



Ontario Recycler Workshop

November 26, 2014

ORW begins at 9:30 a.m. ET



Ontario Recycler Workshop

November 26, 2014

Mike Birett
CIF

Intro & Welcome

- Good morning & welcome to Fall 2014 ORW
- ~120 people registered to participate
 - online & in person
- Thank you for joining us!

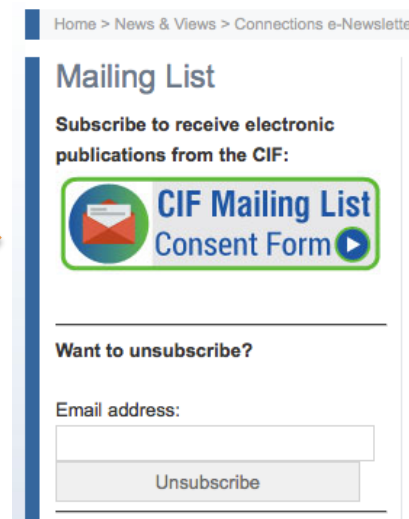
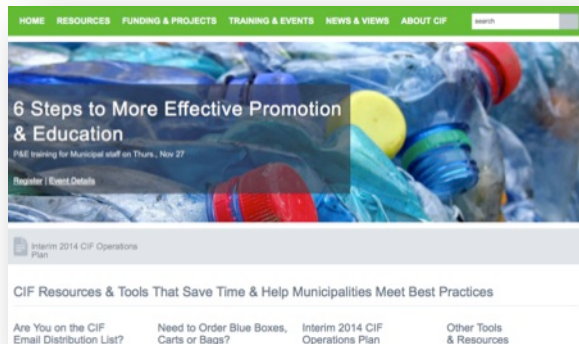
Housekeeping - Webcast

- Full day – to ~4:30 pm
- For webcast
 - ① sound slider (hover on black bar)
 - ② 'submit a question' for speakers
 - not visible on other screens
 - ③ links to agenda, speaker list, technical assistance
 - ④ expand to full screen; 'esc' to go back



Housekeeping Items: In-house

- Please check in at registration desk
 - Confirm attendance
 - Datacall training credit for municipal staff who attend
 - Confirm use of photos
 - let us know if we **cannot** use your photo: online/print
 - Confirm interest to stay on CIF mailing list
 - Connections, REOI, tenders etc.
 - Check-off at reg desk or go online



Snapshot...Today's Program

Morning Session

- CIF & Partner Updates
- *Morning Break*
- Operating Effective Depots to Increase Recovery
- Monitoring & Measuring Program Impacts
- *Lunch*

Afternoon Session

- P&E Matters
- Insights from the MRF
- *Afternoon Break*
- Procurement, Contracting & Management: Working Toward Better Practices Factors Affecting Collection
- *Summary & Concluding Remarks*

A Sincere Thank You to Today's Speakers!

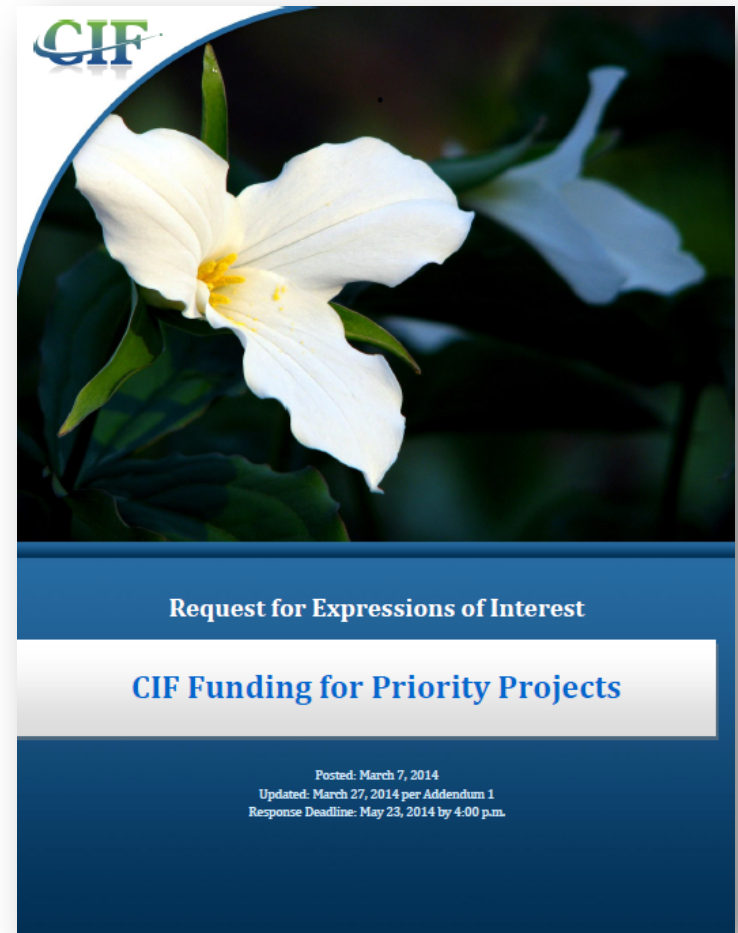
- Amanda Hopkins
- Angela Porteous
- April Stockfish
- Barbara McConnell
- Charles-Étienne Simard
- Chris Fast
- David Miles
- David Yousif
- Gayle Short
- Maria Kelleher
- Matt Risko
- Monika Turner
- Neil Menezes
- Rick Vandersluis
- Rob Cook
- Ryan Frew
- Sherry Arcaro
- Wesley Abbott
- Will Mueller

CIF Update

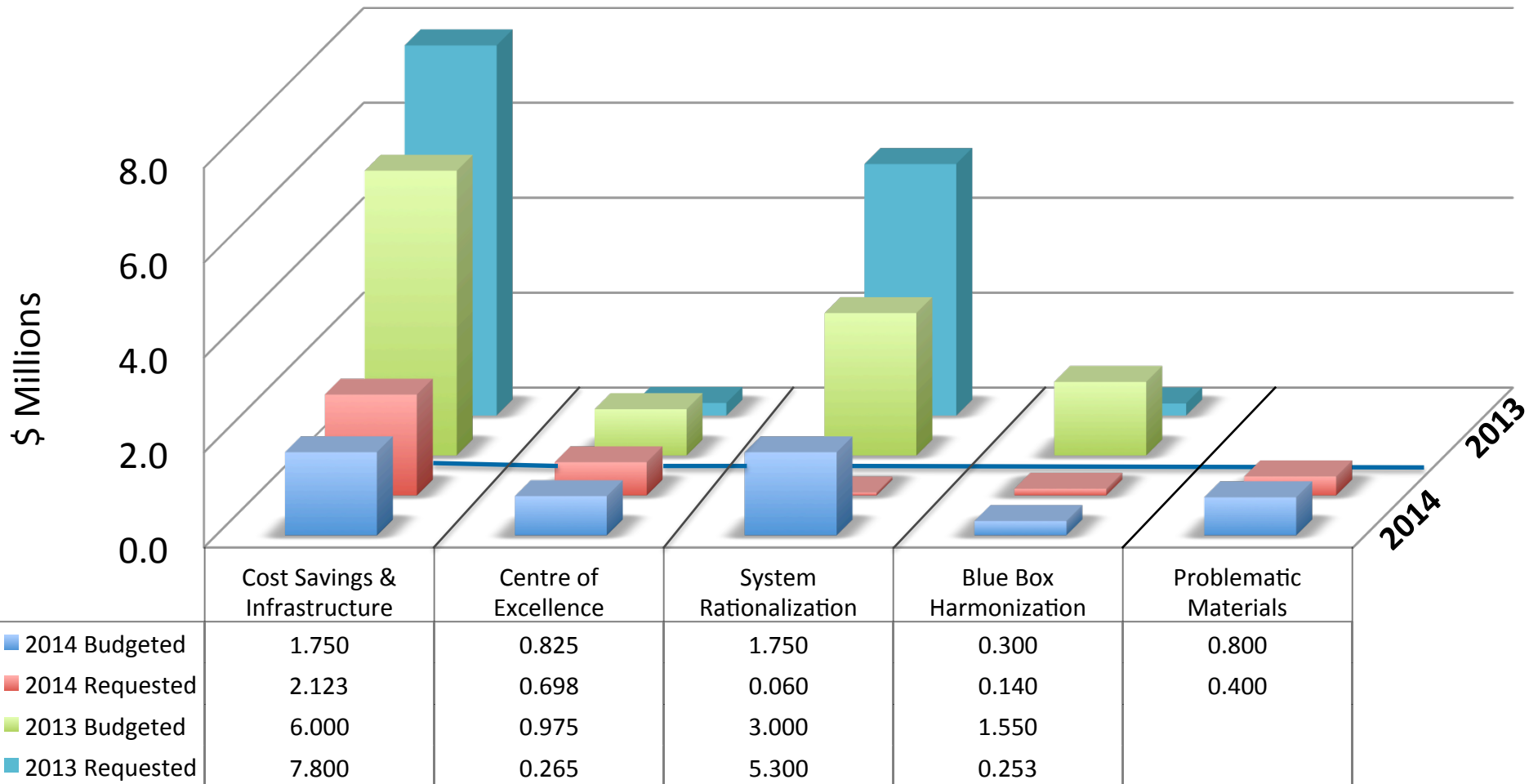
Mike Birett
Managing Director, CIF

2014 REOI Update

- 5th REOI to date
- Closed May 23rd
- Budget: \$5.425 M
- 37 applications received
- \$6.7 M total value
- Funding requested: \$3.4 M



Funding Activity: 2013 vs 2014



2014 Apps

11

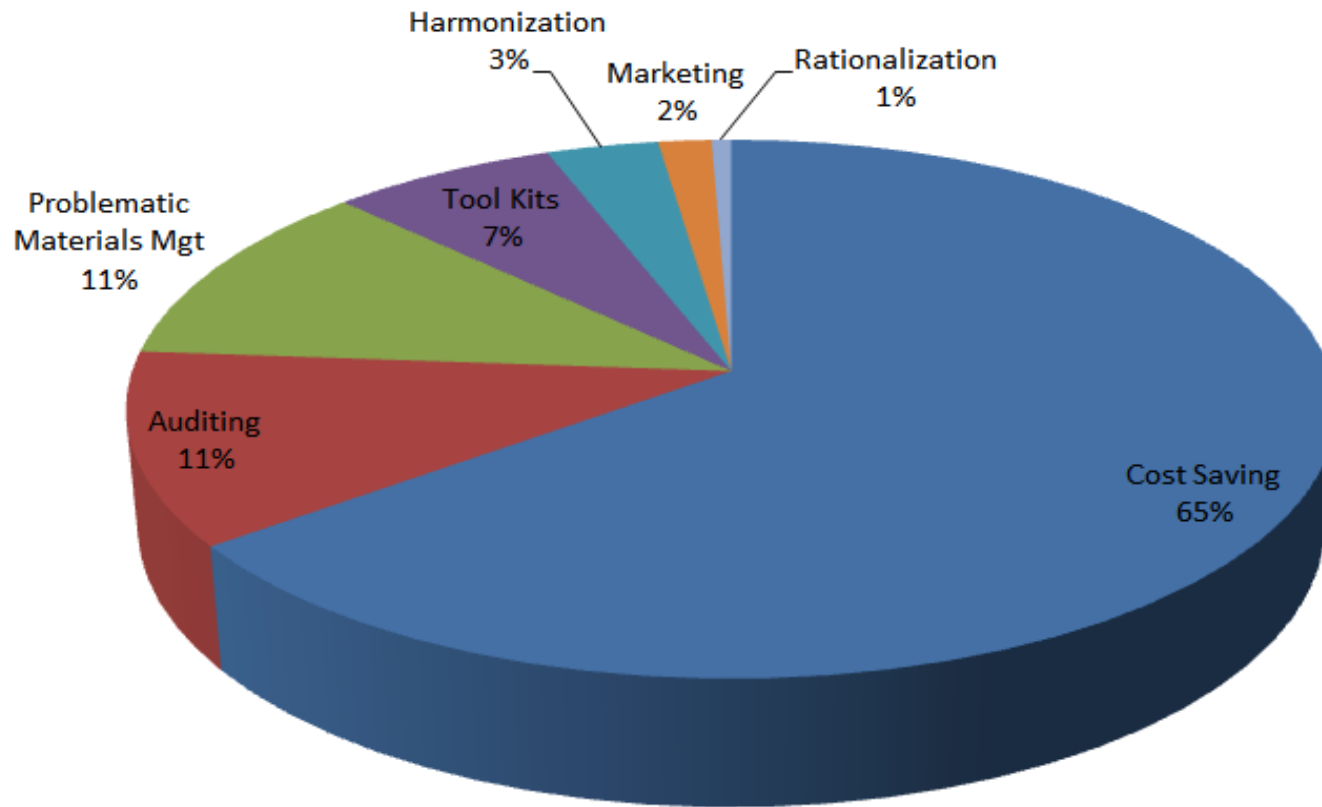
15

2

5

4

Project Value by Priority Areas



Total Project Value
\$ 6,665,822

Total Requested
\$ 3,420,512

Total Approved
\$ 2,459,702

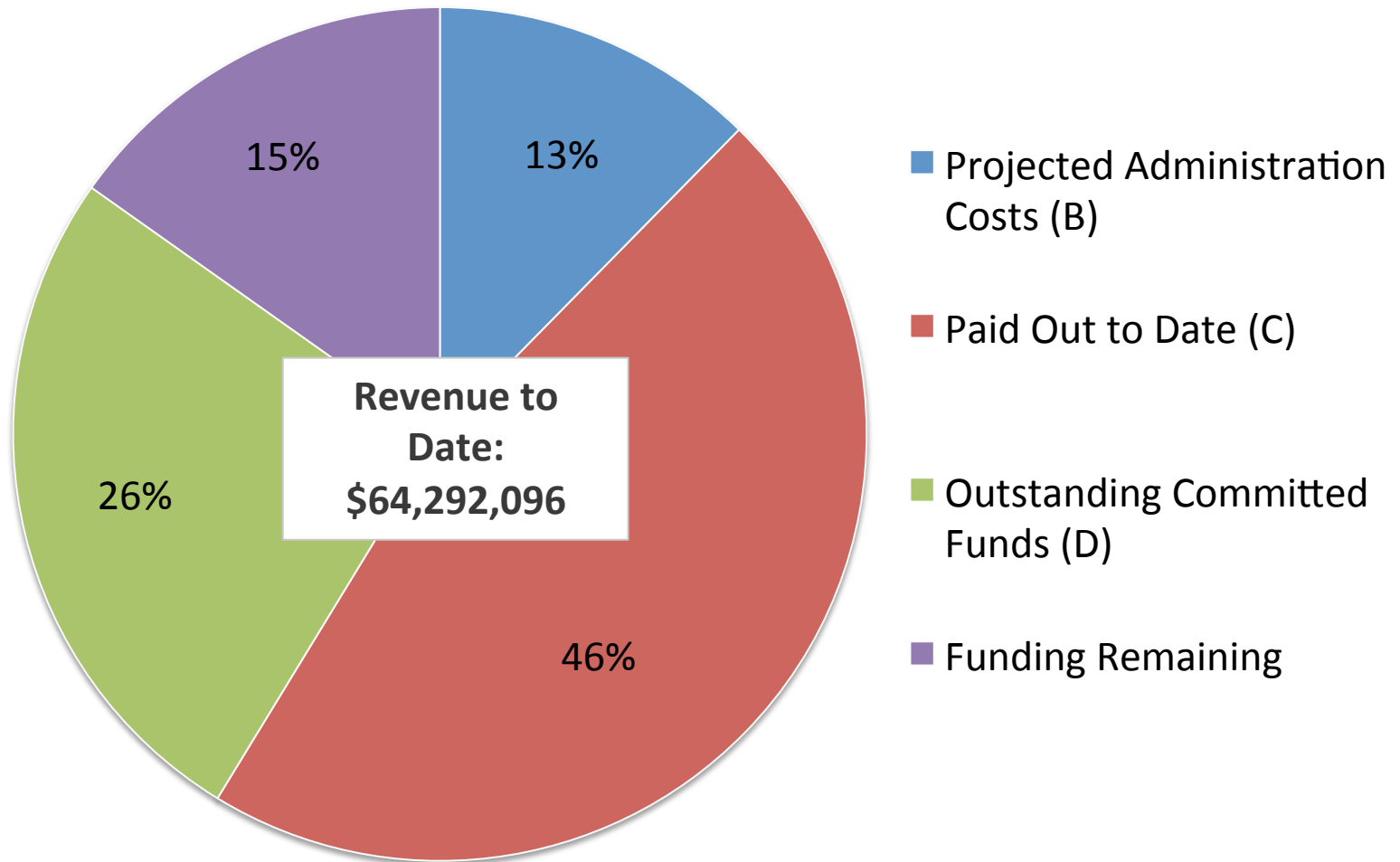
2014 in Review (1)

- Funds provided to:
 - Several projects that will test new technologies for improving fibre & glass quality
 - 10 cost savings initiatives generating over \$600,000/yr in savings (ROI under 4 yrs)
- Completed 4 year optimization of NW Ontario waste shed
 - Work continuing in 5 other parts of Province

2014 in Review (2)

- Audited 56 closed projects (est. \$10 M value)
 - Savings were within 5% of initial projections
- Completed analysis of cost implications of packaging design on diversion
- Conferences, training & outreach sessions we hope are of value
 - Best Practices scores continue to rise
- ~1,000 e-newsletter subscribers

CIF Current Financial Status



Looking Ahead (1)

- Directives remain unchanged
 - MIPC 2011
 - allocate funds based on merits of regionalization projects
 - develop & operate a Centre of Excellence
 - MIPC 2012
 - 3-year extension to year end 2016
- Political future remains cloudy
 - Budget assumes no new funding in 2015

Looking Ahead (2)

- CIF Committee & MIPC support release of interim budget
- Approximately \$9.8M uncommitted in reserves
 - 2015 draft budget will disburse over half
- Municipal feedback suggests we're pointed in the right direction
 - No major change in direction proposed

Proposed 2015 Open Grants

Item	Proposed 2015 Budget
Cost Saving Initiatives	\$2,500,000
System Rationalization	\$1,200,000
Addressing Problematic Materials	\$500,000
Blue Box Harmonization	\$300,000
Total	\$4,500,000

Proposed Centre of Excellence Budget

Item	Proposed 2015 Budget
Best Practices Compliance & Data Call Support	Incl. in Admin Budget
Development of Better Practices & Tool Kits	\$200,000
Research into Materials Management	\$100,000
Support for RFP & Tender Development	\$75,000
Training Initiatives	\$200,000
Outreach Services	\$140,000
Performance Auditing	\$250,000
Total	\$965,000

Fund Administration

- Approval letters & draft grants have gone out
 - Contact your project manager for status
- Check our website for info on project management
 - cif.wdo.ca/funding
- Closure of 2011 projects



Centre of Excellence Priorities

- New training opportunities
- RFPs & contracts
- Depot operations
- Activity-based costing



Top of Mind Issues

- Implications of latest Provincial EPR discussions
- 2015 budget will be reviewed in Q1
- Mixed broken glass



For More Information

Website: <http://cif.wdo.ca>

Mike Birett – Director, CIF

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Carrie Nash – Project Manager, CIF

CarrieNash@wdo.ca (519) 858-239

Gary Everett – Project Manager, CIF

Gary@Egroup1.com (519) 533-1939

Alec Scott – Project Manager, CIF

archenv@sympatico.ca (705) 722-0225



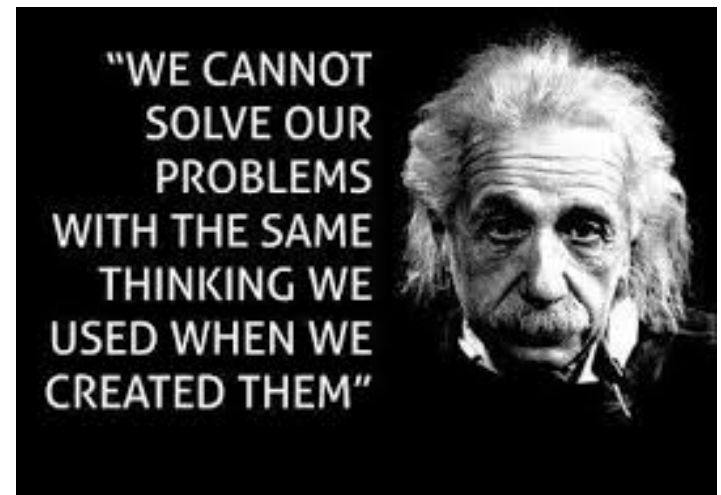
Change Management & the Blue Box System

Sherry Arcaro

Director of Field Services

Current System Challenges

- Mixed broken glass
- Polycoat cups & containers
- Single-use beverage capsules
 - K-Cups - EcoCup™
- Plastic laminates
- Packaging Life Cycle Analysis (LCA)
vs. End-of-Life Management



Dilution Was The Solution!

- Mixed broken glass
 - No magic bullet
 - No imminent change in legislation
 - More capacity or alternatives on the horizon?



Composite Paper Packaging Project Update

- Phase 1 & 2 complete – October webinar
- Hot beverage cup work
- Phase 3
 - Identify solutions to issues found in Phase 1 & 2
 - Optical sorter opportunities
 - Additional mill testing
 - Pilot project in Ontario municipality

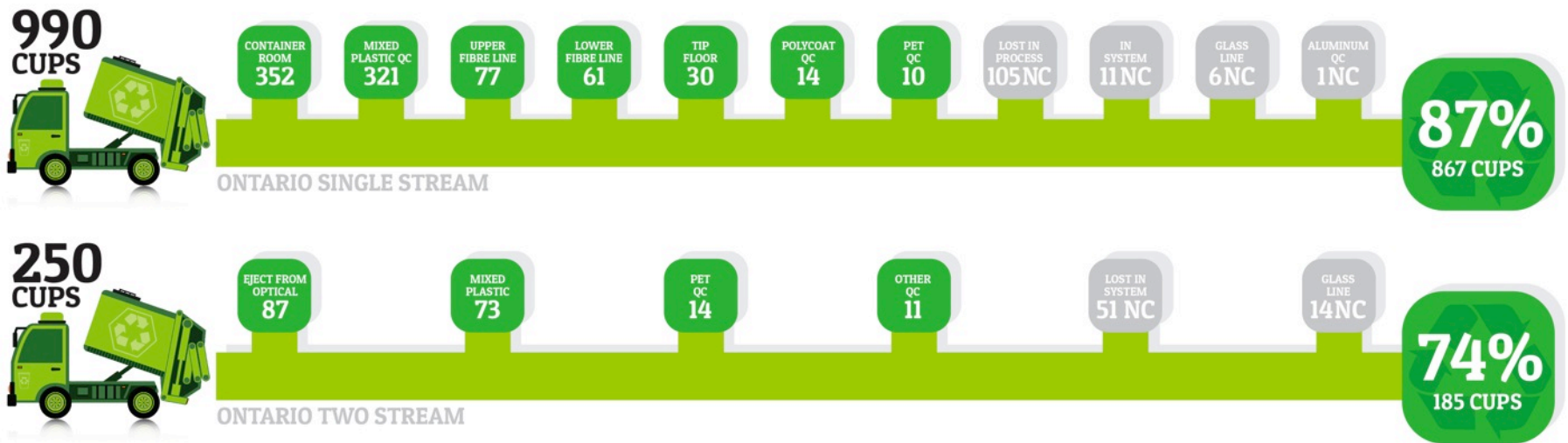


Consumer Demand vs. MRF Technology

- Single-serve packaging on the rise
- Consumers demanding less food waste & convenience
- Working with Mother Parker's on capture of EcoCup™ & other K-cups at MRF
- Partnered with “Green by Nature” in BC on 2 MRF trials
- Worked with City of London & Peel Region in Ontario



Ontario MRF EcoCup™ Trial Results



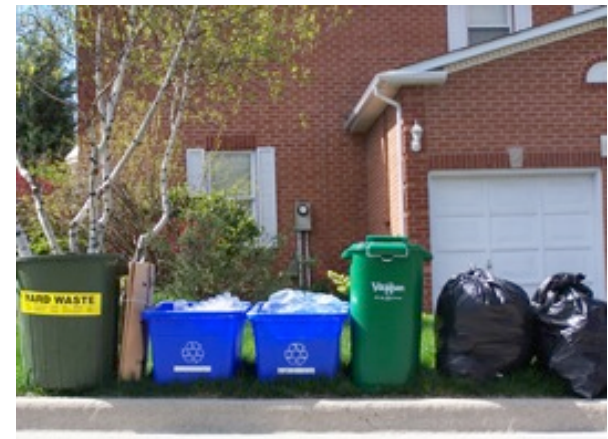
Plastic Laminates...the New Packaging Frontier

- Consumer demand for longer shelf life/lower prices = innovative packaging
- Producer LCAs vs. end-of-life management
- A North American challenge to problem-solve
 - EFW & pyrolysis only current end of life solutions
- Testing on the horizon



2015 Study Opportunities

- New series of curbside studies begin in spring 2015
 - Cost of study shared with municipality
 - Raw data & summary provided to programs
- Spring & Fall MRF material composition studies ongoing in 2015
 - Funded 100% by SO
 - Data provided to program
- Participation is limited,
sign up now!



Thank-you to Our Partners in Progress!



Thank-you...Questions?



Thinking
beyond
the box

Stewardship Ontario

Sherry Arcaro

Director of Field Services

Email: sarcaro@stewardshipontario.ca

Phone: 1-416-725-3156





WDO Update

Will Mueller

WDO

Overview

■ Updates

- ISPs (Industry Stewardship Plans)
- Ontario Electronic Stewardship & Ontario Tire Stewardship (OES & OTS)
- Blue Box (BB) funding & arbitration
- 2013 Datacall results

■ Looking Ahead

ISPs

- Call2Recycle (single-use batteries) & Product Care Association (PCA) (paint)
 - Additional consultations as directed by Minister until Nov. 21
 - WDO to report to the Minister on these consultations
- PCA (pesticides, solvents & fertilizers)
 - To date, PCA has not yet submitted final ISP for Board consideration

<http://wdo.ca/programs/industry-stewardship-plans/>

OES & OTS

OES

- In late 2013, OES entered into services agreement with Electronic Products Recycling Association (EPRA)
- OES has been meeting with municipal associations to discuss potential WEEE Program improvements

OTS

- WDO finalizing its review of Off-the-Road tires component of Used Tires Program
- A report due to Minister on December 12

BB Arbitration

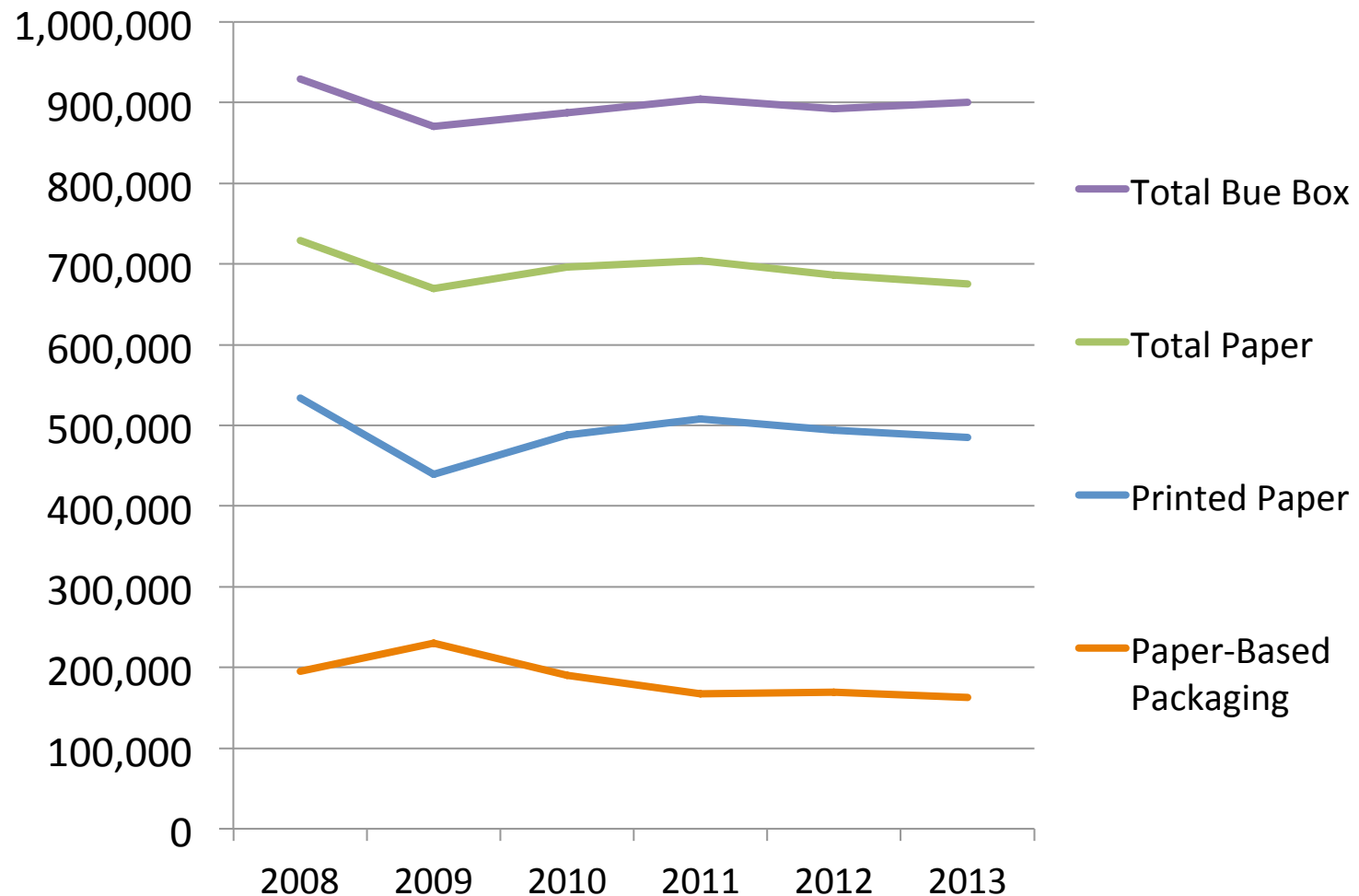
- Arbitration hearings for 2014 steward obligation ended in summer
- WDO has worked with AMO/Toronto & SO to continue flow of 2014 BB funding to municipalities while awaiting arbitrator's decision, which is still pending

2013 Datacall Highlights

- Marketed Tonnes: **900,135** (+0.8% vs. 2012)
 - Recycling Rate (Stewardship Ontario): **65.8%** (+3%)
- Gross Costs: **\$329.0M** (+0.8%)
- Gross Revenue: **\$87.7M** (-1.6%)
- Net Costs: **\$241.3M** (+1.7%)
- Net Cost/Tonne: **\$268** (+0.9%)

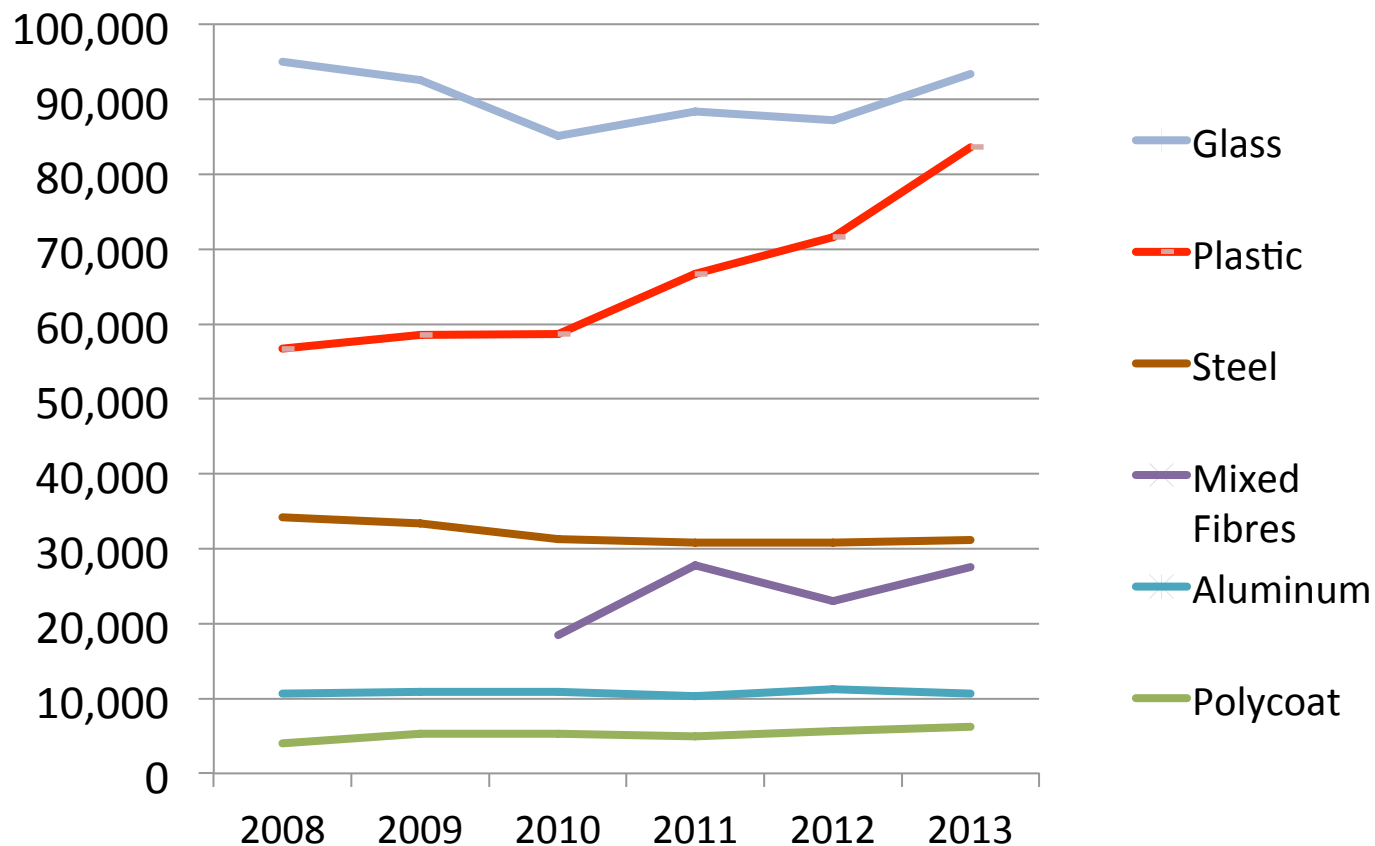
2013 Datacall Results – Tonnes

2008-2013 Total Blue Box & Fibre Tonnes



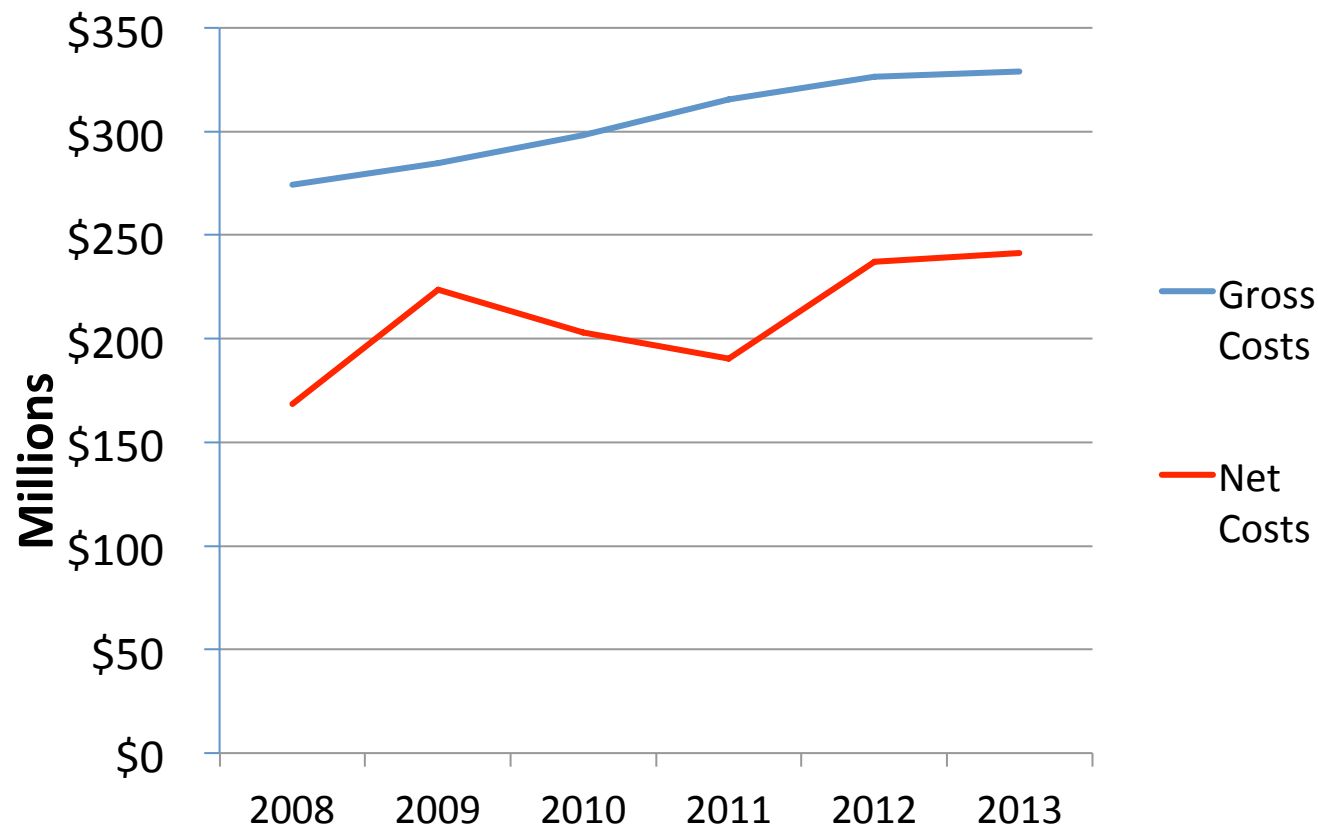
2013 Datacall Results – Tonnes

2008-2013 Container & Mixed Fibres Tonnes



2013 Datacall Results – Financial

2008-2013 BB Gross & Net Costs



Looking Ahead

- Encourage continued feedback on the Datacall
- 2013 Datacall audits are under way
- Working on 2013 residential diversion rate calculations
- WDO will continue to work with municipalities to improve how we measure residential waste diversion in Ontario
 - Still seeking feedback from all stakeholders on data collection & measurement

www.wdo.ca

LinkedIn: WasteDiversiOntario

Twitter: @WDOntario

williammueller@wdo.ca





AMO Update

Monika Turner
AMO Director of Policy

What is Happening at the Provincial Level ... Today

Blue Box & new waste legislation – likely next steps

- Lots of swirl with direction emerging
- Minister's comments at OMWA on November 20th
- Proposed approach to likely Blue Box table + legislation

Blue Box arbitration update

- MIPC approach on interim municipal BB payments
- Current expenditures to November 30th

Enjoy Your Break





CIF
CONTINUOUS
IMPROVEMENT FUND

Operating Effective Depots

Gary Everett, CIF

Depots In Ontario

- Over 300,000 t/y diverted
- Over 150 depots operating

From Huge



To Tiny



Love Depots



Hate Depots



Speakers

Almost all of us have a depot!

- Small Municipal Depot Guidebook
 - Amanda Hopkins, Stantec Consulting Ltd.
- Small Depot Program Case Studies:
 - April Stockfish, McMurrich/Monteith
 - Gayle Short, Township of Algonquin Highlands
- Operating Efficient Depot Programs
 - Rick Vandersluis, Try Recycling
 - Density Study update – Gary Everett, CIF



Small Municipal Depot Guidebook

CIF Project # 738

Amanda Hopkins
Stantec Consulting Ltd.

Project Highlights

- Goals:
 1. Provide small municipalities with practical information & costing model
 2. Help identify & accurately allocate activity based capital & operating costs for estimating full cost of current/planned depot diversion activities
- Impacts: More cost effective design & operations through use of costing tool & incorporation of better practices
- More information:
 - Amanda.hopkins@stantec.com
 - www.stantec.ca

Outline

Introduction & Purpose



Target Audience

The Guidebook Overview

The Depot Model

Question Period

Introduction

- Drop off depots play a vital role in waste management systems
- Effective alternative to waste collection
- Commonly used in rural, small volume settings
- Balancing materials managed with depot costs
- Safety & efficiency are tops in depot design & operations



Project Purpose

- Information & strategies for those planning & operating depots
- Present industry best practices on depot development & operation
- Answer the 'who, what, why, how & where'
- Emphasis on the 'what' & 'how'



Target Audience

- Intended for municipalities with <500 tpy of recyclable materials
- Municipalities who:
 - currently operate depots or
 - are looking to develop new facilities
- Existing facilities – determine financial & operational impacts of expanding programs



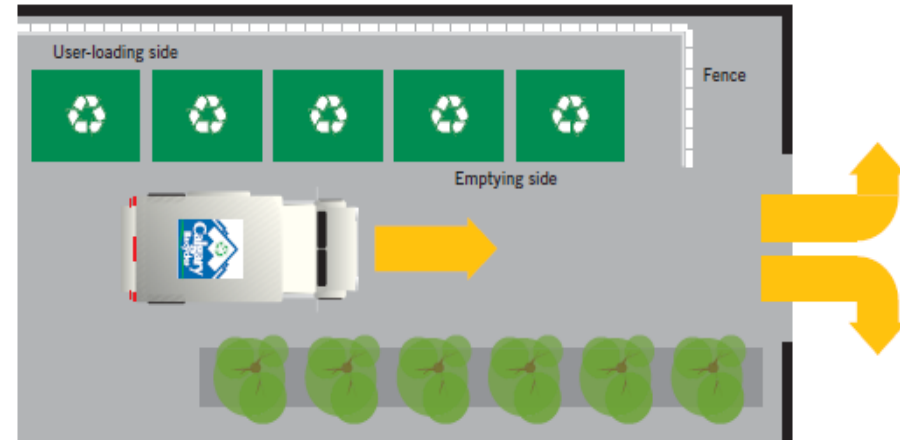
The Guidebook

- Guidebook divided into 3 sections:
 1. Planning, siting, design & approvals
 2. Operations & better/best practices
 3. Costing Model
- Allows users to easily access specific parts of Guidebook

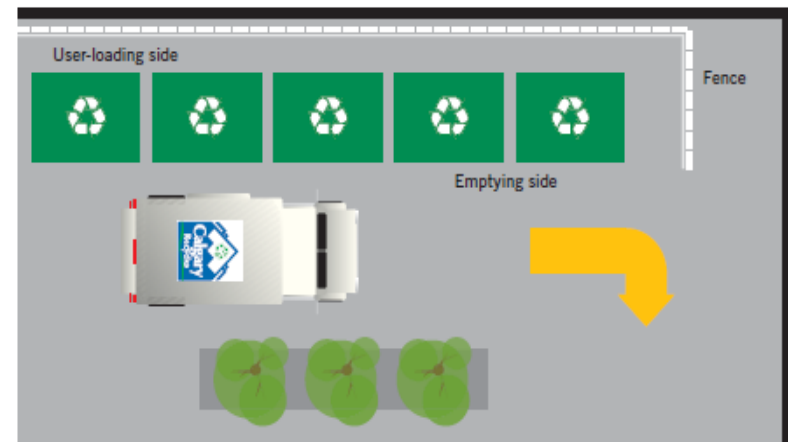


Guidebook Sections (1)

- Planning a Depot
- Depot Design
 - Design for materials handling
 - Vehicle & traffic management
 - Designing for materials movement off-site
 - Other Site Design Considerations
- Siting a Depot
- