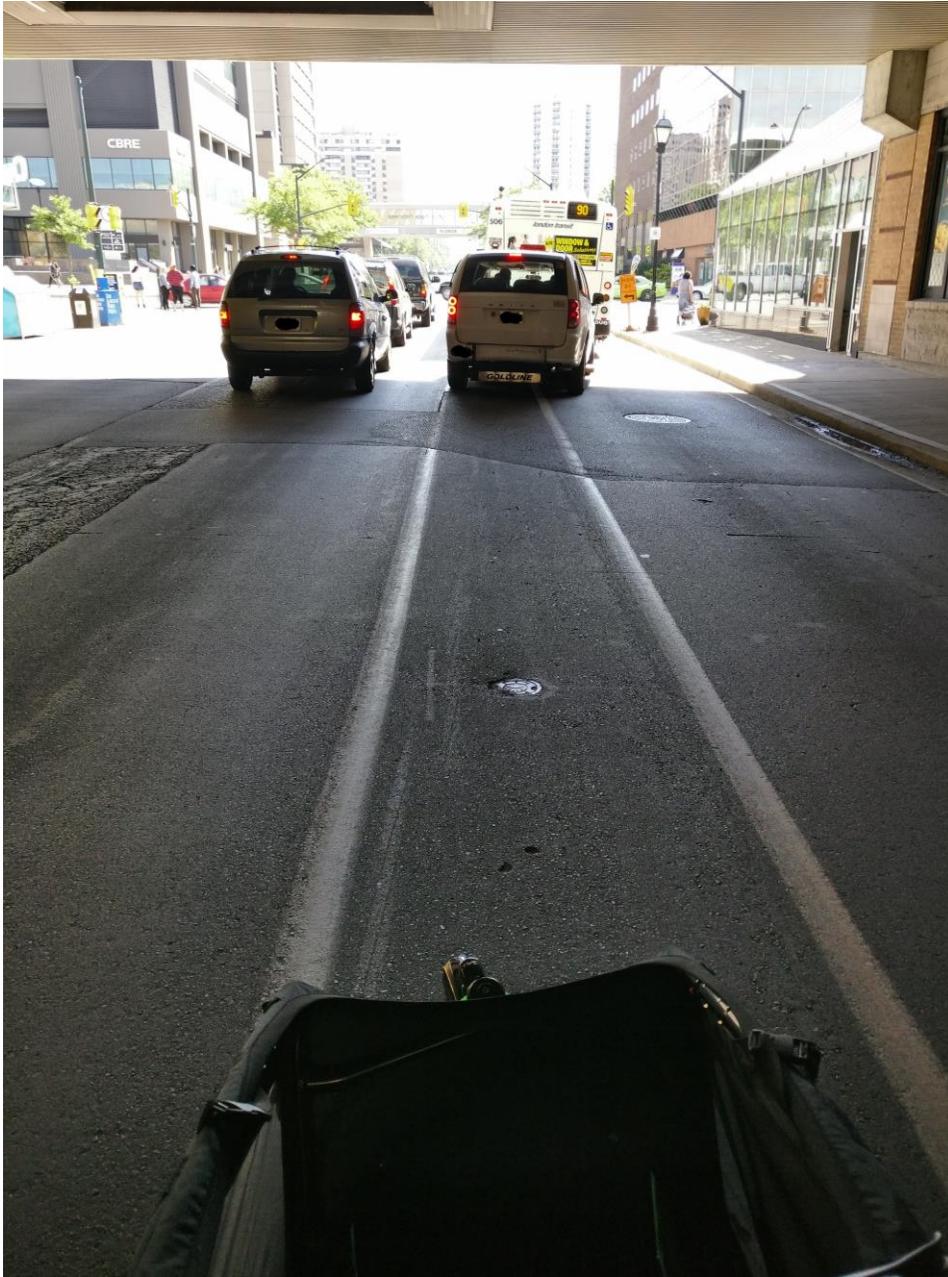
ps - a personal anecdote: my typical morning routine used to arrive at the Cafe, jump on a cargo bike and do a little loop down York to Talbot to King, to pick up our bakery at Petit Paris in Covent Garden Market. Since the buses have been moved to King, I just walk to the market. It's too dangerous and uncomfortable to ride on King Street. When expert riders are changing their habits, the design is surely uncomfortable for a novice.

pps - long-term, for a vibrant downtown, King and Queens should be redeveloped as two-way streets. I realize nobody's talking about this right now, but it's probably the only way to revitalize these car sewers into places where people actually want to be. Hamilton has had unbelievable success with this recently, and given the research and experience from dozens of cities who have done the same thing, there's no reason we shouldn't pursue this too.

--

London Bicycle Café
Southwestern Ontario's Citizen Cyclery
355 Clarence Street, London Ontario
ben@londonbicyclecafe.com
www.londonbicyclecafe.com





Dear Civic Works Committee,

I am writing to express my concern over the lack of safe cycling infrastructure on King St. between Ridout and Wellington. As a cyclist living in Old South, this is the stretch of road I take to get downtown. I see it as a bit of a eastbound gateway for cyclists due to its convenient connectivity to the TVP.

Not too long ago, I quipped that my heart races when I'm biking down this street not because I'm getting physical exercise, but because I fear for my safety. With busses now moved onto this street, and the decision to keep on-street parking, there are many dangerous obstacles to face. Unfortunately, there have been times when I avoid going downtown altogether simply because there aren't convenient alternative cycling routes.

Indeed, removing on-street parking (how many surface lots do we have again?!) and adding in a protected bike lane similar to the one recently installed on Colborne would be the perfect solution. The more infrastructure like this we have, the better. I do believe it would draw Londoners downtown more often, and put London on the map in a way that a BRT route or a flex street can't match.

We could so easily and cheaply possess gold standard cycling infrastructure. Let's not kick the can down the road to the next council. You folks have shown your commitment to building livable cities and this is a key piece of the puzzle.

All the best,
Devan

Dear Member of the committee

I use my bicycle as transportation and I regularly ride it downtown using Colborne and King St. I have noticed the increased traffic and buses on King and feel very unsafe now to use my only mode of transportation to go downtown on King St.

I am writing to support the possibility of a protected lane for cyclists on King. Human life is precious and I hope the city would start to value the life of London citizens that use bicycles as their main mode of transportation instead of costs as a parameter to decide on increasing appropriate infrastructure.

Best regards

Dr. Marco A.M. Prado, Ph.D.

Dear Civic Works Committee;

Over the past few months, I have become increasingly concerned about the hazards present for cyclists travelling through the downtown core. King Street has always been a particularly concerning stretch to travel along, as a result of the thin door zone bike lane adjacent to busy traffic. However, it has recently become significantly worse. As an experienced bicycle commuter, I now avoid King Street as much as possible. When I must travel along King Street, I defensively take the full lane (adjacent to the bike lane) to avoid the risk of dooring or the inevitability of drivers passing too closely. This choice risks frustrating drivers who are already irritable due to the construction delays. However, the alternative risks being thrown into traffic by an opening door or being put in a precarious position by one of the many buses which frequently crosses the bike lane on King Street.

While I have the experience to recognize these risks & make the educated decision to avoid King Street or take the full lane when it is required, less experienced cyclists will assume that the bike lane is the safest place to be. Indeed, on a designated bike route, the bike lane *should* be the safest place to be. This dangerous infrastructure puts cyclists at serious risk for fatalities.

Something needs to change on King Street to increase safety for all road users, and it needs to happen quickly before a vulnerable road user is seriously injured or killed. Removing parking on King Street from Ridout Street to Wellington and replacing it with a multi-directional protected cycle track, is a solution that could be implemented quickly with minimal construction required. This solution is very similar to the first example of Road Diets in Jeff Speck's [video](#), with the difference being that on King Street parking will need to be removed to allow space for this protected cycle track.

In addition to dramatically improving safety for cyclists, this option prioritizes the safety of pedestrians by reducing the crossing distance at intersections. Furthermore, it will encourage active transportation and multi-modal transit through downtown London, reducing car dependence and thereby reducing traffic jams.

Thank you for your prompt attention to these safety concerns.

Sincerely,

Joy Cameron
Bikes n' Brains Founder

www.bikesnbrains.ca

This e-mail is confidential and may contain privileged information. If you are not an intended recipient, please delete this e-mail and notify us immediately. Any unauthorized use or disclosure is prohibited.

Hi,

I hear you are considering the impact of the bike lanes on King St. I believe separated bike lanes should be installed along the length of Dundas St instead, for a number of reasons:

- Buses are now located on King (and Queen) St, meaning they frequently merge in and out of the bike lanes to pick-up/drop-off riders
- The current bike lane is located directly beside the driver's door of parked cars, meaning dooring (having the occupant of a automobile open the door into a cyclist's path) is a terrifying risk
- Coordinated lights and one-way traffic reduces automobile congestion (which is good for those autos) which in turn leads to faster traffic, and more danger to slower, vulnerable cyclists
- If the city is serious about increasing cycling modal share, it has to consider the needs of less confident potential cyclists who need safe (separated) infrastructure

I should also note that I personally already use Dundas and York to get between Dundas/Wellington and York/Rideout every day (on my cycling commute to and from work in South London) because the King St "cycling infrastructure" is so dangerous and terrifying that it is safer for me to be in mixed traffic. My fiancée cycles between Dundas/Wellington and the University, but she uses the sidewalk until she gets to Rideout/Queen because she does not feel safe using the roads (and I agree).

