Review of Targeted PPP List in Stewardship Ontario's Draft Amended Blue Box Program Plan

Prepared for

Continuous Improvement Fund

Prepared by

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1.0 INTRODUCTION

1.1 Background & Approach

AET Group Inc. (AET) was contracted by the Continuous Improvement Fund (CIF) to review Stewardship Ontario's (SO's) initial list of Printed Paper and Packaging (PPP) targeted for collection in transitioned municipalities (as presented in the "Blue Box Program Plan Draft for Consultation", December 2017 hereafter referred to as the aBBPP), cross-reference this list against materials typically targeted for collection in existing Blue Box programs, and provide commentary on how the composition of the recycling stream could change under the new list.

For this exercise, CIF provided single family residential waste composition data representative of a typical municipality in Ontario (hereafter referred to as the "baseline program") upon which SO's initial list of PPP targeted for collection was overlaid to identify which materials would be added to or become contamination within what is hereafter referred to as the "new program". Although the data set was quite detailed (>140 material categories), there was found to be some categories in which constituent materials would have potentially included both targeted and non-targeted materials under the new program list (e.g., #7 plastic bottles/jars/jugs combined with #5 bottles/jars/jugs). To reasonably proportion out these sub-categories of material, AET gathered supplemental composition data from waste composition studies in two additional communities.

2.0 ANALYSIS AND DISCUSSION

The following analysis is based on an exercise of applying SO's proposed list of targeted PPP materials onto a typical Blue Box program. This would result in some materials no longer being targeted (i.e. becoming contamination), while adding some additional materials to the program that are not currently accepted. The specific removals and additions are discussed on a material by material basis below. The baseline data set is intended to be representative of a four-season single family residential audit in a municipality that offers curbside Blue Box collection of a comprehensive suite of solicited materials. The analysis considered set out of PPP across the Blue Box, garbage and green bin streams. Where amounts captured in the Blue Box stream are referenced, they are relative to the total amount set out in all three streams. It should be noted that where a material is collected and would no longer be targeted under the proposed aBBPP, it was assumed that residents would continue to set the material out as part of the Blue Box stream out of habit or as a result of conscious effort to engage in "hopeful recycling" as is often observed with existing programs.

2.1 Paper

Within the realm of PPP, the following lists summarize changes to targeted and non-targeted material sub-categories.

New Targeted Materials:

- Paper Cups (including hot/cold beverage and other paper cups) & long bleach polycoat containers (e.g. fried chicken bucket, frozen food tray).
    - ~65% of cups set out were found in the Blue Box even though this is not currently a targeted material in all municipalities in Ontario.
    - Assuming the same capture rate under the new targeted PPP list, the result would be a decrease in contamination (-0.5%) and increase in Blue Box diversion rate (+0.2%).

No Longer Targeted Materials:

- Hard & Soft Cover Books
    - ~5% of paper in Blue Box.
    - Assuming residents would continue to place books in the Blue Box at the same rate even though they are not targeted under the targeted list of materials, the result would be an increase in contamination (+2.9%) and a decrease in Blue Box diversion rate (-1.0%).
- Aseptic Alcohol Containers and Corrugated Wine Bag Boxes
    - New targeted PPP list does not include alcohol containers.
    - Currently a relatively small proportion (<0.01%) of Blue Box stream.
    - The result would be a minor increase in contamination and a negligible decrease in Blue Box diversion rate.

Other Noteworthy Materials:

- Composite Cans (e.g. spiral wound frozen juice can)
    - Not specifically mentioned in new PPP list.
    - Currently accepted in most existing programs.
    - It is assumed this would remain a targeted material under new list, therefore, no change to contamination or diversion rates.

2.2 Plastics

Within the realm of plastics, the following lists summarize changes to targeted and non-targeted material sub-categories.

New Targeted Materials:

- Black Plastics (excluding #3, #7, unmarked)
    - Black plastics are not currently accepted in the baseline program used.

