TO:	**CHAIR AND MEMBERS WASTE MANAGEMENT WORKING GROUP MEETING ON MARCH 8, 2018**
FROM:	**JAY STANFORD, M.A., M.P.A. DIRECTOR - ENVIRONMENT, FLEET & SOLID WASTE**
SUBJECT:	**BACKGROUND REPORT #3: DEVELOPMENT OF 60% WASTE DIVERSION ACTION PLAN**

RECOMMENDATION

That, on the recommendation of the Director, Environment, Fleet and Solid Waste, this report **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

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

- Residual Waste Disposal Strategy Scope of Work as Part of the Environmental Assessment Process (February 7, 2017 meeting of the Civic Works Committee (CWC), Item #14)
- 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 CWC, Item #10)

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

- Update Report #8 - Programs, Projects and Provincial Activities that will Inform and/or Influence Strategies (January 18, 2018 meeting of the Waste Management Working Group (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)
- Decision Report #5 – Residual Waste Disposal Strategy, Scope of Work as Part of the Environmental Assessment Process (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 how the 60% Waste Diversion Action Plan (Action Plan) will be developed.

CONTEXT:

At the October 30, 2017 City Council meeting passed a resolution stating:

> *"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 and will be a key consideration in the MOECC approval of the environmental assessment for expansion of the W12A Landfill.

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

- 60% diversion rate being the practical limit in Ontario at this time based on the following: many with Green Bin program are between 50% and 55% diversion; about three municipalities have diversion rates around 60% (Simcoe County, Dufferin County, City of Kingston) and a few are pushing higher (York Region including the city of Markham);
- feedback received from residents; and
- increasing from the current 45% diversion to 60% diversion represents a 33% improvement which is a significant undertaking.

DISCUSSION

Resource Recovery Strategy and 60% Waste Diversion Plan Action Plan

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 economical viable and environmentally responsible manner.

As part of the Resource Recovery Strategy, the City will develop a short term Action Plan to achieve at least 60% waste diversion by 2022. It will be important that programs and initiatives that are part of the Action Plan are implemented in such a way as to allow maximum flexibility for change in the future. In other words, any programs or initiatives do not restrict or impede new waste diversion and resource recovery programs and initiatives in the future.

The overall Resource Recovery Strategy will look at the longer term steps the City should take to move beyond 60% waste diversion activities in these primary categories:

Development of Action Plan

The Action Plan will outline the steps that the City will need to take in order to reach 60% waste diversion by 2022. Development of the Action Plan includes:

1. Preliminary Review of Potential Programs, Initiatives and Technologies

Complete:	100%	In Progress:	0%	Not Started:	0%

Preliminary review of potential programs, initiatives and technologies to develop a long list of waste diversion programs, initiatives and technologies that required further investigation.

2. Review of Other Ontario Municipalities

Complete:	100%	In Progress:	0%	Not Started:	0%

A comprehensive review of waste diversion programs/initiatives in other large Ontario municipalities. In summary, the City has similar programs to most other large municipalities with the exception of a Green Bin program.

3. Community Feedback

Complete:	75%	In Progress:	25%	Not Started:	0%

Residents will have a number of opportunities to provide feedback on what should be included in the Action Plan. Summary information on potential programs/initiatives (Appendix A) was presented to the public at the November 2017 Waste Management Open Houses, the LifeStyle Homeshow (January 2018) and is available on-line at *getinvolved.london.ca/WhyWasteResource* until the end of March 2018. Over 500 residents have provided feedback to-date.

Information and feedback has also been sought from various City advisory committees and the Waste Management Community Liaison Committee.

4. Request for Information

Complete:	10%	In Progress:	40%	Not Started:	50%

The City will be releasing 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.

5. 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.

6. Alignment with Provincial Strategies and Legislation

Complete:	75%	In Progress:	25%	Not Started:	0%

Development of the Action Plan will need to align 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.*

7. Comparative Analysis

Complete:	25%	In Progress:	25%	Not Started:	50%

A comparative 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, proven technology) considerations.

8. Peer Review

Complete:	0%	In Progress:	10%	Not Started:	90%

A consulting firm that specializes in waste management technologies will be used to conduct a peer review of the portions of the Action Plan dealing with any technical analysis and newer resource recovery technologies.