Thank you,

Jarad Fisher, concerned Londoner

Hi there,

My name is Seth. I like to believe that I am an engaged community member of London. I work as a physician at London Health Science Centre, I am a member of a local artists collective, and I live in Wortley Village (N6C1B6). I often find myself travelling between downtown and the Old East Village (and then back again). I ride my bicycle to get around this city. Even before the closure of Dundas Street, King Street was in places a scary road to ride a bike on. The worst of it was between Talbot and Wellington Streets. Ever since the closure of Dundas and the re-routing of buses, I have had many close calls with buses. I am constantly at risk of being “doored” as I find myself sandwiched between buses and parked cars.

Until a protected east–west bike lane can be instituted from downtown to the Old East Village, I really believe it behooves the city to remove on-street parking from King Street. It is only a matter of time before a serious car-versus-cyclist accident occurs on that street. If you do not act in time, you will have to live with the knowledge that you meaningfully contributed to the injury or death of one of your community members.

Sincerely,

Seth Climans

To those with the power to make change,

I just arrived home from a longer ride on my bike, most of which was within the city of London. I have a few things to share about my experience.

First off, I would like to say that I applaud London in making cycling infrastructure a priority, and that I feel it is a valuable investment that will pay off well in years to come. Some of the areas that have been focused on have made it much easier to ride, such as Colborne St (which I live on and use regularly) and Sarnia Road. Both areas still have some areas to improve, but they are much better than they have been in the past.

My main concern that inspired me to write this email is about the conflict between cycling routes and bus stops, particularly on Queen St downtown and King St from the forks to Citi Plaza. I have copied this email to the LTC as well so that they are aware of what some of their drivers are up to and can provide some education regarding cyclists to them if that is what is lacking.

On my ride today, I was cut off by a bus merging back into traffic on Queen just east of Richmond (I'm assuming that they didn't see me already on the left side of the bus, #153 around 5:30pm on Tuesday July 3rd), and then another bus blocked both the bike lane and part of the regular lane of traffic in front of the courthouse, waiting for another bus to leave the stop in front of them. This caused a very dangerous situation for me to be in. Only a couple minutes later, heading west on Riverside just past Wharncliffe, another bus was driving between stops taking up at least half of the designated bike lane. It is one thing to have to deal with incompetent members of the public driving their cars on the roads, but I was blown away with what I experienced at the hands of the LTC drivers along that stretch today.

My other concern that I would like addressed since it is part of my regular route, almost daily, is the conflict between busses and cyclists on King Street. Bikes already have to be extra cautious when there is parking on their right near the market, busses only make things a hell of a lot worse. The worst spot and I think one of the most dangerous is the underpass through Citi Plaza. The noise from the busses, traffic and Citi Plaza's Mechanical rooms up above make bike horns/bells useless and the fumes that collect in the air are terrible, especially when the busses are sitting, waiting at the stops. Sometimes there can be up to 6 buses in that area. It is also very dark and so other cars mixed with buses moving over to the curb and then merging back into traffic makes cycling along there a life or death obstacle adventure!!!

I know that there are better ways and I hope that the city can start to implement some changes to protect cyclists and streamline public transit so it works for everyone. Thanks for your time.

Cheers,

Brian Groot

More powerful than the will to win is the courage to begin.

www.mindfulnessrunning.com

Civic Works Committee,

I'm writing this brief email today to raise my concerns I have with my commute on King St. As a cyclist I find the commute to be very dangerous (along with other routes in the city). LTC operators especially have made this route bad because of their neglect for safety when moving their busses around. They often drive into moving traffic with a short signal or no signal at all and they never check for cyclists when they move around the road. When I'm commuting from the market area (west of Richmond) I feel safer taking a lane in traffic and although I frustrate vehicular traffic, I feel this allows me to have the best chance to be seen and avoided.

The amount of cyclists who use King St has increased and with all the development around Lyle St, the population growth will continue to add cyclists to the King St route between the area and the downtown core. I would like to see a protected bike lane on King St so the cyclists are safe and the vehicular traffic is free from cyclists impeding their commute.

Sincerely,
Kurt Walmsley
King St. Commuter

Good Morning Civic Works Committee and London Transit Committee,

I reached out to a local cycling group on facebook to voice some of my concerns regarding my current commute and was directed your way.

I live at the corner of Colborne and King.

My commute takes me north on Colborne, West on Queens and down to the TVP.

On my ride home I take the TVP to King Street and ride east.

I fully support the work being done on Dundas Street and York Street but this is making my ride a lot more challenging and dangerous to navigate. Beyond adding significantly more traffic to both Queens and King Street the new bus stops have created a major challenge for me, as a cyclist.

While riding home on King Street specifically, at any time I may need to ride alongside anywhere from 1- 6 busses. The drivers don't seem to be aware of the bike lane, as they depart their bus stop they signal for just a moment before pulling out - which has on more than one occasion, forced me into traffic.

This is not acceptable. This is literally jeopardizing my safety. I understand that in this lovely city, our busses have the right of way, and goodness knows when I'm taking the bus I am so thankful for this rule.

But the way these roads (and bike lanes) are structured, combined with the bus drivers lack of awareness for cyclists is dangerous. As I ride along these busses I ring my bell constantly, but it is a futile effort as the noise from Citi Plaza and the traffic drowns out even my loudest bell.

I don't know what the right answer is to this challenge, but I assure you, we're doing it wrong right now.

I urge you to not take this information lightly. I am just one cyclist, of many in this city. Putting my life in danger is not acceptable.

I appreciate your time and thank you in advance for your consideration of this important issue

Have a great day,

Christie Groot

Western-Fanshawe Nursing Yr 4

Good morning. Hope your morning is going well so far.

I biked downtown this morning from Byron on the TVP, as I do a few times each week for work. This morning was the first time experiencing buses sharing the road. Definitely not as safe as it was without them. I had multiple cars honking at me as I was between the bus and the cars in what I thought was supposed to be the bike lane.

What I would really LOVE to see would be some sort of protected lane for bikes as my family also likes to bike downtown on the weekends to go to the market or parks for events. I think removing the parking on this street would make a huge difference. Looks like it could easily accommodate a cycle track along this stretch which would get many more people out riding as I know most people I chat with feel it's just not safe to ride, even with painted bike lanes.

Just thought I'd share my concerns as I know there were at least five other cyclists on the road with me that were in the same boat.

Thanks,
Chris McCreery

Hello,

I am writing because I would like to speak at a CWC meeting as a business owner and my experience with the fencing you have put up around the Dundas Street construction.

We've been noticing that a lot of street people are getting caught up near the construction fence RIGHT outside of our shop. There are street people on drugs that change once they reach the construction site -it almost weirds them out once they come up to it. Some people sit and lean against the fence. Others decide that the fence is a safe spot to drop their belongings and shoot up. Sometimes, street people find the barrier a great place to begin opening our garbage. Just today there was a man digging through garbage and throwing things into the construction site. We have seen plenty of drug paraphernalia right outside of our shop which is really gross, embarrassing and frustrating. This is getting out of control and the police are not helpful. The police will show up too late or tell us there is nothing they can do about people hanging around on the fence on drugs.

You have permission to put my name on the agenda.

- Darlene Davis

Please help!

Cycling Advisory Committee

Report

7th Meeting of the Cycling Advisory Committee
June 20, 2018
Committee Room #4

Attendance PRESENT: D. Mitchell (Chair), D. Doroshenko, R. Henderson,
J. Jordan, W. Pol, R. Sirois, D. Szoller and P. Shack(Secretary)

ABSENT: A. Stratton and M. Zunti

ALSO PRESENT: J. Bunn, A. Giesen, S. Harding, A.
Macpherson, B. McCall, R. Patterson and S. Wilson

The meeting was called to order at 4:04 PM.

1. **Call to Order**

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. **Scheduled Items**

2.1 Overview of the Parks and Recreation Master Plan Update

That it BE NOTED that the attached presentation from A. Macpherson, Manager Environmental and Parks Planning, with respect to an update on the Parks and Recreation Master Plan, was received.

2.2 Southdale Road West Class EA Update

That it BE NOTED that the attached presentation from B. Hutson, Dillon Consulting, with respect to the Southdale Road West Class Environmental Assessment Update, was received.

2.3 (ADDED) Fanshawe College Students re Bike and Walk Map Updates

That it BE NOTED the attached presentation from Matt Shier and Oran Young, Fanshawe College Students, with respect to Bike and Walk Map updates, was received.

3. **Consent**

3.1 6th Report of the Cycling Advisory Committee

That it BE NOTED that the 6th Report of the Cycling Advisory Committee, from its meeting held on May 16, 2018, was received.

3.2 Notice of Public Information Centre - Broughdale Dyke-Municipal Class Environmental Assessment

That it BE NOTED that the Notice of Public Information Centre, dated June 20, 2018 from P. Adams, AECOM Canada and A. Spargo, AECOM Canada, with respect to the Broughdale Dyke-Municipal Class Environmental Assessment, was received.

4. Sub-Committees and Working Groups

None

5. Items for Discussion

5.1 2018 Work Plan Update

That the revised attached 2018 Work Plan for the Cycling Advisory Committee BE FORWARDED to Municipal Council for consideration.

5.2 Notice of Public Meeting - Zoning By-law Amendment - 1055-1075 Fanshawe Park Road West

That it BE NOTED that the Notice Of Public Meeting dated April 25, 2018 from Zoning By-Law Amendment with respect to 1055-1075 Fanshawe Park Road West, was received.

5.3 Notice of Planning Application - Zoning By-law Amendment - 147-149 Wellington Street and 253-257 Grey Street

That it BE NOTED the Notice of Planning Application dated May 9, 2018, from Zoning By-law Amendment with respect to 147-149 Wellington Street and 253-257 Grey Street, was received.

5.4 Summer Meeting Schedule

That it BE NOTED, that the Cycling Advisory Committee will meet on July 11, 2018.

6. Deferred Matters/Additional Business

6.1 (ADDED) Colborne Cycle Track

That it BE NOTED, that congratulations were extended to Municipal Council and staff with respect to opening 900 metres of Cycle Track;

it being noted that the approach of design allows for improvements as its use is analyzed.

6.2 (ADDED) London Celebrates Cycling

That it BE NOTED that W. Pol provided verbal update with respect to London Celebrates Cycling.

6.3 (ADDED) Grand Opening – Multi-Use Bridge Connecting Kiwanis Park and the Thames Valley Parkway

That it BE NOTED that the committee held a general discussion with respect to the Grand Opening-Multi-Use Bridge connecting Kiwanis Park and the Thames Valley Parkway.

7. Adjournment

The meeting adjourned at 6:35 PM.



Parks & Recreation Master Plan Update

May / June 2018

Advisory Committees



Purpose of Connecting With You

Purpose:

1. To review the plan to update the Parks and Recreation Master Plan this year.
2. Ask for your assistance in sharing the Community Survey with your networks and the public.
3. To request your Committee's input.



About the Master Plan

Creating a "Game Plan" for Parks, Recreation Programs, Sport Services and Facilities

- The Master Plan provides an overall vision and direction for making decisions. It is a high level/policy directive document.
- It is based on public input, participation trends and usage, best practices, demographic changes and growth forecasts.
- The Plan will be used by the City to guide investment in parks, recreation programs, sport services and facilities over the next ten years and beyond.



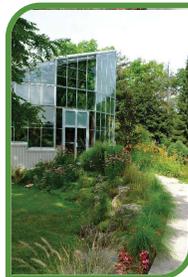
Master Plan Overview

- The City has retained **Monteith Brown Planning Consultants**, **Tucker-Reid & Associates** and **Swerhun Facilitation** to assist in preparing the Update.



Master Plan Building Blocks

1. Public and Stakeholder Input
2. Demographics and Growth
3. Trends and Usage Data
4. Existing Policies and Guidelines
5. Park, Program, and Facility Distribution
6. Facility Inventories and Asset Management Data



Project Scope

Items within Scope:



- **Recreation Programming**, such as aquatic, sport, wellness, arts/crafts, dance/music, and general interest programs provided by the City and other sectors



- **Recreation and Sport Facilities**, such as community centres, pools, sports fields, playgrounds and more



- **Parks & Civic Spaces**, such as major parks, neighbourhood parks, gardens and civic squares



- **Investment in the Community**, such as neighbourhood opportunities, public engagement, sport tourism and more



Project Scope

Items out of Scope:

- **Parkland Dedication Policies** (London Plan)
- **Cycling** (London Plan, Transportation and Cycling Master Plans)
- **Natural Heritage and Trails** (London Plan, Conservation Master Plans, ESA Master Plans)
- **Arts, Culture and Heritage** (Cultural Prosperity Plan and related reports)

Although these items are addressed in other studies, the Master Plan will ensure [alignment](#)



Guiding and Supporting Documents

The Master Plan is a Strategy that guides the provision and management of parks, recreation programs, sport services and facilities. It is influenced by several Overarching Plans and informs several Technical Reports.

Key Overarching Plans	Key Strategies	Key Technical Reports
The London Plan Council's Strategic Plan Accessibility Plan Sector-specific guiding documents, such as the Framework for Recreation in Canada, Parks for All, and others	Age Friendly London Action Plan Child and Youth Agenda Strengthening Neighbourhoods Strategy Transportation and Cycling Master Plans Cultural Prosperity Plan Community Diversity and Inclusion Strategy SHIFT: Rapid Transit Initiative Back to the River / One River Thames Valley Corridor Plan	Development Charges Background Study Conservation Master Plans for Environmentally Sensitive Areas Park-specific Master Plans Business Cases and Feasibility Studies Various By-laws, Policies and Procedures



Deliverables and Timing

- **Background Research** March to June 2018
- **Engagement** May to July 2018
 - Community Survey (Opens May 23rd)
 - Stakeholder Sessions/Focus Groups/Interviews
- **Draft Plan #1** Sept / Oct 2018
- **Draft Plan #2** Oct / Nov
- **Final Plan** presented to the new Council January 2019



Community Survey

Purpose

- To establish a broad picture of usage, satisfaction, priorities, demographics

Timing

- Will be available May 23 until mid-July, hosted through getinvolved.london.ca

How can you help?

- Share the link to the survey with your networks
- Let us know if you would like posters or postcards to distribute




Advisory Committee Input

- Individuals can complete the Community Survey at getinvolved.london.ca
- Tell us about groups or organizations that we should invite to the Stakeholder sessions
- Committee can provide written responses to the Questions
AND / OR
- Committee can provide comments on the last Parks and Recreation Strategic Master Plan (2009) and Interim Update (Jan. 2017)

Email to: PlayYourWay@london.ca





Advisory Committee Input

Guiding Questions

1. What are the most pressing **issues and priorities** for your Advisory Committee?
2. How can the City of London's parks, recreation and sport **services and facilities** continue to support the needs of your Committee? Please be specific.
3. How can your Committee, the City and others **work together** to meet future needs?
4. Are there any initiatives that are being contemplated, planned or are being implemented that could tie into these or other priorities for parks, recreation and sport services and facilities?



Parks & Recreation Master Plan Update

Thank you!

PROJECT OVERVIEW

- Environmental Assessment (EA) for Southdale Road West and Wickerson Road corridors between Wickerson Gate and Byronhills Drive
- The EA will identify the requirements for improving the roads to a 2-lane standard, with the inclusion of Active Transportation



SOUTDALE ROAD WEST/WICKERSON ROAD ENVIRONMENTAL ASSESSMENT – PRELIMINARY (JUNE 2018) 1

EXISTING CONDITIONS



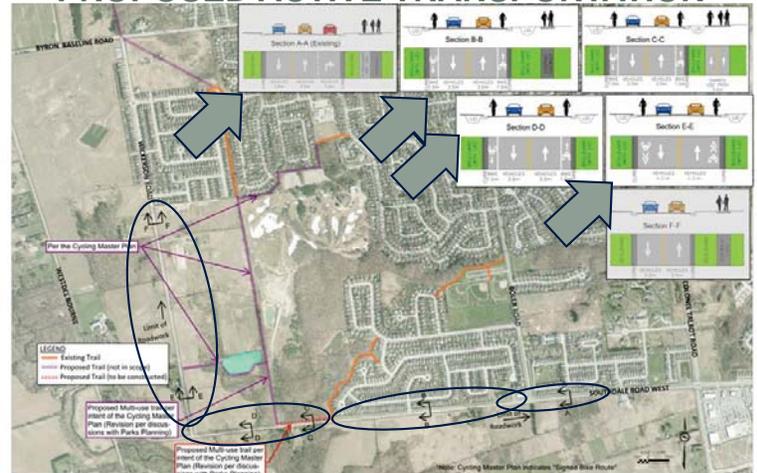
SOUTDALE ROAD WEST/WICKERSON ROAD ENVIRONMENTAL ASSESSMENT – PRELIMINARY (JUNE 2018) 2

CURRENT STATUS

- The second Public Information Centre was held in May 2018 where opportunities for active transportation, as identified in the Cycling Master Plan, were presented to the public (presentation material available on the City website)
- The proposed active transportation strategy will include:
 - Upgrade to on-street bike lanes on Southdale Road (Master Plan showed signed bike routes) and signed bike route on Wickerson Road
 - Partial section of multi-use pathway on north side of Southdale Road West, for future trail connectivity.

SOUTDALE ROAD WEST/WICKERSON ROAD ENVIRONMENTAL ASSESSMENT – PRELIMINARY (JUNE 2018) 3

PROPOSED ACTIVE TRANSPORTATION



SOUTDALE ROAD WEST/WICKERSON ROAD ENVIRONMENTAL ASSESSMENT – PRELIMINARY (JUNE 2018) 4

NEXT STEPS

- Respond and update design based on input from the public and CAC committee
- Complete Environmental Study Report (ESR) – Summer 2018
 - Finalize EA document
 - Present EA document to council for endorsement
 - 30-day public and agency review period
- Detailed Design Phase – Anticipated to be 2018/2019
- Construction Phase – Anticipated to begin 2020

SOUTDALE ROAD WEST/WICKERSON ROAD ENVIRONMENTAL ASSESSMENT – PRELIMINARY (JUNE 2018) 5





- The main objective of this project is to simplify and update the current Bike Map
- Allow the general public to interpret and understand the map much better than before

Your Logo or Name Here 

The Problem



Colour Theme



Font Size



Too Much Information on Main Map



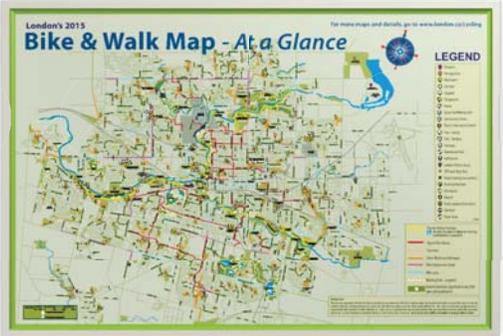
Bike Routes Not Clear



Overall Scale of Map

Your Logo or Name Here 

The Problem



Your Logo or Name Here 

The Solution



Create Callouts



Merge Bike Routes



Use of Lighter Colours in Background



Your Logo or Name Here 

The Solution



Increase Font Sizes



Reduce Details and Icons on Main Map



Focus on Thames Valley Parkway



Your Logo or Name Here 

The Process

- The original London's 2015 Bike & Walk Map hardcopy plans were collected and reviewed
- A site visit was done by bike to analyse verify the current bike routes within London
- Necessary Data was downloaded from the London Open Data Catalogue <http://www.london.ca/city-hall/open-data/Pages/default.aspx>
- ArcGIS > Adobe Photoshop > Adobe Illustrator

Your Logo or Name Here



Site Visit



Your Logo or Name Here



The Proposal – Front Page 12 x 18



Your Logo or Name Here



The Proposal –Back Page 12 x 18 (8 Point Font All Caps)



Your Logo or Name Here



The Proposal –Back Page 12 x 18 (12 Point Font All Caps)



Your Logo or Name Here



Concerns / Challenges

- There is not adequate information available from London Open Data
- 1:60,000 scale was used to create main map – this scale limited the amount of details that can be shown on map
- 12 point font limited the amount of streets that can be labelled
- Parks, Waters and other features distracting from the main feature of the map
- The font size will not be the only issue regarding the Accessibility for Ontarians with Disabilities Act (AODA). The representation of the roads and other paths might not be clear enough and may appear clustered.

Your Logo or Name Here





Contact wpol@fanshawec.ca

London's Walk Maps

Presented by
Matt Shier

Introduction

- The first task we had was producing the 10 and 35 km route maps for the London Celebrates Cycling event which occurred on the 16th of June
- Updating the current walk and bike maps and producing cycling and walking specific maps

London Celebrates Cycling Maps

- Visually appealing
- Identify caution points using call-outs
- Caution points were identified by cycling the routes
- Easily identified route colour
- Meet provinces AODA guidelines
- Submission of draft maps for suggested revisions



Current Walking Maps

- Font size does not meet AODA Standards
- Colour choices do not promote features
- Focus areas do not connect
- Features are not path/trail oriented



Current Walk and Bike Map Tear Off Version



Current Walk and Bike Map Fold Out Version

Proposed Walk Map 12 x 18 Front

Data collection

- Map features were collected using the London Open data
- Route verification by cycling the Thames Valley Parkway

Improvements

- Connected focus area extents
- Colour coded extent indicators
- Improved readability



Proposed Walk Map 12 x 18 Back

Improvements

- Pedestrian oriented map features
- Simplified route visualization
- Enhanced visual presentation
- Suggested Pedestrian oriented advertising



Proposed Walk Map 12 x 24 Front

Benefits

- Improved scale
- Larger focus area extents
- Better layout



Proposed Walk Map 12 x 24 Back

Benefits

- Increased information in focus areas
- Additional room for advertising
- Increased scale in focus areas



Thanks For Listening Questions?



Please send feedback to wpol@fanshawec.ca

Cycling Advisory Committee Work Plan – 2018

Updated June 28, 2018 - Dave Mitchell

Activity	Background	Responsibility	Proposed Timeline	Proposed Budget	Cycling Master Plan Alignment	Link to Strategic Plan	Status
<p>Assist the City in enhancing cycling connections throughout the City to the Provincial cycling network.</p>	<ul style="list-style-type: none"> • To be provided through Cycling Master Plan, EA input • Explore potential of rail corridor to St Thomas • Help define preferred route to attach to Trans Canada Trail in St Thomas 	<p>CAC</p>	<p>2017-2018</p>		<ul style="list-style-type: none"> • Action #3 Identifying Touring Loop Routes 	<p>CITY BUILDING POLICIES Elevate London’s Profile as a Regional Cultural Centre 534 Advance the eco-tourism, agri-tourism, and cultural tourism opportunities available in the city and support linkages to surrounding regional cultural facilities.</p> <p>OUR STRATEGY 60 Direction #6 10. As opportunities arise, utilize rail corridors as mobility links for transit, cycling, and walking.</p>	<p>Discussion with St.Thomas and Elgin county are currently on hold pending completion of a rail segment</p>

Provide recommendations for better integration of the recreational and commuter cycling networks	<ul style="list-style-type: none"> To be provided through Cycling Master Plan, EA input. Participate in East/West cycle track analysis 	CAC	June-		<ul style="list-style-type: none"> Action #7 Identifying & Enhancing Local Cycling Hubs Action #8 Enhancing Bicycle Parking Action #9 Establishing Performance Measures Action #10 Designing & Implementing Crossings & Transitions 	Our Strategy 60 Direction #6 Place a new emphasis on Creating attractive mobility choices	Consulting firm has been announced and information sessions to begin in June
Provide input to CoL Cycling web presence	<ul style="list-style-type: none"> City staff is creating a new web portal on the CoL website specific to cycling 	CAC	Stage 1 Mar-May Stage 2 TBD		<ul style="list-style-type: none"> Action #6 Creating a Cycling Specific Web Presence 		Analysis has been submitted - awaiting content launch and potential for promotion through CAC
Promote safe cycling through education and improved facilities and infrastructure	<ul style="list-style-type: none"> Need to support / initiate City, business and other 	CAC			<ul style="list-style-type: none"> Action #2 Establishing a Winter Cycling Network 	Our Strategy 60 Direction #7 Build strong, healthy and attractive	Colborne street cycle track has been implemented - promotion and analysis

	<p>community partner initiatives relating to mapping, bicycle parking, cycling lanes, etc.</p> <ul style="list-style-type: none"> • Promotional outreach for cycling • Promotion of the Cycling Master Plan 				<ul style="list-style-type: none"> • Action #8 Enhancing Bicycle Parking • Action #9 Establishing Performance Measures 	<p>neighbourhoods for everyone</p> <p>6. Identify, create and promote cycling destinations in London and connect these destinations to neighbourhoods through a safe cycling network.</p>	<p>Kiwanis park bridge has been implemented - promotion required</p> <p>User friendly version of Cycling Master Plan is still pending</p> <p>Updated Cycling Map is in progress</p>
Addressing Bicycle Theft	<ul style="list-style-type: none"> • Promotion of best practices in bicycle security 		CAC Bike security working group		<ul style="list-style-type: none"> • Action #8 Enhancing Bicycle Parking 		
Provide input and recommendations to Environmental Assessments relating to road and cycling infrastructure to assist in managing and upgrading transportation infrastructure.	<ul style="list-style-type: none"> • EA's provide a primary opportunity to ensure cycling priorities are taken into consideration for new roadworks and 	CAC	Ongoing			<p>Our Strategy 60</p> <p>Direction #7 Build strong, healthy and attractive neighbourhoods for everyone</p> <p>6. Identify, create and promote cycling destinations in London and connect</p>	

	infrastructure projects.					these destinations to neighbourhoods through a safe cycling network.	
Educational Initiatives	<ul style="list-style-type: none"> Attend Share the Road conference 	Rebecca Henderson	April 20	\$200	<ul style="list-style-type: none"> Action #9 Establishing Performance Measures 		Report received
Recognition Program	<ul style="list-style-type: none"> Dovetail into Mayor's annual recognition awards 	Cycling Award sub-committee					On hold until post election
Assist in the annual London Celebrates Cycling event	<ul style="list-style-type: none"> Work with city staff and stakeholders to provide a signature event that promotes all components of cycling culture 	London Celebrates Cycling subcommittee	Mar-Jun		<ul style="list-style-type: none"> Action #5 Identifying & Implementing CAN-Bike Program Action #12 Establishing High-Profile Events Action #9 Establishing Performance Measures 	CITY BUILDING POLICIES Support cultural and innovative programming to create a city that exudes innovation, vibrancy, creativity and entrepreneurialism 535 - 539	Completed - statistical analysis and follow-up to be completed

Safe cycling education and enforcement	<ul style="list-style-type: none"> Multiple requests to council recommending non-child cycling on sidewalks indicating a need for a campaign 	CAC	TBD		<ul style="list-style-type: none"> Action #5 Identifying & Implementing CAN-Bike Program Action #11 Enhancing Enforcement 		
Continue to identify / assess specific routes (to be mapped and signed) for key destinations and loops.	<ul style="list-style-type: none"> Continue to support cycling infrastructure at the municipal, provincial and federal levels. Monitor implementation of initiatives identified in the cycling master plan including potential stand-alone initiatives. 	CAC	Ongoing			Strengthening Our Community – 5.1; Building a Sustainable City – 1.a, 2.a, 5.b	

<p>Provide recommendations on operational requirements / improvements which will facilitate cycling</p>	<ul style="list-style-type: none"> Operational priorities (i.e. – street cleaning, snow plowing) need to be established and/or coordinated to ensure key cycling routes are maintained appropriately and that operational activities are not ‘out of sync’ (i.e. – cleaning streets before sidewalks, then putting all the sand from the sidewalks onto the street & cycling lanes that had just 	<p>CAC</p>	<p>Ongoing</p>			<p>Strengthening Our Community – 5.1; Building a Sustainable City – 1.a, 2.a, 5.b</p>	
---	---	------------	----------------	--	--	---	--

	been cleaned....)						
--	----------------------	--	--	--	--	--	--

July 7, 2018

Chair and Members of the Civic Works Committee

Re: Presentation – Canadian Urban Transit Research and Innovation Consortium (CUTRIC)

At the meeting held on July 5, 2018, the Rapid Transit Implementation Working Group received a delegation from Dr. Josipa Petronic, Executive Director and CEO of the Canadian Urban Transit Research and Innovation Consortium (CUTRIC). It would be beneficial for all Members of Council to be given an opportunity to hear the presentation made by the delegation.

The undersigned are therefore seeking support of the following recommendation:

“The City Clerk BE DIRECTED to make the necessary arrangements to invite Dr. Josipa Petronic, Executive Director and CEO of the Canadian Urban Transit Research and Innovation Consortium (CUTRIC) as a delegate before the September 17, 2018 meeting of the Strategic Priorities and Policy Committee to present the information provided at the July 5, 2018 meeting of the Rapid Transit Implementation Working Group.”

Respectfully submitted,



Matt Brown
Mayor



Harold Usher
Councillor, Ward 12

To: Member of the Civic Works Committee

On November 29, 2016 I moved the following motion:

Motion to Approve that, notwithstanding the direction of the City Engineer, and noting that the intersection of South Carriage Road and Hyde Park Road has not yet met the warrant for a traffic signal, the Civic Administration BE DIRECTED to proceed with the installation of a traffic signal at this intersection in order to address the unique circumstances of the intersection and the introduction of the school busses in September 2017; it being understood that the cost of the installation of this traffic signal would be covered within the existing budget.; it being noted that the Civic Works Committee received the staff report dated November 29, 2016 and a communication dated November 28, 2016 from D. Szpakowski, Executive Director, Hyde Park Business Association with respect to this matter. (2016-T07)

The motion failed 2-3 at committee. I asked colleagues at Council to defeat the Committee recommendation so that I could introduce the same motion at Council, however, the Committee recommendation was upheld 7-6.

Since that time a both a new school (St. John French Immersion Catholic Elementary School) and significant development has occurred in the area. The calls for a signalized intersection continue to grow and it now includes support from a school community and new residents moving in weekly. This, on top of the petition of 610 residents that was previously collected and submitted.

Earlier this year, I stood at the intersection and took a short video of the school busses attempting to navigate the turn. Upon showing it to our transportation staff, the School Bus Company was contacted and advised that they should instead use the route through the neighbourhood to Coronation Dr and Gainsborough Rd.

The solution is still very simple, install the traffic lights at South Carriage and Hyde Park Road (ideally in time for the next school season). It will be technically warranted in the future so this decision is simply a matter of timing. This is one of those times where Council can made the decision, in the interests of the community notwithstanding our staff's previous advice and report on this. I implore you to listen to the community and make this important change.

Sincerely and Respectfully,

Josh Morgan
Councillor, Ward 7

Josh Morgan

City Councillor – Ward 7
Office: 519-661-2500 x4007
Cell: 226-927-0395
joshmorgan@london.ca



300 Dufferin Avenue
P.O. Box 5035
London, ON
N6A 4L9

July 6, 2018

Chair and Members of the Civic Works Committee

Re: Residential Drainage – Storm Water Discharge

There are a number of residential areas in the city where sump pumps are directing storm water directly to the street resulting in a buildup of ice on adjacent sidewalks during the winter months. Residential subdivisions built in 1985 to 1995 are more prone to this issue as builders at that time, were not required to connect residential sump pumps into the City's storm sewer system. It is my understanding that in order to resolve this type of issue, the general practice is to extend a storm water lateral from the home to the storm sewer located on the street. I have been advised that a voluntary pilot project is currently underway on Guildwood Boulevard to address this very issue.

Unfortunately some areas of the city, such as Mockingbird Crescent do not have storm sewers fronting the residential properties and there is no specific City of London program, mechanism or budget to rectify this issue in this type of circumstance.

I am therefore seeking support of the following recommendation:

“That the following actions be taken with respect to storm sewer connections in residential areas:

- a) the Civic Administration BE DIRECTED to report back to the Civic Works Committee providing an update with respect to the voluntary pilot project currently underway on Guildwood Boulevard to extend residential sump pumps into the City of London storm sewer systems; and,
- b) the Civic Administration BE DIRECTED to report back to a future meeting of the Civic Works Committee with information pertaining to the feasibility of a implementing a sump pump discharge mitigation pilot project utilizing low impact development technologies, for properties located on Mockingbird Crescent.

Respectfully submitted,

Virginia Ridley
Councillor, Ward 10

DEFERRED MATTERS

**CIVIC WORKS COMMITTEE
(as of July 9, 2018)**

Item No.	File No.	Subject	Request Date	Requested/ Expected Reply Date	Person Responsible	Status
1.	44	<p><u>Potential Savings in Consulting Costs</u> Civic Administration to review and report back on areas that the City of London could realize consulting cost decreases for capital projects through the addition of new staff, rather than contracting out those consulting services, so that the City of London would realize net savings.</p>	June 2/15	2nd Quarter 2018	K. Scherr	IN PROGRESS
2.	75.	<p><u>Options for Increased Recycling in the Downtown Core</u> That, on the recommendation of the Director, Environment, Fleet and Solid Waste, the following actions be taken with respect to the options for increased recycling in the Downtown core: b) the Civic Administration BE DIRECTED to report back to the Civic Works Committee in May 2017 with respect to: i) the outcome of the discussions with Downtown London, the London Downtown Business Association and the Old East Village Business Improvement Area; ii) potential funding opportunities as part of upcoming provincial legislation and regulations, service fees, direct business contributions, that could be used to lower recycling program costs in the Downtown core; iii) the future role of municipal governments with respect to recycling services in Downtown and Business Areas; and, iv) the recommended approach for increasing recycling in the Downtown area.</p>	Dec 12/16	4th Quarter 2018	K. Scherr J. Stanford	
3.	76.	<p><u>Rapid Transit Corridor Traffic Flow</u> That the Civic Administration BE DIRECTED to report back on the feasibility of implementing specific pick-up and drop-off times for services, such as deliveries and curbside pick-up of recycling and waste collection to local businesses in the downtown area and in particular, along the proposed rapid transit corridors.</p>	Dec 12/16	4th Quarter 2018	K. Scherr E. Soldo	

4.	78.	<p><u>Garbage and Recycling Collection and Next Steps</u> That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, with the support of the Director, Environment, Fleet and Solid Waste, the following actions be taken with respect to the garbage and recycling collection and next steps: b) the Civic Administration BE DIRECTED to report back to Civic Works Committee by December 2017 with:</p> <ul style="list-style-type: none"> 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); and, ii) an Options Report for the introduction of a semi or fully automated garbage collection system including considerations for customers and operational impacts. 	Jan 10/17	Part b) i) – 3rd Quarter, 2018 Park b) ii) – 4th Quarter, 2018	K. Scherr J. Stanford	
5.	79.	<p><u>Update and Next Steps - Resource Recovery Strategy and Residual Waste Disposal Strategy as Part of the Environmental Assessment Process</u> That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, with the support of the Waste Management Working Group, the following actions be taken with respect to the development of London's Long-Term Solid Waste Resource Recovery Strategy and Residual Waste Disposal Strategy as part of the Environmental Assessment (EA) process (Phase One - Prepare Terms of Reference and Phase Two – Undertake EA): e) the Civic Administration BE DIRECTED to report back to the Civic Works Committee with an Interim Update Report and the Final Draft Terms of Reference, which would incorporate a public participation meeting to conclude Phase One activities.</p>	Oct 24/17	3rd Quarter 2018	K. Scherr J. Stanford	

6.	89.	<p><u>6th Report of the Transportation Advisory Committee</u> That the following actions be taken with respect to the 6th Report of the Transportation Advisory Committee, from its meeting held on May 23, 2017: a) the Transportation Advisory Committee (TAC) Terms of Reference BE REFERRED to the Civic Administration to review and report back to the Civic Works Committee with respect to a review of the overlapping of Advisory Committee mandates of the Cycling Advisory Committee and the Transportation Advisory Committee.</p>	June 7/17	1st Quarter 2019	K. Scherr E. Soldo City Clerk	
7.	91.	<p><u>Warranted Sidewalk Program</u> That the following actions be taken with respect to the Warranted Sidewalk Program: a) the Managing Director, Environmental and Engineering Services and City Engineer BE REQUESTED to develop an improved community engagement strategy with respect to Warranted Sidewalk Program; and, b) the Managing Director, Environmental and Engineering Services and City Engineer, BE REQUESTED to report back to the Civic Works Committee with respect to the potential future provision of additional sidewalk installation options on the east side of Regal Drive in the Hillcrest Public School area; it being noted that currently planned work would not be impeded by the potential additional work; it being further noted that the Civic Works Committee received a delegation and communication dated September 22, 2017 from L. and F. Conley and the attached presentation from the Division Manager, Transportation Planning and Design, with respect to this matter.</p>	Sept 26/17	4th Quarter 2018	K. Scherr E. Soldo	
8.	93.	<p><u>Public Notification Policy for Construction Projects</u> That the Civic Administration BE DIRECTED to amend the “Public Notification Policy for Construction Projects” to provide for a notification process that would ensure that property owners would be given at least one week’s written notice of the City of London’s intent to undertake maintenance activities on the City boulevard adjacent to their property; it being noted that a communication from Councillor V. Ridley was received with respect to this matter.</p>	Nov 21/17	3rd Quarter 2018	E. Soldo	

9.	94.	<p><u>Report on Private Works Impacting the Transportation Network</u></p> <p>b) report back to the Civic Works Committee, by the end of March 2018, on:</p> <ul style="list-style-type: none"> i) ways to improve communication with affected business, organizations and residents about the timing, duration and impacts of permits for approved works, including unexpected developments; ii) ways to improve the scheduling and coordination of private and public projects affecting roadways and sidewalks that carry significant pedestrian, cyclist, transit and auto traffic; iii) resources required to implement these improvements; and iv) any other improvements identified through the review resources required to implement these improvements; and 	Dec 4/17	3rd Quarter 2018	K. Scherr G. Kotsifas	
10.	96.	<p><u>Hydro One Grant for Tree Planting</u></p> <p>That the following actions be taken with respect to the Hydro One grant for tree planting</p> <ul style="list-style-type: none"> a) the Managing Director, Environmental and Engineering Services and City Engineer BE DIRECTED to investigate and report back on possible options to address the noise impacts being experienced by homes abutting Highbury Avenue resulting from the recent removal of trees by Hydro One, including the costs for implementing such options; it being noted that the Civic Administration would, as part of the investigation, review the City's policy on local improvements, as it related to noise attenuation barriers, as well as past projects; 	Nov. 28/17	4th Quarter 2018	K. Scherr E. Soldo	

11.	98.	<p><u>Private Drain Connection (PDC) Projects</u></p> <p>That the Director of Water and Wastewater BE REQUESTED to review the Wastewater and Stormwater By-law WM-28 as it relates to fees and charges for Private Drain Connections (PDC) work undertaken as part of a City of London construction projects and report back with respect to a potential blended fee for mixed use properties that is reflective of a balanced charge between the current residential and commercial fees; it being noted that a communication dated January 16, 2018, from Councillor T. Park was received related to this matter.</p>	Feb. 6, 2018	2nd Quarter 2018	S. Mathers	
12.	99.	<p><u>Pedestrian Sidewalk – Pack Road and Colonel Talbot Road</u></p> <p>That the communication from J. Burns related to a request for a pedestrian crosswalk at the intersection of Pack Road and Colonel Talbot Road BE REFERRED to the Division Manager, Transportation Planning and Design for review and consultation with Mr. Burns as well as a report back to the appropriate standing committee related to this matter.</p>	Feb. 6, 2018	4th Quarter 2018	D. MacRae S. Maguire	
13.	102.	<p><u>Garbage Cycles and Holidays</u></p> <p>That the Civic Administration BE REQUESTED to review the 2019 waste pick up calendar and report back to the Civic Works Committee with a recommendation related to the best dates in the Spring for the unlimited container pick up.</p>	April 17, 2018	2nd Quarter 2018	K. Scherr	
14.	103.	<p><u>Clear Garbage Bags</u></p> <p>That the Civic Administration BE DIRECTED to investigate and report back with a potential implementation strategy regarding the use of clear garbage bags as part of the 60% Waste Diversion and Action Plan.</p>	May 28, 2018	TBD	J. Stanford	
15	104	<p><u>Toilets are Not Garbage Cans</u></p> <p>That the Civic Administration BE REQUESTED to undertake the following with respect to the "Toilets Are Not Garbage Cans" public awareness sticker initiative, coordinated by B. Orr, Sewer Outreach and Control Inspector</p>	June 19, 2018	TBD	J. Stanford B. Orr	

Waste Management Working Group

Report

3rd Meeting of the Waste Management Working Group
July 13, 2018
Committee Room #1

Attendance PRESENT: Councillor M. van Holst (Chair); Mayor M. Brown;
Councillors J. Helmer and S. Turner and J. Bunn (Secretary)

ABSENT: Councillors M. Cassidy and H. Usher

ALSO PRESENT: W. Abbott, M. Losee and J. Stanford

The meeting was called to order at 12:00 PM.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

2.1 Decision Report #8 – 60% Waste Diversion Action Plan

That, on the recommendation of the Director, Environment, Fleet and Solid Waste, the following actions be taken with respect to the 60% Waste Diversion Action Plan:

a) the staff report dated July 13, 2018, with respect to the 60% Waste Diversion Action Plan, BE RECEIVED;

b) the action plan to achieve 60% waste diversion by 2022 BE SUPPORTED IN PRINCIPLE; and,

c) the release of the above-noted Action Plan for review and comment by the general public and other stakeholders BE SUPPORTED; it being noted that minor changes/revisions to the report may be made prior to release to improve readability or layout of the report;

it being noted that the attached presentation from J. Stanford, Director, Environment, Fleet and Solid Waste, with respect to this matter, was received.

3. Consent

3.1 2nd Report of the Waste Management Working Group

That it BE NOTED that the 2nd Report of the Waste Management Working Group, from its meeting held on March 8, 2018, was received.

3.2 Update Report #10 - Draft Proposed Terms of Reference

That it BE NOTED that the staff report dated July 13, 2018, with respect to an update report (#10) related to the Draft Proposed Terms of Reference for the Environmental Assessment of the Proposed W12A Landfill Expansion for the City of London, was received.

4. Items for Discussion

None.

5. Deferred Matters/Additional Business

None.

6. Adjournment

The meeting adjourned at 1:12 PM.

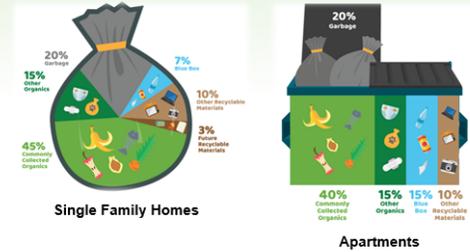
Presentation to Waste Management Working Group

July 13, 2018

Environmental & Engineering Services

60% Waste Diversion Action Plan

What's in the garbage?

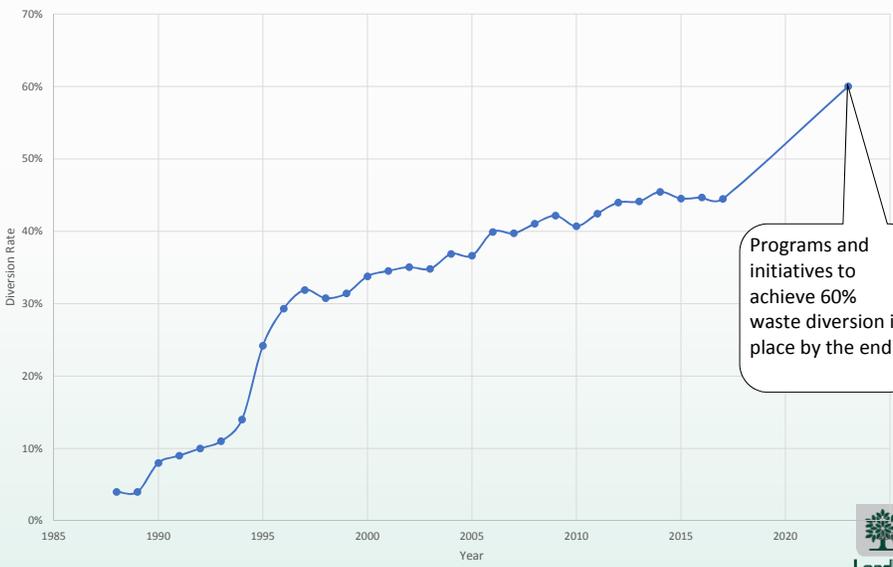


Waste Management Working Group: July 13, 2018
 Civic Works Committee: July 17, 2018
 Municipal Council: July 24, 2018
 Community Engagement: July 25 – September 27, 2018

Why Waste? getinvolved.london.ca



The Road to 60% Diversion





Council Direction(s)

October 30, 2017 Council direction:
“The W12A Landfill expansion be sized assuming the residential waste diversion rate is 60% by 2022 noting this does not prevent increasing London’s residential waste diversion rate above 60% between 2022 and 2050.”

Strategic Plan for the City of London (2015-2019):
Increase efforts on more resource recovery, long-term disposal capacity, and reducing community impacts of waste management.

The London Plan (December 28, 2016):
*Direction #4 Become one of the greenest cities in Canada
 #12 Minimize waste generation, maximize resource recovery, and responsibly dispose of residual waste.*





Provincial Direction(s)



Many Targets (“must”)

- 70% reduction/recovery of food and organic waste from SF homes by 2025
- 50% reduction/recovery of food and organic waste generated at the building by 2025

60% waste diversion goal is a key London commitment as part of the Environmental Assessment for the W12A Landfill expansion

To mark our progress and keep on track, we have set three interim goals:



30%

diversion rate by 2020



50%

diversion rate by 2030



80%

diversion rate by 2050

Why Waste?

How much waste and resources?

Residential
160,000 tonnes
45% diverted



IC&I
~ 170,000 tonnes
~ 20% diverted



CR&D
~ 120,000 tonnes
~ 50% diverted

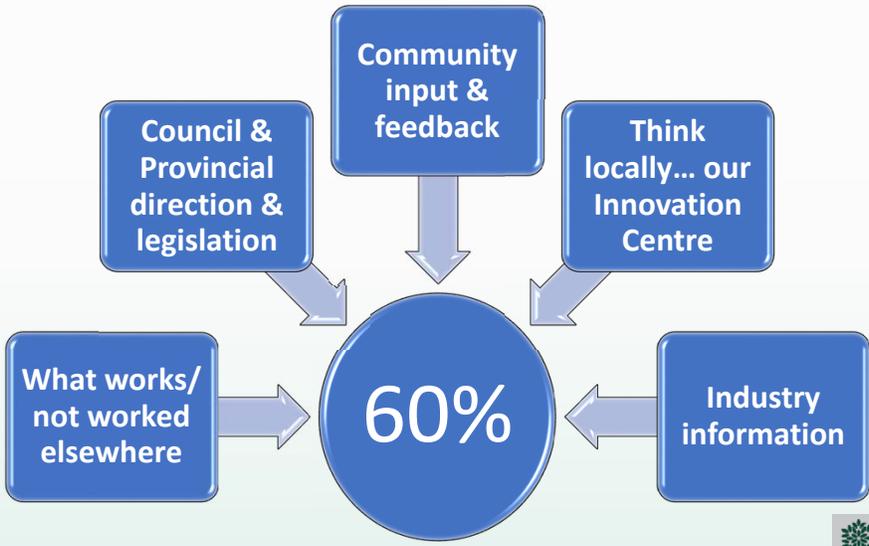


Between 425,000 and 450,000 tonnes per year



Why Waste?

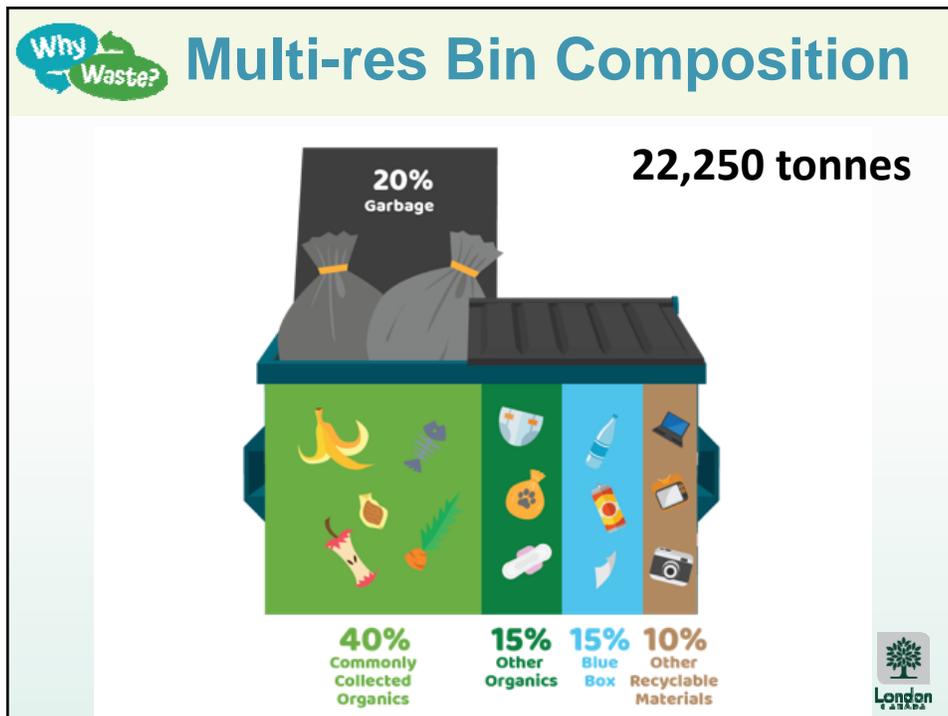
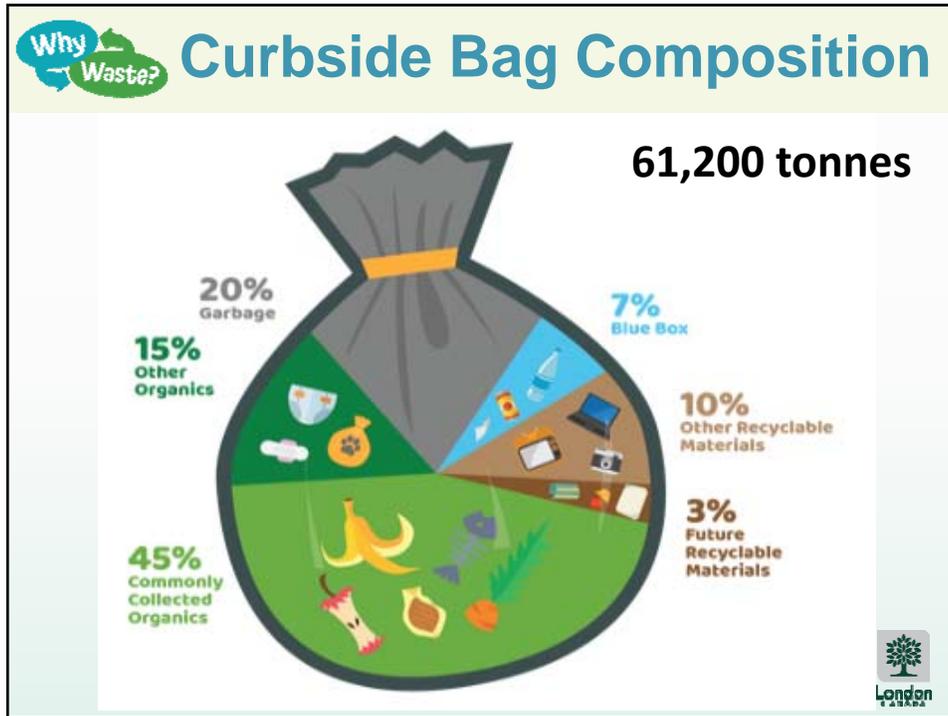
How this Report was Prepared



```
graph TD; A[Council & Provincial direction & legislation] --> C((60%)); B[Community input & feedback] --> C; D[Think locally... our Innovation Centre] --> C; E[Industry information] --> C; F[What works/ not worked elsewhere] --> C;
```

60%





Why Waste? **Composition – Did You Know!!**

Top 5 Diversion Opportunities	Estimated tonnes	% of Waste	Kg/hhld/year
1. Avoidable food waste	19,300	24%	107
2. Unavoidable food waste	10,100	12%	56
3. Pet waste	8,500	10%	47
4. Items for Blue Box/Cart	8,300	10%	46
5. Construction/Reno/Demo	4,700	6%	26
Total	50,900	62%	282



 Blue Box – Blue Carts	
Why is this important?	<ul style="list-style-type: none"> • Provincial law - shifting to EPR is key • Industry will be funding
How many actions?	<ul style="list-style-type: none"> • None • Industry will be responsible • Council/City staff to continue to push
How much will it divert?	<ul style="list-style-type: none"> • 1% to 3% • 1,600 to 4,800 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • SAVINGS estimated at \$1.5 to \$1.8 million by 2023 • SAVINGS \$8.00 to \$10.00 per year

 New (or Expanded) Recycling	
Why is this important?	<ul style="list-style-type: none"> • Items are easy to identify/describe • Identified in provincial direction
How many actions?	<ul style="list-style-type: none"> • 7; some pilot projects • Support local jobs; potential for more • New business opportunities
How much will it divert?	<ul style="list-style-type: none"> • 0.4% to 0.8% • 640 to 1,280 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$2.00 to \$3.00 per year • Likely \$2.50

 <h2 style="margin: 0;">Curbside Organics</h2>	
Why is this important?	<ul style="list-style-type: none"> • Largest portion of the waste stream • Proven programs (that have improved) • Legislated
How many actions?	<ul style="list-style-type: none"> • 2 • Weekly Green Bin, recycling • Biweekly, same day garbage pickup
How much will it divert?	<ul style="list-style-type: none"> • 8% to 12% • 13,000 to 20,000 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$21.75 to \$30.50 per year • Likely \$28 • Likely curbside home only \$40






Mixed Waste Processing and Mechanical/Biological Treatment (MBT)





FOCUS - Green Bin vs Mixed Waste Processing

MWP Advantages	MWP Disadvantages
<p>Environmental</p> <ul style="list-style-type: none"> 25% to 80% more organics captured 25% to 80% more GHG reduction 	<p>Financial (Curbside Homes)</p> <ul style="list-style-type: none"> Costs \$70 to \$115/hhld compared to \$30 to \$45/hhld for Green Bin
<p>Social</p> <ul style="list-style-type: none"> More convenience No “Yuk” factor 	<p>Technical</p> <ul style="list-style-type: none"> Rules are evolving Uncertainty for product quality





Multi-res Organics

Why is this important?	<ul style="list-style-type: none"> Largest portion of the waste stream Legislated
How many actions?	<ul style="list-style-type: none"> 1 Pilot project (15%) – mixed waste processing and composting/digestion Follow progress of other communities
How much will it divert?	<ul style="list-style-type: none"> 0.5% to 0.7% 800 to 1,120 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> Range \$2.25 to \$4.00 per year Likely \$2.75 Likely Multi-res unit only \$62.50

 Other Organics Programs	
Why is this important?	<ul style="list-style-type: none"> • Food waste avoidance should be a priority • Lowers costs; community oriented
How many actions?	<ul style="list-style-type: none"> • 3 • Builds on 2 existing actions, BYC and community composting
How much will it divert?	<ul style="list-style-type: none"> • 0.3% to 0.6% • 480 to 960 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$1.50 to \$2.00 per year • Likely \$1.75

 FOCUS – Food Waste Avoidance	
	<p>Local Research (Western University), local Pilot Projects and experience in Canada, USA and Europe</p>
<ul style="list-style-type: none"> • Audits – confirmed up to 2/3rds avoidable food waste • \$450 to \$600 per household (\$80 to \$100 million/year) in avoidable food • 10% reduced = \$8 to 10 million saved locally 	
	

 <h2>Reduction & Reuse</h2>	
Why is this important?	<ul style="list-style-type: none"> • Lowers costs; community oriented • Council policies, directions and by-laws set stage
How many actions?	<ul style="list-style-type: none"> • 7, includes community investment • People are the driving force behind reduction and reuse
How much will it divert?	<ul style="list-style-type: none"> • 1% to 4% • 1,600 to 6,400 tonnes
What is the cost/hhld estimate?	<ul style="list-style-type: none"> • Range \$0.50 to \$2.00 per year • Likely \$1.50

 <h2>FOCUS – Working with the Community</h2>	
<p>Build Collaborations Explore options to build community collaborations</p>	 <p>What Is A Tool Lending Library?</p>
	<p>More (Fun) Reporting and Feedback . . . celebrating community success</p> 



Ipsos Survey June 2018

Parameters

- 301 respondents; Single family and apartments
- +/- 6.4%, 19 times out of 20



Findings

- waste diversion is important (90%)
- support food waste avoidance program (90%)
- support curbside/multi organics program (75%)
- prepared to deliver more to depots (65%)





Ipsos Survey June 2018

Willingness to pay more for increased waste diversion

\$0 per household per year	<div style="width: 24%; height: 15px; background-color: #008080; display: inline-block;"></div>	24%
\$1 to \$25 per household per year	<div style="width: 47%; height: 15px; background-color: #008080; display: inline-block;"></div>	47%
\$26 to \$50 per household per year	<div style="width: 18%; height: 15px; background-color: #008080; display: inline-block;"></div>	18%
\$51 to \$75 per household per year	<div style="width: 4%; height: 15px; background-color: #008080; display: inline-block;"></div>	4%
\$76 to \$100 per household per year	<div style="width: 7%; height: 15px; background-color: #008080; display: inline-block;"></div>	7%

76% willing to pay more



Benefits

Environmental 

- increased waste diversion (33% more)
- reduced GHG gas emissions (equivalent of removing 4,200 to 6,800 cars)
- reduced landfill impacts (odour, traffic)
- better use of material and resources





Benefits

Social 

- creation of jobs (between 125 and 170, direct & indirect)
- satisfaction/pride of community

Financial 

- short-term landfill cost savings
- avoid long term export costs (\$5 to \$7 million/year)



 **Estimated Annual Costs**

Program Category	Cost Range	Likely Cost
Blue Box Recycling Improvements	\$0	\$0
New Recycling Programs and Initiatives	\$350,000 - \$550,000	\$450,000
Curbside Organics Management Program	\$3,900,000 - \$5,500,000	\$5,000,000
Multi-Res Organics Pilot Program	\$400,000 - \$700,000	\$500,000
Other Organic Programs	\$250,000 - \$350,000	\$300,000
Waste Reduction, Reuse Initiatives and Policies	\$150,000 - \$350,000	\$250,000
Total	\$5,050,000 - \$7,450,000	\$6,500,000

 **Potential Funding Sources**

Source	Potential amount	Possible Date	Who Controls	Level of Risk
Full EPR for Blue Box	\$1.5 M to \$1.8 M	2022 to 2025	Province	Low
Full EPR for Other Programs	\$50,000 to \$150,000	2023/2025	Province	High
W12A Landfill Levy	\$250,000 to \$1 M	2020/2022	City	Low
Total	\$1,800,000 - \$2,950,000 (\$2,000,000 likely)			



Estimated Capital Costs

Program Category	Items	Estimated Cost
New Recycling Programs and Initiatives	<ul style="list-style-type: none"> • EnviroDepot Improvements 	\$500,000 to \$2,700,000
Curbside Organics Management Program	<ul style="list-style-type: none"> • Green Bin Carts • Kitchen Catchers • Collection Vehicles 	\$12,000,000
Other Organic Management Programs	<ul style="list-style-type: none"> • Community composting 	\$100,000
Waste Reduction, Reuse Initiatives and Policies	<ul style="list-style-type: none"> • Reuse facilities 	\$200,000
Total	\$12.5 - \$15 million	



Annual Cost Summary

	Low	High	Likely (Anticipated)
Cost	\$5,050,000	\$7,450,000	\$6,500,000
Cost/hhld	\$28.00	\$41.50	\$36.00
Revenue	\$1,800,000	\$2,950,000	\$2,000,000
Revenue/hhld	\$10.00	\$16.50	\$11.00
Total Estimated Cost			\$4,500,000
Total cost/hhld			\$25.00

 **MBNC Cost Comparisons**

2016 Municipality	Cost per Tonne		Cost per Household		
	Collection & Disposal	Diversion	Collection & Disposal	Diversion	Total
Hamilton (lowest Diversion & GB)	344	151	150	69	218
Niagara (Lowest with GB)	195	138	90	102	192
Average of 9 GB municipalities	264	234	127	100	227
London (60% - likely cost)	156	161	87	86	173
London (60% - high cost)	156	171	87	91	178

 **Next Steps – 60%**

Next Steps	Comments	Timeline
CWC and Council “Approval in Principle”	<ul style="list-style-type: none"> • CWC Meeting – July 17 • Council - July 24 	July 2018
Seek Community Feedback on Action Plan	<ul style="list-style-type: none"> • Interactive WhyWaste website • Circulate to Stakeholder Groups • Attend Gathering on the Green II • Presentations to WMCLC and ACE • Public Participation Meeting (Sept. 27) 	July to September, 2018
CWC and Council Approval	<ul style="list-style-type: none"> • Implementation details and final cost estimates to be provided 	January/February, 2019