  - Assuming that black plastics would continue to be captured at the same rate as non-black plastics under the baseline program, the result would be a decrease in contamination (-0.2%) and a negligible increase in Blue Box diversion rate (+<0.1%) under the new program.
- "Packaging-Like" Film and Rigid Plastics (e.g. sandwich/ziplock bags, plastic cups, plates)
  - Non-packaging bags and durable plastic products are not currently accepted in the baseline program.
  - Baseline audit data categories did not distinguish between "packaging-like" materials within the "non-packaging" categories, therefore supplemental audit data was gathered to determine proportion of these materials present in the stream.
  - It was found that ~28% of non-packaging film in the recycling stream was "packaging-like" and ~2.5% of durable plastic products in the recycling stream was "packaging-like".
  - The result would, therefore, be a proportional decrease in contamination and increase in Blue Box diversion rate under the new program.

No Longer Targeted Materials:

- PVC (#3), #7 and unmarked Bottles, Jars & Jugs
  - The baseline program accepts #1-7 bottles, jars & jugs.
  - The aBBPP proposes exclusion of #3, #7 and unmarked containers.
  - There was a baseline audit category for "Other Bottles, Jars & Jugs", which included #5, #7 and unmarked containers. Supplemental audit data was gathered to determine the proportion of these containers that were #5 vs. #7 or unmarked. It was found that ~18% of "Other Bottles, Jars & Jugs" were #7 or unmarked, and it was assumed that these containers would become contamination under the new program.
  - Assuming the same quantity would remain in Blue Box under the new program, the net result would be a proportional increase in contamination and decrease in Blue Box diversion rate.
- PET Alcohol Bottles
  - The new targeted PPP list does not include alcohol containers.
  - Currently relatively small proportion of Blue Box stream (~0.02%).
  - Assuming the same quantity would remain in the Blue Box under the new program, the net result would be a minor increase in contamination and a minor decrease in Blue Box diversion rate.
- Unmarked PE Plastic Bags & Film
  - The baseline program included PE carry-out bags and other PE film packaging (e.g. toilet paper overwrap, produce bag, bread bag, etc.) as a solicited material.
  - Baseline audit data did not distinguish between marked & unmarked film; therefore, supplemental audit data was gathered to determine this proportion.

- ~50% of packaging film was found to be marked with recycling symbols and/or number.
- It was assumed that the new PPP list would only target marked PE film and that the same overall quantity of film would remain in the stream, with 50% being classified as contamination (unmarked) and 50% accepted/targeted which would result in an increase in contamination of approximately 0.9% and a decrease in Blue Box diversion rates of approximately 0.3%.

2.3 Metals

Within the realm of metals, the following lists summarize changes to targeted and non-targeted material sub-categories.

New Targeted Materials:

- Aluminum Foil
  - The study assumed acceptance of aluminum foil trays only.
  - Foil in general represents a relatively minor component of the waste stream (~0.2%).
  - Assuming that foil will be captured at the same rate as foil trays in the baseline program, there will be a minor decrease in contamination (-0.1%) and a minor increase in Blue Box diversion rates (+0.1%).

No Longer Targeted Materials:

- Alcoholic Beverage Cans
  - The new targeted PPP list does not include alcohol containers.
  - Currently this stream is a relatively small proportion of the Blue Box stream.
  - The result would be a minor increase in contamination (+0.2%) and a minor decrease in Blue Box diversion rate (-<0.1%).
- Steel & Aluminum Aerosol Cans
  - The new targeted PPP list excludes aerosol cans
  - Currently this stream is a relatively small proportion of the Blue Box stream.
  - The result would be a minor increase in contamination (+0.2%) and a negligible decrease in Blue Box diversion rate (-<0.1%).

2.4 Glass

Within the realm of glass, the following lists summarize changes to targeted and non-targeted material sub-categories.