9. Consideration of Learnings from the Mixed Waste Processing Working Group

Complete:	0%	In Progress:	100%	Not Started:	0%

The Region of Peel is the coordinator of a Mixed Waste Processing Working Group comprised of several Ontario municipalities including the City of London, City of Toronto, Region of York, Region of Waterloo, Region of Niagara, County of Oxford, and County of Simcoe. This Working Group shares updates, research results, Committee/ Council reports, site visit experience and related operational experiences.

10. Consideration of Learnings from London Waste to Resources Innovation Centre (LWRIC)

Complete:	0%	In Progress:	100%	Not Started:	0%

Input and advice acquired through the working relationships established as part of the LWRIC. The primary goals of LWRIC 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.

Next Steps

The next steps and tentative timetable for approval of the Action Plan are presented below.

Table 1 - Tentative Timetable for 60% Waste Diversion Action Plan

Date	Step
Early March 2018	• Release Request for Information (RFI) on Resource Recovery Technologies
March 31, 2018	• End of community feedback period (including on-line feedback at getinvolved.london.ca/WhyWasteResource)
Early April 2018	• RFI due
April to Late May 2018	• Development of Draft Action Plan document

Table 1 - Tentative Timetable for 60% Waste Diversion Action Plan

Date	Step
Late May 2018	• Review of Draft Action Plan by WMWG
June 19, 2018	• CWC to receive Draft Action Plan and release for community feedback (after Council approval)
July 17, 2018	• Public participation meeting for Draft Action Plan at CWC meeting
July 24, 2018	• Approval by Council

ACKNOWLEDGEMENTS

This report was prepared with assistance from Mike Losee, Division Manager, Solid Waste Management, Anne Boyd, Manager – Waste Diversion Programs and Jane Kittmer, Solid Waste Planning Coordinator.

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Appendix A : Summary Information on Potential Programs/Initiatives that was Presented to the Public

Appendix A

Summary Information on Potential Programs/Initiatives that was Presented to the Public

Why Waste?

Getting to 60% by 2022

FEEDBACK REQUESTED

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

Why Waste?

Food Waste Reduction Initiatives

4
FEEDBACK REQUESTED

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 us to invest in this initiative?[1]	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 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

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Why Waste?

Home Composting

5
FEEDBACK REQUESTED

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?[1]	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/processing 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 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

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Why Waste?

Community Composting

6

FEEDBACK REQUESTED

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% (20 tonnes)	0.01% (20 tonnes)	0.1% (200 tonnes)
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

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Why Waste?

City Wide Organics – Curbside Program

FEEDBACK REQUESTED

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% 14,000 tonnes	14% 22,000 tonnes
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

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Why Waste?

City Wide Organics - Multi-Residential Program

8
FEEDBACK REQUESTED

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?	• 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.	• 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
GHG[2] 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

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Why Waste?

Other Recyclables

9a
FEEDBACK REQUESTED

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 cost[2]	$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
GHG[3] 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

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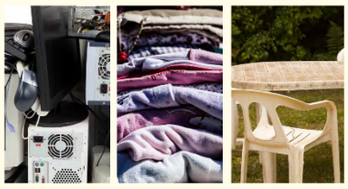
Why Waste?

Other Recyclables

9b FEEDBACK REQUESTED

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

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Why Waste?

Waste Reduction & Reuse Initiatives

10
FEEDBACK REQUESTED

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?		Moderate Investment	Significant Investment
Program Cost for Examples		Per household **Net annual cost**	
Lending libraries	• Lending of materials and equipment that are used infrequently means less product production and can save money for households. Tool sharing 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 interested citizens on how to fix household items (e.g., bikes, 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 reuse (e.g., furniture, toys) in a convenient, yet structured way so that the events do not contribute to litter or illegal dumping.	$0.25 **$45 K**	$0.50 **$90 K**
Waste reduction education and outreach	• In addition to the above, increase of general awareness campaigns on waste reduction (e.g., buy in bulk, buy products that last, repair products, avoid disposable products, unaddressed ad mail opt out, etc.)	$0.55 **$100 K**	$1.10 **$200 K**

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Why Waste?

Waste Reduction Policies

11
FEEDBACK REQUESTED

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

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: 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.

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