Report to Civic Works Committee

To: **Chair and Members**
Civic Works Committee
From: **Kelly Scherr, P.Eng., MBA, FEC**
Managing Director, Environmental & Engineering Services, City Engineer
Subject: **Green Bin Program Design - Community Engagement Feedback**
Date: **March 30, 2021**

Recommendation

That, on the recommendation of the Managing Director, Environmental & Engineering and City Engineer the following actions **BE TAKEN:**

a) this report **BE RECEIVED** for information;

b) the Civic Administration **BE AUTHORIZED** to undertake a Request for Proposals procurement process to:

i) select a company or companies to supply a kitchen container for indoor use to recover organics;

ii) select a company or companies to supply and deliver to London homes a Green Bin curbside container (approximate size 45 litres); and

iii) select a company or companies to supply and deliver a larger Green Bin curbside container (approximate size 80 litres or 120 litres) potentially for use in some townhome complexes where a smaller Green Bin is not practical;

c) the Civic Administration **BE AUTHORIZED** to undertake the Request for Proposals procurement process for a Green Bin material processor(s) that can compost and/or anaerobically digest:

i) Mix #1 - Food waste, non-recyclable/soiled paper, cooking oils and grease, and household plants; and/or

ii) Mix #2 - Food waste, non-recyclable/soiled paper, cooking oils and grease, household plants; and pet waste (e.g., dog, cat, other);

it being noted that processors will have to clearly state what types of products will be created (e.g., compost categories AA, A, B, digestate, renewable natural gas, electricity, etc.) as well as describe the final end uses for these products.

d) the Civic Administration **BE AUTHORIZED** to design a Green Bin program that permits the use of the following liners, if a liner is deemed necessary by the household:

i) Newsprint/household paper;

ii) Purchased paper liners/bags; and

iii) Purchased certified compostable bag liners;

it being noted that should Mix #2 be selected all pet waste must contained inside a purchased certified compostable bag (leak free and tied tightly) to be an eligible item for the Green Bin.

e) the Civic Administration **BE DIRECTED** to report back on the outcome of the procurement processes and provide details on the preferred mix of materials to collect in the Green Bin and any final design adjustments based on new information; and

f) the Civic Administration **BE DIRECTED** to report back by September 2021 on municipal programs options, advantages, disadvantages and estimated costs to address bi-weekly garbage concerns.

Executive Summary

The Green Bin Community Engagement process was conducted to engage the community and solicit feedback in designing London's Green Bin program. The community engagement focused on five key decision areas for overall program design which influence one another: types of materials accepted, size of curbside container, type of kitchen container and type of bin liners permitted. The engagement process also asked Londoners what concerns they may have with bi-weekly garbage collection.

The City's community engagement online platform, GetInvolved.ca, was used to provide information, and collect feedback on each of the key decision areas. Feedback was collected over an 8-week period from January 11, 2021 to March 5, 2021. The online feedback form received 3,777 responses, the webpage had 9,180 unique visitors and about 54,000 total page views. Key highlights of the resident feedback are:

- a large majority supported a Green Bin material mix that includes food waste (99%), soiled paper (79%), cooking oils and grease (63%) and household plants (73%). 45% of respondents wanted to also include pet waste, and 21% wanted to also include diapers/sanitary products (includes adult incontinence products and feminine hygiene products);

- the 'medium' curbside container size (80 litres) was preferred over the 'small' bin (45 litres) by 57% to 35% (with others undecided, etc.);

- a tight-fitting lid to reduce odours/fruit flies was the most important kitchen container feature (80%), followed by a handle (64%). Only about 20% did not need or want a kitchen container;

- almost 70% indicated that purchased certified compostable liners should be permitted, and about 45% indicated paper liners (purchased, or household paper) be permitted. Only 7% thought that plastic bags should be permitted;

- the most common concern (48%) for bi-weekly garbage collection was that it would be four weeks between collection if they missed a collection. About 25% indicated concerns about holding on to diapers and about 25% indicated concerns about holding on to pet waste over a longer collection cycle.

Staff recommendations for all five decisions are provided in the Recommendation section of this report and are based on details from:

- review and discussions with municipalities delivering a Green Bin program;
- experience from the Green Bin Pilot Project conducted in London between October 2011 and November 2012;
- feedback received from online engagement and previous engagement opportunities and comments received; and
- City staff experience from viewing Green Bin programs in operation and similar programs and/or program parameters offered in London.

Funding for the Green Bin program as part of the 60% Waste Diversion Action Plan was approved on March 2, 2020 and with budget amendments made and approved on January 12, 2021. The estimated amount allocated for the Green Bin program and related matters is $5 million annually with a capital cost estimated between $12 million and $15 million. These estimates were prepared in 2018.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of solid waste management and the need for a more sustainable and resilient city in the development of its 2019-2023 Strategic Plan for the City of London. Specifically, London's efforts in solid waste management address the three following areas of focus: Building a Sustainable City; Growing our Economy; and Leading in Public Service.

On April 23, 2019, the following was approved by Municipal Council with respect to climate change:

> *Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change.*

The 60% Waste Diversion Action Plan, including the Green Bin program, addresses various aspects of climate change mitigation within the waste management services area including greenhouse gas (GHG) reduction.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Some relevant reports that can be found at www.london.ca under Council and Committees meetings include:

- Community Engagement on Green Bin Program Design (November 17, 2020 meeting of the Civic Works Committee (CWC), Item #2.3)
- Business Case 1 – 60% Waste Diversion Action Plan – 2020-2023 Multi -Year Budget (January 30, 2020 meeting of the Strategic Priorities & Policy Committee (SPPC), Item #4.12a)
- 60% Waste Diversion Action Plan – Updated Community Feedback (September 25, 2018 meeting of the CWC, Item #3.2)
- Public Participation Meeting 60% Waste Diversion Action Plan – Additional Information (September 25, 2018 meeting of the CWC, Item #3.2)
- 60% Waste Diversion Action Plan (July 17, 2018 meeting of the CWC, Item #3.1)

2.0 Discussion and Considerations

2.1 Overview of Green Bin Community Engagement and Results

The Green Bin Community Engagement process was conducted to engage the community and solicit feedback in designing London's program. The City's community engagement online platform, Get Involved, was used to provide information and collect feedback on each of these five key decision areas for the overall Green Bin program design:

1. What materials should be placed inside the Green Bin?
2. What size of curbside container should be used?
3. What type of kitchen (indoor) container should be provided?
4. What type of container liners should be permitted?
5. What are the concerns about bi-weekly garbage collection (pickup)?

A communications campaign promoted the community engagement opportunities to Londoners. The campaign included social and traditional media such as newspaper ads, radio ads, City Newsletter e-News, Social Media (Instagram, Facebook, Twitter) and digital billboards.

The Green Bin community engagement overview details and summary is available in Appendix A. The community engagement process was conducted over an eight-week period from January 11 to March 5, 2021 using the City's community engagement online platform, Get Involved:

- 3,777 responses were received;

- 1,325 general comments regarding support for the Green Bin program, waste diversion programs, ideas for program design and environmental benefits were provided;

- 9,180 unique visitors (number of individual devices – such as a phone, iPad, or computer - visiting the Get Involved page and viewed at least one page) were recorded; and

- 54,000 total page views (number of total pages viewed on the Green Bin Get Involved page. This includes all clicks on the home page, photos, videos, and background information) were recorded.

The one-night Green in the City series event presented an overview of London's Green Bin program development. A portion of the presentation included municipal staff from the Region of Waterloo and City of Hamilton to share their Green Bin program experiences. This event had 105 attendees.

Each of the five key decision areas for the Green Bin Program design are described and evaluated in the Appendices B through F. Each key decision area is presented with the following sections: overview, summary of the choices, Green Bin municipalities, London's experience with similar and existing programs, resident feedback results, operational and technical considerations, and staff recommendations.

2.2 Key Decision #1 – What Materials Should Be Placed Inside the Green Bin?

Choices
A decision about the type of material permitted in the Green Bin is perhaps the most critical decision because it will impact other operational decisions. Seven types of materials can be grouped into three categories:

- 'Clean' organics typically include food waste, non-recyclable/soiled paper, cooking oils and grease, and household plants;

- 'Dirty' organics typically include pet waste (e.g., dog waste, cat waste/litter, other pet waste/litter) and diapers and sanitary products (includes adult incontinence products and feminine hygiene products); and

- Yard waste (including grass clippings, trimmings, etc.).

Green Bin Municipalities
A review of 15 Ontario municipalities and three Canadian programs found that all municipalities have a material mix that includes food waste, soiled paper, cooking oils and grease and household plants. About half of municipalities allow pet waste and only two municipalities (York Region and Toronto) allow diapers/sanitary products.

Resident Feedback
Online Feedback Form Question: What Materials Should Be Placed Inside the Green Bin?

Material Type (check all that apply)	Responses (%)	Number of Responses
Food waste	99%	3,691
Soiled paper	79%	2,941
Cooking oils and grease	63%	2,335
Household plants	73%	2,738
Pet waste (dog and cat feces and kitty litter)	45%	1,679
Diapers/sanitary products[1]	21%	778
Yard waste	53%	1,990
Total Responses		**3,734**

[1]Diapers includes adult incontinence products and sanitary products refers to feminine hygiene products.

These results are consistent with in-person feedback received from 260 participants at the January 2020 Lifestyle Home Show where approximately 50% selected a 'clean-only' material mix only. Approximately 50% also selected pet waste and about 30% also selected diapers/sanitary products.

Staff Recommendation

1. Obtain pricing from the marketplace on two mixes of Green Bin materials to be processed:
    - Mix #1 - Food waste, non-recyclable/soiled paper, cooking oils and grease, and household plants; and
    - Mix #2 - Food waste, non-recyclable/soiled paper, cooking oils and grease, household plants; and pet waste (e.g., dog, cat, other).

Rationale for Recommendation

Mix #1 contains materials that are:

- the most commonly collected materials in other municipalities;
- generally ranked higher from resident feedback;
- easiest materials to compost or digest;
- likely to have lower processing costs;
- likely to create the cleanest possible end-product; and
- represent more than 65% of available organics.

Mix #2 also includes pet waste (e.g., dog waste, cat waste and litter, other pet waste) which is found in approximately half the homes in London. This will:

- add to challenges for compost or digest and likely increase processing costs;
- may require a change in handling practices if plastic bags are currently being used for 'poop and scoop' practices;
- be an extra cost to households if they are switching to certified compostable bags, from plastic pet waste bags (which cost less) or reusing retail plastic bags;
- increase the Green Bin 'yuk factor' and may discourage general use of the Green Bin if it becomes soiled with pet waste, and particularly over the winter when cleaning with an outdoor hose may not be possible;
- may have an impact on end-product quality; and
- targets an additional 20% of available organics to increase total target to 85% of available organics.

Diapers/sanitary products should be excluded from both mixes because:

- diapers/sanitary products are not really composted or digested; therefore, they still end up in the landfill, and their presence in the mix will negatively impact the ability to produce a higher quality end-product;
- most households with diapers use them for a transition period and although managing them for this period is a challenge, there are other preferred options that can be explored to assist those households (e.g., permitting no-charge depot drop-off, permitting an extra bag at the curbside, etc.); and

Yard waste should not be added to the Green Bin program because:

- the cost of processing yard waste with Green Bin materials is approximately double that of processing yard waste collected in a separate collection;
- it may discourage the use of the Green Bin for kitchen organics if householders fill their bin with yard waste, leaving less room for food scraps;
- the current Green Week collection program that includes trimmings, plant materials, brush, branches, leaves is still required; and
- yard waste will continue to be permitted at the EnviroDepots.

Next Steps

1. Prepare details for a Request for Proposals for processing London's Green Bin Materials that includes pricing options for Mix #1 and Mix #2 materials.

2. Undertake further research on how municipalities work with residents regarding pet waste, diapers/sanitary products and related matters.

2.3 Key Decision #2 – What Size of Curbside Container Should Be Used?

Choices
The curbside container is used to store organic materials and will be set out to the curbside on collection day. Staff have narrowed the Green Bin container choice to two size options (based on previous public feedback and research including what is most used in other municipalities):

- 'small' size Green Bin typically about 45 litres; and
- 'medium' size Green Bin typically 80 litres.

Green Bin Municipalities
A review of 15 Ontario municipalities found that ten programs use the small Green Bin, four programs use a medium Green Bin ranging from 80 to 100 litres and one municipality that collected the Green Bin bi-weekly uses a large (240 litre) Green Bin. Those using the medium or large containers (carts) also use semi or automated collection vehicles to assist crews with collection of the heavier bins.

Resident Feedback
Online Feedback Form Question: What size of curbside Green Bin would you like?

Green Bin Size (check one)	Responses (%)	Number of Responses
Small (40 to 50 litres in size)	35%	1,336
Medium (70 to 80 litres in size)	57%	2,155
Undecided	5%	170
I do not wish to receive a Green Bin	3%	107
Total Responses		**3,768**

These results are consistent with in-person feedback received at the January 2020 Lifestyle Home Show where approximately 60% of the 260 respondents selected the medium bin and 40% selected the small bin.

Staff Recommendation
1. Design London's Green Bin program to use the small size (approximately 45 litres) Green Bin container.

Rationale for Recommendation
- the small Green Bin will hold 20 to 30 kilograms of organics;
- the average quantity of organics generated in London households is:
  - about 4 kilograms per week of Mix #1 materials (and potentially up to 4 times that amount in peak periods)
  - about 5 kilograms per week of Mix #2 materials (and potentially up to 4 times that amount in peak periods)
- for health and safety reasons London's weight limit for collectors manually lifting garbage is 20 kilograms. It will be the same for Green Bins;
- if a larger Green Bin container is used, all collection vehicles would require a mechanical lift assist and this feature would increase vehicle costs by as much as $12,000 to $15,000 per vehicle;
- the small Green Bins (45 litres) cost between $35 and $40 and the 80 litres containers cost between $70 and $75 (i.e., more than double the price between containers sizes or potentially about $5 million difference in price if it were one or the other being offered); and
- the medium 80 litre bin may result in more yard waste being placed in the bin because there will be extra capacity, which will mean higher fees for managing yard waste.

It is important to note that resident feedback favoured the medium-sized Green Bin. However, based on waste audit data the small Green Bin will be large enough to handle the average quantities of organics from most London households. A solution is needed for households that find that the small bin is not adequate as they generate large quantities of organic waste (e.g., the provision of a second Green Bin, or of a larger bin in some instances). There will be no limit to the quantity of Green Bin materials that will be collected from households, as is the case with Blue Box recyclables, as long as the materials are from the household participating in the program.

Next Steps

1. Prepare details for a Request for Proposals for purchase and distribution of the small Green Bin.

2. Undertake research of advantages and disadvantages of registering/tracking Green Bins and the associated costs to determine if this feature should be included in the Green Bin RFP specification.

3. To accommodate households and townhome complexes that require more capacity the option of providing a second Green Bin or other alternatives will be reviewed.

4. A small percent of respondents indicated they do not wish to be supplied with a Green Bin. Experience with other communities suggest some householders do not wish to participate because they compost/digest their organics or do not wish the added work. Staff will explore means of potentially allowing Londoners to opt out of the delivery, returning the unwanted Green Bin, exchanging the unwanted Green Bin, etc. to determine practicality and cost savings potential.

2.4 Key Decision #3 – What Type of Kitchen Container Should Be Provided?

Choices

Generally, a kitchen container is supplied to households at the same time as the curbside container. The kitchen container helps to make the routine of collecting kitchen organics convenient and thus increase participation in the program to increase chances of success.

There are different types of kitchen containers, with some differences in the features they provide (e.g., handle, carbon filter, size). Other considerations include:

- would residents prefer to be given a retail coupon to purchase a container of their choice; and
- would residents prefer not to receive a kitchen container.

Green Bin Municipalities

The general practice is the provision of a kitchen container with each Green Bin at the start of the program. An opt-out option or retail discount coupon was not found in other municipalities.

Resident Feedback

Online Feedback Form Question: Kitchen Containers: What features are important to you?

Kitchen Container Features (check all that apply)	Responses (%)	Number of Responses
Smaller size bin (approximately 7 litres)	39%	1,476
Larger size bin (approximately 9 litres)	35%	1,335
A handle	64%	2,411
A carbon filter to reduce odours (filters are optional and will need to be purchased)	42%	1,584

Kitchen Container Features (check all that apply)	Responses (%)	Number of Responses
A tight-fitting lid to reduce odours and fruit flies	80%	3,015
I prefer to use my own container (e.g., plastic ice cream tub, coffee can)	7%	256
I already have a container and do not need another	13%	490
I prefer to be provided a coupon towards the purchase of a container of my choice from a local retailer	18%	662
I have no preference	3%	105
I am undecided	2%	75
Other (please specify)	2%	91
Total Responses		**3,769**

Staff Recommendation
- Provide a kitchen container with a tight-fitting lid with each Green Bin (curbside).

Rationale for Recommendation
- a kitchen container helps to increase chances of success by providing a convenient way to collect kitchen organics;
- a system to conveniently collect and store kitchen scraps is an important step towards creating new habits in the household, which are important to establish at the onset of a new program;
- distribution of discount retail coupon would not ensure that each household that wishes to participate will have a kitchen container when the program starts; and
- aligns with a large majority of resident feedback indicating they do want to be provided with a kitchen bin;

Next Steps
1. Prepare details for a Request for Proposals for the purchase of a kitchen container with the distribution of the Green Bin.

2.5 Key Decision #4 – What Type of Container Liners Should Be Permitted?

Choices
Households may wish to line their kitchen container and/or Green Bin. Lining kitchen container or the Green Bin protects helps the material to slide out of the bin, keeps the bin cleaner, reducing odours and insects, and will reduce liquids that can splash on collectors or the street. Liner choices include:

- Newsprint/household paper;
- Purchased paper liners/bags;
- Purchased certified compostable bag liners;
- Plastic bags (non-degradable); and
- No liner.

Green Bin Municipalities
The liner material permitted is contingent on which materials are permitted in the Green Bin; for example, municipalities that accept diapers/sanitary products also permit the use of plastic bag liners. Most municipalities do not require liner use, but some municipalities that accepted pet waste in the Green Bin require it to be placed in an acceptable liner for collection. Due to Covid-19 a few municipalities do require the use of plastic bag liners.

Experience has shown that there is an evolution in the types of liners being used, the cost and availability of these liners, the public reaction to liner use and how collectors react to different types of liners.

Additional information on this matter continues to be compiled by City staff.

Resident Feedback
Online Feedback Form Question: What type of liners should be used?

Bin Liner Type (check all that apply)	Responses (%)	Number of Responses
Newsprint or other household paper	43%	1,599
Purchased paper bags	45%	1,687
Purchased compostable liners (i.e., certified compostable bags)	67%	2,530
Non-degradable plastic liners (e.g., plastic grocery bags)	7%	269
No liner	25%	948
I have no preference	9%	343
I am undecided	6%	221
Total Responses		**3,759**

Staff Recommendation
1. [If London's Green Program is based on Mix #1] Allow residents the choice of no-liner, paper, or certified compostable liners, and not allow the use of regular plastic bag liners.

2. [If London's Green Program is based on Mix #2 (Mix #1 plus pet waste] Allow residents the choice of no-liner, paper, or certified compostable liners, and not allow the use of plastic bag liners. Pet waste would need to be bagged in a certified compostable bag, that is leak free and tied tightly for the safety of the collector. It could still go in the garbage if it were in a regular plastic bag.

Rationale for Recommendation
- allowing households the choice of liner options will accommodate varying household routines and budgets, and encourage program participation;
- offers choice for residents including no-cost options and aligns with resident feedback – only 7% would like to use plastic bags;
- permitting the use of paper and certified compostable liners, and not permitting plastic bags, is consistent with the recommendation to not include diapers/sanitary in the material mix; and
- requiring the use of certified compostable bags when pet waste is placed in the Green Bin is consistent with the desire to keep normal plastic out of the Green Bin. Letting just one item contained in plastic be placed in the Green Bin opens the door for other plastic bags. Residents could place pet waste in plastic bags directly into the garbage as per the current system.

Next Steps
1. Notify liner suppliers/retailers to advise them of permitted liner choices so that they may ensure that product is available for purchase by Londoners in sufficient time prior to the launch of the Green Bin program.

2.7 Key Decision #5 – What are the Concerns About Bi-weekly Garbage Collection?

General Comments
The 60% Waste Diversion Action Plan (approved by Municipal Council in 2018) identified that a switch to bi-weekly, same-day garbage collection and weekly recycling and Green Bin collection (on the same day) would be less costly than weekly garbage collection. Bi-weekly garbage collection was also considered as key to encouraging greater participation of the Green Bin program.

Green Bin Municipalities
Garbage collection frequency is summarized in the table below.

Garbage Collection Frequency for Large Municipalities with Green Bin Collection

Garage Collection Frequency	Municipality
Weekly	Dufferin County, Hamilton[1], Kingston
Weekly	St. Thomas[2]
Bi-weekly	Barrie, Durham, Guelph, Halton, Niagara[3], Ottawa, Peel, Simcoe County[4], Toronto, Waterloo, York (Other Canadian: Calgary, Halifax, Vancouver)

Table Notes:
[1] Reviewing bi-weekly garbage collection
[2] Weekly garbage, bi-weekly green bin and recycling
[3] Changed to bi-weekly garbage collection in October 2020
[4] Changed to bi-weekly garbage collection in February 2020

Resident Feedback
Online Feedback Form Question: What concerns might you have about bi-weekly garbage collection?

Bi-Weekly Garbage Concerns (check all that apply)	Responses (%)	Number of Responses
Too long to hold diapers/sanitary products	24%	902
Too long to hold pet waste	24%	906
Too much garbage will be accumulated over a two-week period	33%	1,250
Missing a pickup will mean four weeks between collection days	48%	1,813
I have some concerns, but I support the decision of bi-weekly garbage collection and weekly recycling and Green Bin pickup	38%	1,425
I do not have concerns about bi-weekly garbage collection	26%	982
I am undecided	2%	70
Other (please specify)	4%	149
Total Responses		**3,760**

Staff Recommendation
1. Prepare a report on how municipalities work with residents to address bi-weekly garbage collection concerns (e.g., managing diapers and related matters) including advantages, disadvantages and estimated costs.

Rationale for Recommendation
- reduced garbage collection frequency relative to Green Bin collection will encourage increased participation in the Green Bin program;
- the Green Bin will manage wet organic and smelly household waste weekly (except for diaper waste) leaving mostly dry waste to be placed in the garbage;
- municipalities with Green Bin programs have found that the amount of organic material collected in the Green Bin increases by 50% to 100% with the introduction of bi-weekly garbage collection. Blue Box recycling rates also increased; and
- resident feedback indicates some specific concerns about reduced garbage collection frequency, however almost 40% noted that they still supported bi-weekly garbage, and about 25% had no concerns.

Managing diapers/sanitary products
Holding diapers/sanitary products for a two-week period may be a challenge for some households. Other municipalities offer programs to assist with diapers/sanitary products. These include a special collection for registered households, an exception to the curbside limit, and no-charge drop-off at depots. Generally, these programs require registered users to place garbage in clear plastic bags so the contents can be checked.

Next Steps
1. Design an information campaign to prepare for collection schedule changes and Green Bin program implementation.

2. Undertake further research on how municipalities work with residents regarding pet waste, diapers/sanitary products and related matters.

3.0 Financial Impact/Considerations

Funding for the Green Bin program as part of the 60% Waste Diversion Action Plan was approved on March 2, 2020 and with budget amendments made and approved on January 12, 2021. The estimated amount allocated for the Green Bin program and related matters is $5 million annually with a capital cost estimated between $12 million and $15 million. These estimates were prepared in 2018.

All items to be purchased through competitive procurement will be provided to Committee and Council for approval and include final decisions on the selection of:

- a company or companies to supply a kitchen container for indoor use to recover organics;

- a company or companies to manufacture and deliver to London homes a Green Bin curbside container (approximate size 45 litres;

- a company or companies to supply and deliver a larger Green Bin curbside container (approximate size 80 litres or 120 litres) potentially for use in some townhome complexes where a smaller Green Bin is not practical; and

- a Green Bin material processor(s) that can compost and/or anaerobically digest Mix #1 and/or Mix #2 materials.

Conclusion

The eight-week Green Bin community engagement program attracted a lot of attention and feedback was received from many Londoners. This information was fairly consistent with experience from other Ontario municipalities and a few communities in other parts of Canada. Previous and related experience with London pilot projects has contributed to staff analysis.

It must be noted that like the Blue Box program, there are innovations, new ideas and new learnings on a regular basis with Green Bin programs. City staff will ensure that, where possible, these kinds of opportunities can be introduced to improve program design and implementation for the purpose of containing/reducing cost, increasing customer experience and satisfaction, and maintaining customer and worker health and safety.

All next steps associated with this report have been identified in the Recommendation section on the first page.

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Prepared and Submitted by: **Jay Stanford, M.A., M.P.A.**
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Managing Director, Environmental & Engineering Services & City Engineer

Appendix A Summary of Green Bin Community Engagement

Appendix B Key Decision #1 – What Materials Should Be Placed Inside the Green Bin?

Appendix C Key Decision #2 – What Size Bin Should London's Green Bin Be?

Appendix D Key Decision #3 – What Type of Kitchen Container Should Be Provided?

Appendix E Key Decision #4 – What Type of Container Liners Should Be Used?

Appendix F Key Decision #5 – What Are the Concerns About Bi-weekly Garbage Collection?

Appendix A – Summary of Green Bin Community Engagement

Online Engagement and Resident Feedback

The Green Bin Community Engagement process was conducted to engage and solicit resident feedback in designing London's Green Bin Program.

Resident feedback was collected over an eight-week period from January 11 to March 5, 2021. The City of London's community engagement online platform, Get Involved getinvolved.london.ca/greenbin, was used to provide information and collect resident feedback on each of the five key decision areas for the overall Green Bin program design:

1) what materials should be placed inside the Green Bin?
2) what type of kitchen container should be provided?
3) what type of bin liner should be permitted?
4) what size of bin should London's Green Bin be? Small or medium?
5) what concerns could there be with bi-weekly garbage collection?

In addition to the five key decision questions, four general questions were asked:

- The City of London is adapting its community engagement to follow event restrictions and physical distancing guidelines to help slow the spread of Covid-19. How would you prefer to engage with London's Green Bin program in the future?
- Would you like to be contacted in the future about London's Green Bin program? Please include your email.
- What is your postal code?
- Do you have any additional comments or feedback?

Londoners were made aware of this engagement and feedback opportunity through a communications campaign that included the following communication methods:

- newspaper ads;
- radio ads;
- City website information including Our City e-news;
- social media; and
- digital billboards.

A promotional digital billboard was displayed on rotation for approximately three weeks (January 20 to February 12, 2021) at the four following locations:

- Wellington Street at Front Street;
- Wellington Street at Bathurst Street;
- Richmond Street at Horton Street; and
- Wharncliffe Road at Baseline Road.

The communication campaign details are provided in Table A1. The newspaper advertisements were provided at no cost through the Resource Recovery and Recovery Authority (RPRA) in-kind advertising program.

Table A1 – Community Engagement Communications Campaign

Communication Type	Date(s) of advertisement
Newspapers	January 23, 2021 – London Free Press January 27 and January 28, 2021 – Londoner
Radio advertising (Jack FM, AM 980, Fresh FM, Classic Rock 98.1)	January 18 to February 7, 2021
Social media (Twitter, Facebook, Instagram)	January 11 to March 3, 2021 (26 posts)

Communication Type	Date(s) of advertisement
Green in the City virtual event	106 attended, 172 registered
Digital Billboards	January 20 to February 12, 2021 (4 locations)
Other digital media	February 4, 2021 – Our City (9,330 emails)

It is important to note that this feedback method (online resident feedback) is non-random sampling, meaning it is not clear what the odds or probability that the data represents the total population (i.e., statistical validity cannot be determined). Online feedback methods are often referred to as unrestricted, self-selected surveys. They are a form of convenience sampling. Care must be used in interpreting the results.

The key highlights of the resident feedback received through the Get Involved feedback form are:

- 3,777 completed feedback forms (75% who started completed it);
- 54,140 total page views (number of total pages viewed on the Green Bin Get Involved page. This includes all clicks on the home page, photos, videos and background information);
- 9,180 unique visitors (number of individual devices – such as phone, iPad or computer - visiting the Get Involved page and viewed at least one page);
- 1,335 provided additional general comments on the feedback form; and
- 2,210 requested to be contacted for future engagement and provided their email addresses.

Overall, of the 3,777 respondents, 38% (1,418) provided a method on how they would like to engage and receive information regarding London's Green Bin program in the future. Some respondents provided multiple methods for communication and others had no preference. The methods of communication listed by residents can be summarized into the following categories:

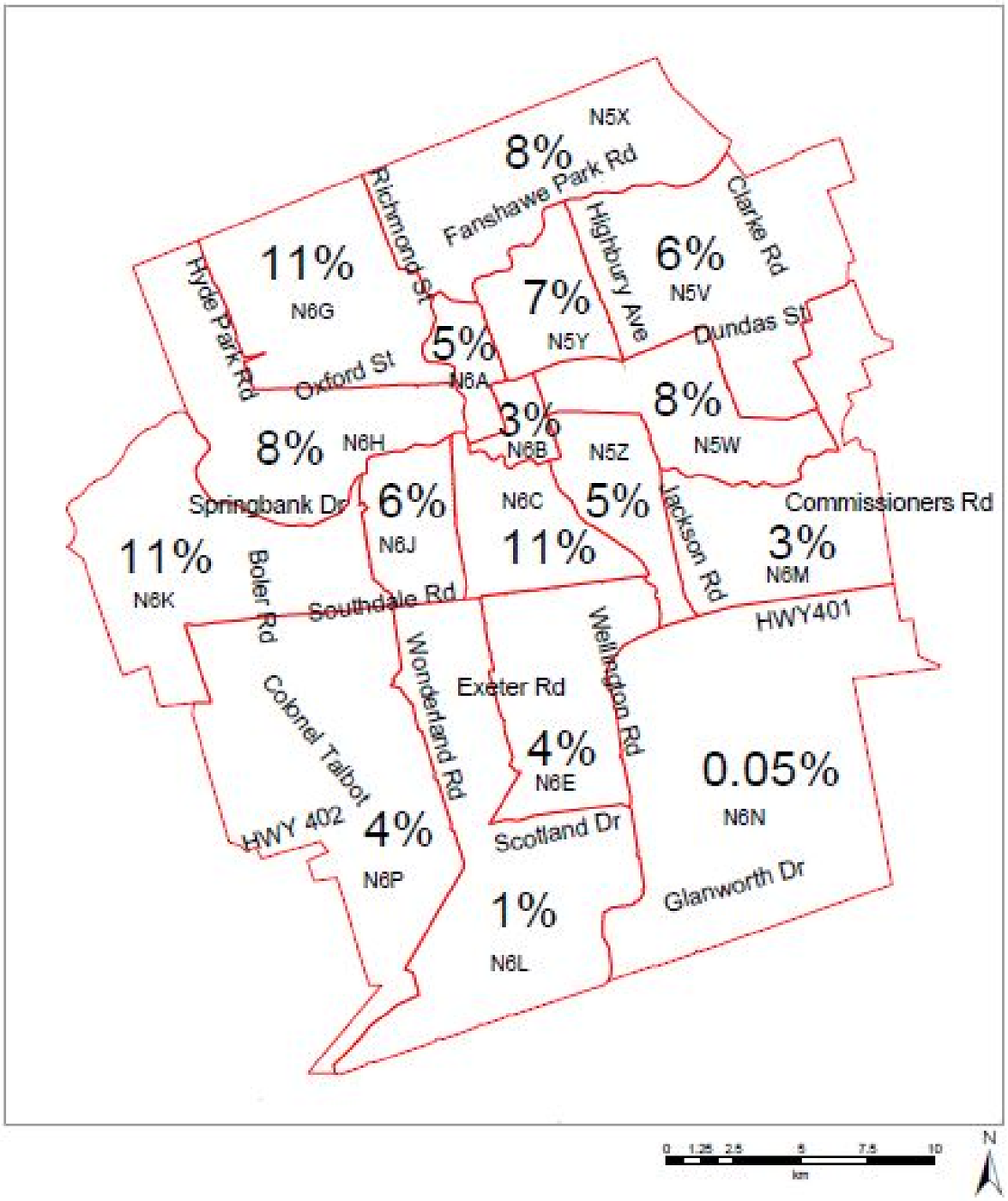
- online (City website, Get Involved website) – 42%
- email – 48%
- virtual presentations (Zoom, webinar) – 13%
- social media (Facebook, Twitter, Instagram) – 11%
- other (print, radio, community groups) – 2%
- no preference – 6%

Of the 3,777 respondents, 2,781 (74%) provided a postal code. Of these 7 respondents indicated that they were non-London residents. The resident feedback received represented all areas of the city. To summarize the distribution, examples of City Planning Districts with the corresponding Canada Post FSA (Forward Sortation Area, first three letters of postal code) are as follows:

- Huron Heights, Uplands, Stoney Creek (N5V, N5X, N5Y) – 21%
- Central London, Highland (N6A, N6B, N6C) – 19%
- Sunningdale, Hyde Park, Oakridge (N6G, N6H) – 19%
- Byron, Southcrest, Bostwick (N6J, N6K) – 17%
- Crumlin, Hamilton Rd, Glen Cairn (N6M, N5W) – 15%
- Lambeth, Tempo (N6P, N6L) – 5%
- Glanworth, White Oak (N6E, N6N) – 4%

A detailed city-wide distribution of the proportion of feedback forms completed is displayed in Figure 1.

Figure 1: Online Feedback Form – Postal Code Distribution of Respondents



Overall, there was a range of general additional comments received. Of the 3,777 respondents, 35% (1,335) provided one or more comments at the end of the feedback form, with most of the comments received being positive. The most common comment received (72%) expressed support of a Green Bin program for London. The other common comments received expressed views on:

- waste diversion programs such as backyard composting or recycling;
- apartments and businesses participating in the Green Bin program;
- ideas for Green Bin program design – promotion and education, bin design for pest control;
- Green Bin program operations – processing, marketing of end products, costs; and;
- environmental benefits of the Green Bin program.

Based on staff's review of the general comments, approximately 70% of the written feedback was related to the Green Bin program and is addressed by this staff report. Approximately 25% of the written feedback was related to other waste management

programs and the remaining 5% was tied to other items dealing with the environment. The general comments were tallied by categories; therefore, residents may have provided more than one general comment, the proportion of comments was determined from all tallied comments not by the number of residents who provided a general comment.

Green in the City event – Developing London's Green Bin Program

A virtual Green in the City event included City staff presentations and presentations from municipal staff of the Region of Waterloo and City of Hamilton who shared information about their mature Green Bin programs.

The event had 106 residents attend and 172 registered. At the end of the presentation there was a question-and-answer period where residents had the opportunity to find out more about London's Green Bin program design. Some examples of the questions asked were regarding the differences in the environmental impacts of processing pet waste and diapers/sanitary products materials and where London will be shipping the Green Bin materials for processing.

Additional Green Bin Resident Feedback Received in 2020

In early 2020 Londoners were solicited for feedback to assist with narrowing down some of the program design options.

An interactive display was featured at the January 2020 Lifestyle Homeshow, Western Fair District Agriplex (January 31 – February 2, 2020) where 260 people provided in-person feedback. The overall results were:

- 90% of participants plan to use the Green Bin;
- the vast majority would put food waste and soiled paper products in the Green Bin (95% and 80% respectively);
- 60% would put pet waste in the Green Bin;
- 30% would put diaper/sanitary products in the Green Bin; and
- 60% say the medium size (80 litre) Green Bin is best for them.

Resident feedback was also collected at four smaller community events in 2020:

- January 10, 2020 at the London Knights House of Green Goes Green event;
- February 26, 2020 at the Lambeth Legion during the W12A Landfill Expansion Environmental Assessment Open House;
- February 27, 2020 at the Earl Nichols Arena during the W12A Landfill Expansion Environmental Assessment Open House;
- March 7, 2020 at the Carling Heights Optimist Centre for Seedy Saturday; and
- Other planned events were cancelled due to the COVID-19 pandemic.

Overall, from these four events approximately 60 residents completed an in-person feedback form and the results were consistent with the in-person feedback received at the January 2020 Lifestyle Homeshow.

Appendix B – Key Decision #1 – What Materials Should Be Placed Inside the Green Bin?

Overview

The type of materials permitted in the Green Bin is the most critical decision as it will impact other aspects of the program, including processing costs, availability of processing operations, user participation and convenience, waste diversion rate, landfill costs, and greenhouse gas emissions.

Choices

Food waste, including cooking oil and grease, and non-recyclable/soiled paper are the most common materials collected in Green Bin programs. A key decision is required on the types of materials permitted. Seven types of materials can be grouped into three categories:

- 'Clean' organics typically include food waste, non-recyclable/soiled paper, cooking oils and grease, and household plants;
- 'Dirty' organics typically include pet waste (e.g., dog waste, cat waste and litter and other pet waste) and diapers/sanitary products (includes adult incontinence products and feminine hygiene products); and
- Yard waste (including grass clippings, trimmings, etc.).

The online resident feedback form listed all seven material choices and asked Londoners to check any they want to include in London's Green Bin program.

Green Bin Municipalities

A review of 15 Ontario and three Canadian municipal Green Bin programs found that all municipalities have a material mix that includes food waste, soiled paper, cooking oils and grease and houseplants (note: Hamilton stopped accepting houseplants and yard waste in April 2019). Half of the 18 programs accept 'clean' organics; seven allow pet waste but do not allow diapers/sanitary products; and two municipalities (York Region and Toronto) allow pet waste and diapers/sanitary products. Table B1 provides details on Green Bin materials collected in the 18 municipalities.

Table B1 - Summary of Materials included in Other Green Bin Programs

Municipality	Food	Soiled paper	Cooking oils and grease	House-hold plants	Pet waste	Diapers/ Sanitary Products	Yard waste
City of Toronto	x	x	x	x	x	x	
Region of York	x	x	x	x	x	x	
City of Guelph	x	x	x	x	x		
Region of Niagara	x	x	x	x	x		
City of Ottawa	x	x	x	x	x		x
Simcoe County	x	x	x	x	x		
City of St Thomas	x	x	x	x	x		x
Region of Waterloo	x	x	x	x	x		
City of Barrie	x	x	x	x			
Dufferin County	x	x	x	x			
Region of Durham	x	x	x	x			

Municipality	Food	Soiled paper	Cooking oils and grease	House-hold plants	Pet waste	Diapers/ Sanitary Products	Yard waste
City of Hamilton	x	x	x				
Region of Halton	x	x	x	x			
City of Kingston	x	x	x	x			x
Region of Peel	x	x	x	x			
Other Canadian							
City of Vancouver	x	x	x	x			x
City of Calgary	x	x	x	x	x		x
City of Halifax	x	x	x	x			x

Many of the Ontario Green Bin programs are mature and have been in place for several years. Municipal staff from these municipalities were asked about any changes they have made to material mixes since the beginning of the program. These changes are listed in Table B2 and provide some insight about which materials have become problematic for their programs. Municipal staff were also asked for their comments on materials they consider to be problematic and should not be included in the Green Bin program (Table B3).

Table B2 – Changes to Green Bin Material Mixes Since Program Inception

Changes to Material Mix	Municipality
Removed disposable paper cups	Niagara, Halton
Removed dirt/vacuum sweepings	Waterloo
Removed leaf and yard waste	Hamilton (2019)
Added grease and cooking oils	Kingston
Added pet waste and kitty litter	Simcoe County (2019), Ottawa (2019)

Table B3 – Materials to Avoid in Municipal Green Bin Programs

Materials to Avoid	Municipality
Compostable plastics	Toronto, Guelph
Plastic bags	Niagara, Peel
Diapers/sanitary products	Niagara, Simcoe, Hamilton, Peel
Pet waste	Halton (in-vessel composting)
Others (dirt/vacuum sweepings, dryer lint, microwave popcorn bags)	Waterloo, Hamilton

London's Experience with Similar Existing Programs

The Green Bin Pilot Project that operated in London between October 2011 and November 2012 had a 'clean' program material mix including the option to 'top-up' with yard waste. The contamination rate (i.e., the percent of materials that do not belong) was measured twice during the pilot project and was approximately 3%. This is significantly "cleaner" than Green Bin programs that allow plastic materials such as diapers/sanitary products or plastic bags as liners.

London's curbside yard waste collection program allows for the use of paper bags, certified compostable bags, or reusable containers. However, prior to 2010 the program permitted the use of plastic bags, but it was changed to decrease the yard waste processing costs, reduce plastic bag use, and increase the quality of the compost end-

product as it would have less contaminants. A ‘cleaner’ processed end-product with less contaminants allows for more versality with end markets.

Resident Feedback Results

Results from the 2021 online resident feedback form on what type of materials should be placed inside the Green Bin can be found below in Table B4.

Table B4 – Online Feedback Form Question: What Materials Should Be Placed Inside the Green Bin?

Material Type (check all that apply)	Responses (%)	Number of Responses
Food waste	99%	3,691
Soiled paper	79%	2,941
Cooking oils and grease	63%	2,335
Household plants	73%	2,738
Pet waste (dog and cat feces and kitty litter)	45%	1,679
Diapers/sanitary products[1]	21%	778
Yard waste	53%	1,990
Total Responses		**3,734**

[1] Diapers includes adult incontinence products and sanitary products refers to feminine hygiene products

Noting that the question asked was somewhat different, these results are consistent with resident feedback received from 260 participants at the January 2020 Lifestyle Home Show, where approximately 50% selected a ‘clean only’ material mix, and approximately 50% selected pet waste and about 30% selected diapers/sanitary products.

Operational and Technical Considerations

In general, the ‘clean’ organics option would be a less costly choice for the City. Restricting the material mix to these materials means that a smaller and less costly curbside bin can be used (as extra capacity for items like diapers would not be required), and processing operations will be more available (as fewer processors are able to process ‘dirty’ organics), and the per tonne cost of processing will be less.

<u>Yard Waste</u>

Yard waste, such as grass clippings or plant trimmings can be a problem as it is not a cost-efficient way to manage this material and there is not sufficient capacity within the Green Bin to contain it. The cost of processing yard waste with Green Bin materials is approximately twice as much compared to yard waste collected on a separate collection. If yard waste is permitted in the Green Bin it could have the effect of discouraging the use of the Green Bin for kitchen organics if householders fill their bin with yard waste, leaving less room for food scraps.

<u>Pet Waste and Diapers/Sanitary Products</u>

Including pet waste or diapers/sanitary products in the material mix could have some advantages such as user convenience and increased waste diversion of these materials through the Green Bin. However, including these materials in the mix will increase processing costs and make the Green Bin materials more difficult to process.

Adding pet waste in the material mix could increase diversion through the Green Bin by 10% and 20% and including both pet waste and diapers/sanitary products could increase

diversion by 15% to 25%. It is important to note that the diapers/sanitary products are not really composted or digested; therefore, they still end up in the landfill. Depending on the type of pre-processing system used, many dog waste bags may not open to permit exposure of the contents for further processing. Including pet waste and diapers/sanitary products could increase the processing costs between 20% to 40%.

Not accepting pet waste and diapers/sanitary products in the Green Bin will mean that a large percentage of London households will need to store this material for a longer period between garbage collections. Approximately 50% of London homes have dogs or cats and approximately 10% of homes in London have diapers/sanitary products.

Pet waste in the Green Bin would need to be bagged in a certified compostable bag, leak free and tied tightly for the safety of the collector. This requirement may cause a change in household 'poop and scoop' handling practices and introduce extra costs if households are switching to certified compostable bags, from plastic pet waste bags or reusing retail plastic bags. Including pet waste may also increase the Green Bin 'yuk factor' and discourage general use of the Green Bin if it becomes soiled with pet waste, particularly in the winter months when cleaning with an outdoor hose may not be possible.

Currently the City sells a home digester unit that can be used to 'digest' dog waste. In 2020 a small pilot project was conducted with volunteer households to test the use of the digester. The results of this pilot were favourable and suggest this could be a potential solution to handle dog waste for some households. This will be investigated further as reducing the price of the digester (and home composters) is an action item that is to be implemented as part of the 60% Waste Diversion Action Plan.

As noted, both products make the Green Bin materials more difficult and costly to process. However, including these materials in the Green Bin will make it easier for residents to accept bi-weekly garbage collection; provide minor landfill cost savings; and further reduce greenhouse gas emissions.

Between these two materials types, pet waste would be considered the higher priority as it involves for more households in London.

Staff Recommendations and Next Steps

It is recommended that staff obtain pricing from the marketplace on two mixes of Green Bin materials to be processed and prepare the details for a Request for Proposals for:

- Mix #1 - Food waste, non-recyclable/soiled paper, cooking oils and grease, and household plants; and

- Mix #2 - Food waste, non-recyclable/soiled paper, cooking oils and grease, household plants; and pet waste (e.g., dog, cat, other).

Staff will also undertake further research on how municipalities work with residents regarding diapers/sanitary products and related matters.

Appendix C – Key Decision #2 – What Size Bin Should London's Green Bin Be?

Overview

Residents will be supplied with a curbside bin to store Green Bin materials and place at the curbside on collection day. The mix of materials permitted and needing capacity in the Green Bin will be a factor in the size selection of the curbside bin used.

Choices

To help respondents make a choice, the Get Involved site included information and photographs on two size options. Through preliminary research and initial public feedback, City staff had narrowed the curbside container choice to two options:

- 'small' size Green Bin typically 45 litres; and
- 'medium' size Green Bin typically 80 litres.

Green Bin Municipalities

These sizes are common in other Ontario municipalities (Table C1). For comparison, the larger Blue Box used in London is 90 litres and the maximum size of garbage can permitted is 125 litres.

Table C1 – Green Bin Sizes

Municipality	Green Bin Sizes in Use (litres)	Number of Material Categories Collected (Table B-1 out of 7)	Kg/year Single Family Households	Percentage Diversion of Total Residential Waste
City of Toronto	97[1]	6	340	20%
Region of York	45	6	310	26%
City of Guelph	80	5	340	18%
Region of Niagara	46	5	70	6%
City of Ottawa	46, 80	6	260	22%
Simcoe County	46	5	90	9%
City of St Thomas	240	6	300	23%
Region of Waterloo	46	5	170	13%
City of Barrie	46	4	110	8%
Dufferin County	46	4	140	15%
Region of Durham	46	4	130	11%
City of Hamilton	46, 120	3	80	6%
Region of Halton	46	4	160	14%
City of Kingston	80	5	80	9%
Region of Peel	100	4	180	12%

Notes:
[1] City of Toronto changed from 46 litre size when automatic/semi-automated was implemented. Smaller bin is still used in area where automatic collection is not possible due to space restrictions.

London's Experience with Similar Existing Programs

The Green Bin pilot project had residents choose from a 45 litre, 80 litre or 120 litre bin based on their needs and storage space. The residents who participated had requested a specific Green Bin size as follows:

- 45 litre – 150 (40%)
- 80 litre – 186 (50%)
- 120 litre – 41 (10%)

Resident Feedback Results

Results from the 2021 online resident feedback form on the size of curbside Green Bin can be found below in Table C2.

Table C2 – Online Feedback Form Question: What size of curbside Green Bin would you like?

Green Bin Size (check one)	Responses (%)	Number of Responses
Small (40 to 50 litres in size)	35%	1,336
Medium (70 to 80 litres in size)	57%	2,155
Undecided	5%	170
I do not wish to receive a Green Bin	3%	107
Total Responses		**3,768**

Operational and Technical Considerations

Larger Green Bin sizes (100 to 120 litres) are not being considered for London at this time. The larger bin would require a semi or fully automated lift mechanism style collection truck, which would increase collection costs. The larger bin size is also more likely to be used by residents for yard waste because there will be extra capacity, which will increase Green Bin processing costs.

The estimated cost of the bins is $35 to $40 for the small bin (45 litres) and $70 to $75 for the medium bin (80 litres); a difference of approximately $5 million in capital costs. Bin size will be a factor in collection operations planning; a small bin can be lifted manually, but a larger Green Bin container will require a mechanical lift to assist on all collection vehicles and this feature would increase vehicle costs by as much as $12,000 to $15,000 per vehicle.

The small Green Bin will hold 20 to 30 kilograms of organics. Waste audits indicate that the average weight of organics generated in London households is:

- about 4 kilograms per household per week of 'clean' or Mix #1 materials (and potentially up to 4 times that amount in peak periods); and

- about 5 kilograms per household per week of Mix #2 (Mix #1 plus pet waste) (and potentially up to 4 times that amount in peak periods).

If either Mix #1 or Mix #2 is selected, then 4 or 5 kg/household/week on average is available in the waste stream for diversion through the Green Bin. The small bin size would have sufficient capacity to manage this quantity of weekly organic material, and the extra quantities on weeks when more than average quantities are generated in the household. It is important to note that this estimate assumes that 100% of the organic mix will be diverted from the garbage into the Green Bin. However, based on other municipal programs and London's pilot project, reaching 100% diversion of organics is not expected, and even with enforcement measures in place, 100% capture of the material mix would not be typical.

Based on density of food waste in the range of 0.50 kg/litre to 0.70 kg/ litre it is estimated that the small Green Bin (45 litre) could hold approximately 20 to 30 kilograms of food waste and the medium Green Bin (80 litres) would hold approximately 40 to 60 kilogram of food waste (Source: *Residential GAP – Manual on Generally Accepted Principles for Calculating Municipal Solid Waste System Flow*, CSR, 2003).

As noted, the small bin will be sufficient for both average household quantities and peak generation times. Noting the maximum container weight (set in the by-law) for curbside garbage collection is 20 kilograms, the smaller bin option also ensures that bins are less likely to be overweight. There will be no limit on the quantity of Green Bin materials collected from households. To accommodate households that require more capacity, and to avoid Green Bins becoming overweight, a second small Green Bin may be provided to household that require it. This option will be reviewed.

Green Bin manufactures may provide an option of embedding containers with Radio Frequency Identification (RFID) tags to register Green Bins by address. As Green Bins are distributed city-wide each Green Bin becomes assigned to a municipal address and input into a tracking system. The advantages of RFID technology are assisting with managing carts as a municipal asset and tracking weekly usage (scanning) in real time. RFID technology also allows confirmation of delivery when the cart is delivered to a household and throughout the lifecycle of the cart. RFID technology is an added cost in the cost of the Green Bin production and the on-going program. Staff will undertake research on the need and benefits of the RFID technology.

Staff Recommendations and Next Steps

Staff recommend that London's Green Bin program be designed to use the smaller (45 litre) curbside container, and for staff to prepare the details for a Request for Proposal for the purchase and distribution of the small Green Bin.

Staff will undertake research of the advantages and disadvantages of registering/ tracking Green Bins and the associated costs to determine if this feature should be included in the Green Bin RFP specification.

To accommodate households that require more capacity the option of providing a second Green Bin will be reviewed.

There may be some locations (e.g., bulk collection areas in townhome complexes) where an 80 litre or larger Green Bin may provide certain advantages for users. This option or other alternatives will be reviewed.

A small percentage of respondents indicated they do not wish to be supplied with a Green Bin. Experience with other communities suggest some householders do not wish to participate because they compost/digest their organics or do not wish the added work. Staff will explore means of potentially allowing Londoners to opt out of the delivery, returning the unwanted Green Bin, exchanging the unwanted Green Bin, etc. to determine the practically and cost savings potential.

Appendix D – Key Decision #3 – What Type of Kitchen Container Should Be Provided?

Overview

Generally, a kitchen container is supplied to households at the same time as the curbside container. To make the collection of organics more convenient in the kitchen, a container is used to store materials (e.g., under the sink, in a cupboard, or on the counter). Depending on how much food waste is generated in a household, it is emptied into the Green Bin daily or 2 to 3 times per week. Kitchen containers have a snap lid and may have a charcoal filter to trap and reduce odours.

During door-to-door delivery a how-to guide would be placed inside the kitchen container and then inside the Green Bin. The kitchen container helps to make the routine of collecting kitchen organics convenient and thus increase participation in the program to ensure success. Establishing a convenient way to collect kitchen organic waste in each household is critical to a successful Green Bin program.

Choices

There are different types of kitchen containers, with some differences in the features they provide (e.g., handle, carbon filter, size). Other considerations include:

- would residents prefer to be given a retail coupon to purchase a container of their choice; and
- would residents prefer not to receive a kitchen container and use their own repurposed container or a 'do-it-yourself' (DIY) version.

Green Bin Municipalities

There are many different kitchen container options available for purchase in other Ontario municipalities. An opt-out option or retail discount coupon was not found in other municipalities. Various sizes designed to fit under the sink or on the kitchen counter should be considered.

London's Experience with Similar Existing Programs

The Green Bin Pilot Project that operated in London between October 2011 and November 2012 included 762 households and had residents choose from three types of kitchen containers. Approximately half of the households requested a specific model (Table D1). The other households were randomly distributed kitchen containers from the three types listed below. At that time the standard manufactured kitchen container from Orbis and a similar sized model from Sure-Close was the most popular with 90% of those residents who requested a specific model choosing them and 10% selecting the smaller model by Busch.

Table D1 – 2011-2012 Green Bin Pilot Project Kitchen Container Selection

Kitchen Container Selection	Responses (%)	Number of Responses
Orbis (7 litre standard size)	30%	115
Sure-Close (with air holes, about 7 litres)	60%	217
Busch (small, about 5 litres)	10%	45
Total Responses		377

There are also learnings from households that successfully compost food scraps using a backyard composter. These households keep a kitchen container within easy reach to collect food scraps as meals are being prepared and during meal clean-up. The size of

the kitchen container is an important factor. It needs to be small enough for placement on the counter and stored when not in use and large enough to contain food scraps for a day or more. Other features include a lid that controls odours and fruit flies, a handle for easy carrying, and an opening that facilitates receiving food scraps off plates and easily tipping the food scraps into the Green Bin. If a liner is used with the kitchen container, then the size and shape may also be a factor to ensure that the liners fit the container. Some models also include charcoal filters to help with odours.

Resident Feedback Results

Details from the 2021 online resident feedback form on kitchen containers and what features are important to Londoner's can be found in Table D2.

Table D2 – Online Feedback Form Question: Kitchen Containers: What features are important to you?

Kitchen Container Features (check all that apply)	Responses (%)	Number of Responses
Smaller size bin (approximately 7 litre)	39%	1,476
Larger size bin (approximately 9 litre)	35%	1,335
A handle	64%	2,411
A carbon filter to reduce odours (filters are optional and will need to be purchased)	42%	1,584
A tight-fitting lid to reduce odours and fruit flies	80%	3,015
I prefer to use my own container (e.g., plastic ice cream tub, coffee can)	7%	256
I already have a container and do not need another	13%	490
I prefer to be provided a coupon towards the purchase of a container of my choice from a local retailer	18%	662
I have no preference	3%	105
I am undecided	2%	75
Other (please specify)	2%	91
Total Responses		**3,769**

Operational and Technical Considerations

Resident feedback on low and no-cost options was included on the Get Involved feedback form, including no-cost DIY bin such as a large metal coffee can or plastic ice cream tub, or lower-cost option of a retail discount coupon.

There are many different kitchen container options available for purchase, and many London households currently use repurposed containers for home composting, that work well for them. When planning the launch of a City-wide Green Bin program providing the same container to all households in London may be the most cost-effective option.

Green Bin manufacturers generally also supply kitchen containers. Purchasing both containers from the same supplier may be a preferred option based on cost.

Staff Recommendations and Next Steps

It is recommended that staff obtain pricing from the marketplace and prepare the details for the Request for Proposals for the purchase and distribution of a kitchen container with each Green Bin (curbside).

Appendix E – Key Decision #4 – What Type of Container Liners Should Be Used?

Overview

Residents may wish to line their kitchen container and/or Green Bin. Lining kitchen containers or the Green Bin helps keep containers clean, reduce odours and fruit flies, and helps empty the material out and prevent food scraps from sticking to the bottom of the bins. If wet food scraps freeze and stick to the bottom of the bins, not all the contents will be emptied during collection. It will also reduce liquids that can splash on collectors or the street.

Choices

Typically, a liner of some type is often used to line the kitchen container and/or Green Bin. Liner types include:

- newsprint/household paper;
- purchased paper liners/bags;
- purchased certified compostable liners; and
- plastic bags (non-degradable).

No liners is an acceptable choice in most municipalities.

Green Bin Municipalities

Table E1 provides details on Green Bin liners used in Ontario and some other Canadian municipalities. In 2019 Ottawa began to allow plastic bags as a convenience. The liner material permitted is contingent on which materials are permitted in the Green Bin; for example, municipalities that accept diapers/sanitary products also permit the use of plastic bag liners.

Most Ontario municipalities do not make liner use mandatory; however, some municipalities require the use of an approved liner when pet waste is placed in the Green Bin. Before the pandemic only Durham and Halton Regions required the use of liners, and due to Covid-19 a few other municipalities now require the use of plastic bag liners.

Table E1 – Summary of Acceptable Green Bin Liners

Municipality	Paper	Certified Compost-able	Non-degradable plastic	Are liners manda-tory?	Kg/year Single Family Households
City of Toronto	x		x	partially[1]	340
Region of York	x	x	x	yes/no[2]	310
City of Guelph	x	x		no	340
Region of Niagara	x	x		partially[1]	70
City of Ottawa	x	x	x	partially[1]	260
Simcoe County	x	x	during Covid-19[3]	partially[1]	90
City of St. Thomas	x	x		no	300
Region of Waterloo	x	x	during Covid-19[3]	yes[3]	170
City of Barrie	x	x		no	110
Dufferin County	x	x		no	140

Municipality	Paper	Certified Compost-able	Non-degradable plastic	Are liners manda-tory?	Kg/year Single Family Households
Region of Durham	x	x		yes/no[2]	140
City of Hamilton	x	x		no	80
Region of Halton	x	x		yes[4]	160
City of Kingston	x	x		no	80
Region of Peel	x	x		no	180
Other Canadian					
City of Vancouver	x			no	-
City of Calgary	x	x		partially[1]	-
City of Halifax	x			no	-

Notes:
[1] Pet waste must be contained in one of the approved liners for collection.
[2] Variations exist in Region of Durham and Region of York as lower tier municipalities have most of the responsibility for collection. Some municipalities make liners mandatory.
[3] Green Bin materials must be bagged during Covid-19.
[4] This was enacted during Covid-19, but the plan is to make this permanent.

London's Experience with Similar Existing Programs

By way of a London example, reusable containers can be used for yard waste collection. However, most Londoners choose to pay between 35 and 50 cents per bag to purchase paper yard waste bags.

In the 2011-2012 London Green Bin Pilot Project paper liners and certified compostable liners were permitted. Plastic bags liners were not allowed.

Resident Feedback Results

Details from the 2021 online resident feedback form on what type of bin liners should be allowed can be found below in Table E2.

Table E2 – Online Feedback Form Question: What type of bin liners should be allowed if the household wishes to purchase them?

Bin Liner Type (check all that apply)	Responses (%)	Number of Responses
Newsprint or other household paper	43%	1,599
Purchased paper bags	45%	1,687
Purchased compostable liners (i.e., certified compostable bags)	67%	2,530
Non-degradable plastic liners (e.g., plastic grocery bags)	7%	269
No liner	25%	948
I have no preference	9%	343
I am undecided	6%	221
Total Responses		**3,759**

Operational and Technical Considerations

The type of liner permitted will depend on which materials are permitted in the Green Bin. It is not recommended that diapers/sanitary products be an acceptable material. Prohibiting the use of plastic bag liners would be consistent with this recommendation.

Liners can be purchased from hardware and grocery stores, as well as online. The approximate cost per bag varies depending on the product, the amount purchased, and where it is purchased. Some examples on the price ranges:

- Small Green Bin liners: Between $0.40 to $1.50 per bag;
- Medium Green Bin liners: Between $0.80 to $1.50 per bag; and
- Kitchen container liners: Between $0.15 to $0.70 per bag.

Purchasing liners will be a new expense for many households. The average annual cost could range from about $35 to $115 depending on how often liners are used and the type of liners. Households can avoid a cost by using no-cost options such as household paper and paper bags (e.g., newsprint, paper grocery bags, etc.). No-cost options may be less convenient, but they will be a preferred option for some. Paper retail bags are becoming more common as many stores move away from plastic bags. Municipalities promote creative origami methods of reusing household paper to wrap food waste.

Staff Recommendations and Next Steps

There are two options depending upon the material mix of London's Green Bin program:

3. If London's Green Program is based on Mix #1, that residents be allowed the choice of no-liner, paper, or certified compostable liners, and not allowed the use of plastic bag liners.

4. If London's Green Program is based on Mix #2 (Mix #1 plus pet waste), the same liner choices be permitted as above. Most important, if pet waste is placed in the Green Bin it would be required to be bagged in certified compostable bag, that is leak free and tied tightly for the safety of the collector. If residents wish to use plastic bags for pet waste it would be required to be placed in the garbage as per the current system.

It is recommended that not permitting plastic liners would also allow for a range of compositing or anaerobic digestion processors which could result in a production of high quality and readily marketable materials.

Staff will notify liner suppliers and retailers to advise them of the permitted liner choices in sufficient time to have liner product options available in London prior to the launch of the Green Bin program.

Additional work will be undertaken to determine if other suitable liners and/or bags become available to assist with pet waste recovery solutions thought the Green Bin or other opportunities.

Appendix F – Key Decision #5 – What Are the Concerns About Bi-weekly Garbage Collection

Overview

During the development of the 60% Waste Diversion Action Plan (approved by Municipal Council in 2018), it was identified that a switch to bi-weekly, same day garbage collection and weekly recycling and Green Bin collection (same day) would be less costly than weekly garbage pickup. Bi-weekly garbage collection was also viewed as key to higher use of the Green Bin. It is expected that this change to the collection schedule will occur at the same time as Green Bin collection begins.

Through the engagement process City staff did endeavor to understand the concerns and challenges of a reduced garbage collection schedule for London households. These challenges and concerns are described below under Operational and Technical Considerations and include waiting four weeks between collections, if a collection is missed; holding onto diapers/sanitary products; and pet waste and/or accumulating garbage over a two-week period.

Green Bin Municipalities

Bi-weekly garbage collection is the common service level in large Ontario municipalities. Municipalities with Green Bin programs that did not initially have bi-weekly collection found that the amount of organic material collected increased by 50% to 100% with the introduction of bi-weekly garbage collection. Collection of Blue Box recyclables also increased with the introduction of bi-weekly garbage collection. Twelve of the fifteen largest Ontario municipalities with a Green Bin program have bi-weekly garbage collection (Table F1), and two of the other programs are reviewing the option or in transition to go to bi-weekly collection.

Table F1 – Garbage Collection Frequency for Large Municipalities with Green Bin Collection

Garage Collection Frequency	Municipality
Weekly	Dufferin County, Hamilton[1], Kingston
Weekly	St. Thomas[2]
Bi-weekly	Barrie, Durham, Guelph, Halton, Niagara[3], Ottawa, Peel, Simcoe County[4], Toronto, Waterloo, York Other Canadian: Calgary, Halifax, Vancouver

Notes:
[1] Reviewing bi-weekly garbage collection
[2] Weekly garbage, bi-weekly green bin and recycling
[3] Changed to bi-weekly garbage collection in October 2020
[4] Changed to bi-weekly garbage collection in February 2020

London's Experience with Similar Existing Programs

The 2011 to 2012 Green Bin Pilot Project tested a modified garbage collection schedule. The modified garbage collection schedule consisted of weekly garbage collection during the summer (April to September) and bi-weekly collection during the winter (October to March). Testing the modified collection schedule helped to determine public acceptance and the cost savings/increases with this type of collection schedule. This schedule was accepted by pilot project participants.

Resident Feedback Results

Details from the 2021 online resident feedback form on the concerns of bi-weekly garbage collection can be found below in Table F2.

Table F2 – Online Feedback Form Question: What concerns might you have about bi-weekly garbage collection?

Bi-Weekly Garbage Concerns (check all that apply)	Responses (%)	Number of Responses
Too long to hold diapers/sanitary products	24%	902
Too long to hold pet waste	24%	906
Too much garbage will be accumulated over a two-week period	33%	1,250
Missing a pickup will mean four weeks between collection days	48%	1,813
I have some concerns, but I support the decision of bi-weekly garbage collection and weekly recycling and Green Bin pickup	38%	1,425
I do not have concerns about bi-weekly garbage collection	26%	982
I am undecided	2%	70
Other (please specify)	4%	149
Total Responses		**3,760**

Residents also provided additional comments about bi-weekly garbage collection. Of the 3,760 who answered the feedback form, 28% provided one or more additional comments. Based on staff's review of the comments, over 95% of the comments are addressed by this staff report:

- 55% are related to accumulating garbage/too long to hold garbage;
- 25% are concerning nuisance factors such as pests and odours; and
- 15% were about holding diapers/sanitary products and pet waste.

The other 5% were regarding illegal dumping of garbage. The bi-weekly garbage comments were tallied by categories; therefore, residents may have provided more than one general comment, the proportion of comments was determined from all tallied comments not by the number of residents who provided a general comment.

Operational and Technical Considerations

Managing garbage over a two-week period will vary for each household, with potentially a greater impact on large households and those using diapers/sanitary products. The number of containers that will be permitted at the curb every two weeks will be the subject of a future report to Committee and Council as the number is tied into other waste diversion initiatives as well. The key concerns regarding bi-weekly garbage collection are:

<u>Missing a pickup</u>

The most frequently noted concern of respondents was about those occasions when collection was missed and there would be a wait of four weeks between collections. For most households this may not be a common occurrence but could happen if they were away from home or failed to set garbage out to the curb on collection day.

While this is recognized as a challenge for some residents, there are options in place to manage these instances. Like all new programs there will be an adjustment phase that includes changing behaviour to adjust to the new program. Adjustments could also include relying on a neighbour to place garbage at the curb.

Bagged garbage is accepted at EnviroDepots for $1.50 per bag, and tags can be purchased ($1.50 per bag tag) for curbside pick-up of extra garbage.

Larger volume of garbage created over a two-week period

Less frequent garbage collection means that more garbage will accumulate, and households will have to store it for a longer period. Making full use of the City's waste diversion programs could make a significant reduction in the amount of waste needing to be stored. For example, using the Green Bin for as much food waste as possible will reduce the quantity of wet and smelly garbage that needs to be held for up to two weeks.

Waste audit data identifies that some households could improve their recycling efforts. The audits show that some households continue to place Blue Box and other recyclables (e.g., electronics, scrap metal, batteries, etc.) in the garbage. The City will provide reminder information about the recycling programs that are available to help ensure that these materials are not being put in the garbage.

Garbage tags for curbside pickup ($1.50/ tag) and EnviroDepot drop-off ($1.50/bag) will continue to be available for households that have garbage above the collection limit.

Diapers and Sanitary Products

Not permitting diapers/sanitary products in the Green Bin and storing them for a two-week period may be the hardest challenge of the bi-weekly schedule, and especially when storage in a garage or shed is not an option.

Some other Ontario municipalities offer programs to assist with diapers/sanitary products. These include a special collection for registered households, an exception to the curbside limit, and no-charge drop-off at depots. Generally, these programs require registered users to place garbage in clear plastic bags so the contents can be checked by staff. Table F3 below lists some options that have been used in other Ontario municipalities.

Table F3 – Municipal special programs to deal with diapers/sanitary products

Municipality	Special Programs to Deal with Diapers/Sanitary Products
Niagara Region	A diaper exemption program where eligible residents can apply for an exemption to their bi-weekly waste collection on weeks when garbage is not collected.
City of Ottawa	A sign-up program for the collection of diapers/sanitary products, on weeks when garbage is not collected.
Waterloo Region	Free diaper drop-off at depots (see-through plastic bags are mandatory), and a Medical Exemptions program.
City of Barrie	From May 1 – October 31, residents can dispose of a maximum of 2 clear bags of diapers/sanitary products (only) per week at the landfill at no charge.
Halton Region	A diaper bag tag program where households may receive diaper bag tags that allow them to exceed the three-bag limit without having to purchase a $2 bag tag. The diaper bag tag also allows households to drop-off their diaper waste free of charge at the Halton landfill.
Peel Region	Initially allowed residents that wanted an option to dispose diapers/sanitary products on a weekly basis to register for an exemption that would allow them to bring diapers/sanitary products to drop off depots, but uptake was very low.

Smelly Food Waste

Currently in London food waste is collected with garbage on a six-day collection schedule. When Green Bin collection begins, food waste (in the Green Bin) will be collected more frequently than it is currently. A weekly collection of the Green Bin will be an encouragement for households to participate in the Green Bin program, ensuring food waste goes into the Green Bin and not the garbage.

Pet Waste

If pet waste is not permitted in the Green Bin, storing it for a two-week period will be more of a challenge. Some households have found that dog waste is easily managed using a backyard digester (sold at the EnviroDepots). However, digesters cannot manage kitty litter, and may not be practical for some households.

Staff Recommendations and Next Steps

Staff will undertake further research and prepare a report on how municipalities work with residents to address bi-weekly garbage collection concerns (e.g., managing diapers/sanitary products) including advantages, disadvantages, and estimated costs. To help with making residents aware of this collection schedule change staff will design and implement a communications campaign to prepare for collection schedule changes and Green Bin program implementation.