New Targeted Materials:

- Non-food & Beverage Containers (e.g. perfume bottle)
  - The baseline program accepts food & beverage glass bottles only.

- Non-food & beverage containers are a relatively small component of glass containers.
- The result would be a minor decrease in contamination and an increase in Blue Box diversion rate.

No Longer Targeted Materials:

- Alcoholic Containers
  - The new targeted PPP list does not include alcohol containers.
  - Currently glass alcohol containers make up a sizable proportion of the Blue Box stream by weight (~4.6 % of the total Blue Box Stream).
  - The result would be a significant increase in contamination (+4.6%) and a decrease in Blue Box diversion rate (-1.6%).

2.5 Overall Waste Diversion & Blue Box Contamination

The baseline data showed that 28.1% of the curbside waste generated was diverted through the baseline Blue Box program (i.e., weight of accepted materials in the Blue Box as a proportion of all waste set out in the garbage, green bin and blue box combined). The contamination rate in the Blue Box stream was 18.9%.

Looking at the cumulative net impact of the aforementioned additions and removals under the new list of targeted PPP, the baseline program's contamination rate would increase by 7.1%, while the Blue Box diversion rate would drop by 2.4%. That said, it should be recognized that the projected change does not consider the impact of any significant change in participation that might result from successful public education and/or compliance. Perhaps most important is the recognition that glass associated with the Ontario Deposit Return Program remains the single largest factor affecting the change in projected contamination rates and its exclusion from future programs will need to be accompanied by a more successful diversion program by the associated producers. Refer to Appendix A for a Draft Amended Blue Box Program Plan Scenario.

	Baseline	New Targeted PPP List
Contamination Rate	18.9 %	26.0 %
Blue Box Diversion Rate	28.1 %	25.7 %

Legend:

No longer Targeted
New Targeted
Special Note

Scenario: Draft Amended Blue Box Program Plan

Material Category	Material Targeted in aBBPP?	Blue Box	Notes
	Recycling	Estimated (kg/hhld per yr)	
1. PAPER			
Newspaper – Dailys and Weeklys	X	22.60	
Newspaper – Other	X	19.06	
Telephone Books / Directories	X	0.34	
Magazines & Catalogues	X	14.87	
Mixed Fine Paper (Obligated)	X	8.93	
Books Hard Covered		3.36	
Books Soft Covered		4.55	
Other Printed Paper (Non-Obligated)	X	6.83	
Corrugated Wine Bag in Box		0.03	**Assuming no Alcohol deposit packaging Targeted**
Corrugated Pizza Boxes	X	2.75	
Other Corrugated	X	32.27	
Waxed Corrugated		0.37	
Kraft Paper	X	4.30	
Boxboard / Cores	X	20.16	
Molded Pulp	X	2.38	
Paper Cups - Hot Beverage	X	0.92	**Currently 65% of hot cups ending up in reyclcing. Assume this would stay same. This is already higher capture rate than onther muni's that accept cups**
Paper Cups - Cold Beverage	X	0.19	**Currently 62% of cold cups ending up in recycling. Assume this would stay same.**
Paper Cups - Other	X	0.17	**Currently 72% of other paper cups ending up in recycling. Assume this would stay same.**
Long Bleach Polycoat	X	0.18	**This category was not part of this audit data set. See note below.**
Laminated Paper Packaging		0.40	**This category lilkely contains some material that would be Targeted (e.g. long bleach polycoat trays). Based on previous audit data ~14% would be Targeted. Assume same capture rate as cups (65%). Added category above.**
Composite Cans	X	0.43	**Not specifically mentioned in aBBPP. Assuming Targeted.**
Gable Top Cartons	X	3.15	
Aseptic Alcohol		0.00	
Aseptic Other Containers	X	0.95	
Total Paper		**149.17**	
3. PLASTICS			
Plastic Film *New*	X	1.03	**Moved 50% (unmarked) to other film**
PET Beer Bottles		0.00	
PET Other Alcohol Bottles Over 100 ml		0.04	
PET Other Alcohol Bottles 100 ml and Under	X	0.01	**Alcohol under 100ml not part of deposit program**
PET Water Beverage Bottles	X	3.65	
PET Other Beverage Bottles	X	3.52	
PET Other Bottles & Jars	X	2.27	
PET Bottles and Jars ≥ 5 L (excluding alcoholic	X	0.09	
PET Other Packaging	X	3.45	
PET Other Packaging - Black	X	0.36	**Assume same capture rate at PET non-black packaging (79.2%)**
HDPE Beverage Bottles	X	1.13	
HDPE Other Bottles & Jugs	X	3.98	
PVC Bottles & Jars		0.00	
Other Plastic Alcohol Containers 100 ml and Under	X	0.00	**Alcohol under 100ml not part of deposit program**
Other Bottles, Jars & Jugs	X	0.13	**#7 & unmarked BJJ's would be contamination within this category. Estimating ~18% #7 & unmarked**
Polystyrene Packaging - Foam	X	0.51	
Polystyrene Packaging - Foam 'Peanuts'		0.07	
Polystyrene Packaging - Foam Food Service	X	1.27	
Polystyrene Packaging - Rigid	X	1.30	
Polystyrene Packaging - Rigid Black	X	0.22	**Assume same capture rate as PS Rigid non-black (60.6%)**
Polystyrene Non-Packaging - Rigid	X	0.03	
Wide Mouth Tubs & Lids - Coloured	X	2.59	
Wide Mouth Tubs & Lids - Clear	X	0.64	
Large HDPE & PP Pails & Lids	X	0.45	
Stand Up Laminated Packaging/Pouches		0.12	
Polyethylene Plastic Bags & Film - Packaging Carry Out	X	0.72	**Moved 50% (unmarked) to other film**
Polyethylene Plastic Bags & Film - Packaging Other	X	0.73	**Moved 50% (unmarked) to other film**
Polyethylene Plastic Bags & Film - Non-Packaging Bags	X	0.57	**Packaging-like film will be Targeted (e.g. sandwich/freezer bags). ~28% of non-packaging film included here. Remaining moved to other film.**
Polyethylene Biodegradable & Compostable Plastic Bags		0.20	**Assuming no bags marked compostable or degradable would be Targeted**
Polyethylene Plastic Bags & Film - Non-Packaging Other		0.81	
Plastic Medical Bags/Tubing		0.00	
Laminated Pouches & Bag in Box Liners for Alcohol		0.04	
Laminated/Other Plastic Film and Bags		5.81	**Added 50% of PE Carry-out, Packaging and "new fim" here, accounting for proportion not marked with recycling symbol**
Other Rigid Plastic Packaging		6.34	**Added estimated quantity of #7 & unmarked Bottles, Jars, Jugs & non-packaging like rigid plastics here.**
Durable Plastic Products	X	0.10	**Some packaging-like products classified here would be Targeted (e.g. drink cup, flower pot, etc.). ~2.5% of all durable products "packaging Like". Moved remaining with Other Rigid Plastic Packaging**
Total Plastics		**42.18**	
4. METALS			
Aluminum Alcoholic Beverage Cans		0.54	**Assuming no alcohol containers on deposit**
Aluminum Food & Other Beverage Cans	X	2.66	
Aluminum Foil	X	0.66	**Assume same capture rate as foil trays (46.8%)**
Aluminum Foil Trays	X	0.32	
Other Aluminum Containers		0.05	**Aerosol not Targeted**
Steel Alcoholic Beverage Cans		0.02	**Assuming no alcohol containers on deposit**
Steel Food & Other Beverage Cans	X	5.54	
Steel Aerosol Cans		0.41	**Aerosol not Targeted**
Steel Paint Cans	X	0.19	
Other Metal		1.86	
Total Metals		**12.24**	

Scenario: Draft Amended Blue Box Program Plan

Material Category	Material Targeted in aBBPP? Recycling	Blue Box Estimated (kg/hhld per yr)	Notes
5. GLASS			
Clear Glass Beer		0.45	
Clear Glass Other Alcohol Over 100 ml		2.74	
Clear Glass Other Alcohol 100 ml and Under	X	0.04	**Alcohol under 100ml not part of deposit program**
Coloured Glass Beer		1.50	
Coloured Glass Other Alcohol Over 100 ml		7.82	
Coloured Glass Other Alcohol 100 ml and Under	X	0.09	**Alcohol under 100ml not part of deposit program**
Clear Glass Other Beverage and Food	X	14.97	
Coloured Glass Other Beverage and Food	X	8.58	
Other Glass		3.35	**gain some non-food & beverage glass containers (e.g. cosmetics bottle), unknown proportion**
Total Glass		**39.55**	
6. HOUSEHOLD SPECIAL WASTE			
Batteries - single use		0.06	
Batteries - rechargeable		0.00	
Pressurized Containers - Aerosols		0.06	
Pressurized Containers -Non-Aerosol		0.00	
Portable Fire Extinguishers		0.00	
Fluorescent Light Bulbs & Tubes		0.07	
Medical Sharps & Syringes		0.00	
Mercury Containing Devices		0.00	
Pharmeceuticals		0.13	
Antifreeze		0.03	
Fertilizers		0.01	
Oil Containers (Machinery)		0.00	
Oil Filters (Machinery)		0.00	
Paint & Stain		0.04	
Solvents		0.01	
Pesticides		0.00	
Other HSW liquids		0.03	
Other HSW		0.03	
Total HSW		0.46	
7. ORGANICS			
Yard Waste		2.39	
Grass Clippings		0.01	
Small Wood Waste		0.20	
Pet Waste		0.40	
Diapers & Sanitary		1.41	
Certified Compostable Plastic Bin Liners		0.00	
Tissue/Towelling		3.28	
Shredded Paper		1.98	
Other Compostable Paper		0.05	
Leftover Bakery		1.03	
Leftover Meat & Fish		0.43	
Leftover Dried Food		0.40	
Leftover Fruits & Vegetables		1.19	
Leftover Dairy		0.39	
Leftover Other		2.97	
Untouched Bakery		0.38	
Untouched Meat & Fish		0.00	
Untouched Dried Food		0.12	
Untouched Fruits & Vegetables		0.51	
Untouched Dairy		0.18	
Untouched Other		0.30	
Inedible Bakery		0.00	
Inedible Meat & Fish		0.07	
Inedible Dried Food		0.01	
Inedible Fruits & Vegetables		0.97	
Inedible Dairy		0.01	
Inedible Other		0.15	
Total Organics		**18.82**	
8. OTHER MATERIALS			
Textiles/Cloting		2.73	
Cigarette Butts		0.05	
Single Use Cleaner i.e Swiffer duster		0.01	
Baby Wipes		0.01	
Single Use Coffee Pods		0.24	
Carpeting		0.26	
Wood		1.05	
Construction & Renovation		1.20	
Computer / IT Equipment		0.02	
Telecom Equipment		0.16	
TV & Audio Equipment		0.19	
Small Kitchen Appliances		0.22	
Other Electronics		0.17	
Tires and Other Rubber		0.02	
Ceramics		0.90	
Furniture - Padded		0.00	
Furniture - Plastic		0.00	
Furniture - Wood		0.06	
Furniture - Metal		0.00	
Furniture - Other		0.00	
Mattresses		0.00	
Other Large Bulky Items		0.42	
Other Waste		3.42	
Total Other		**11.11**	
Grand Total		**273.53**	
Total Accepted Blue Box Materials		202.27	

Contamination Rate	**26.0%**	All non-Targeted materials counted as contamination (even if previously accepted in program)
% of total waste stream diverted through BB	**25.7%**	Only counting Targeted materials as "diverted"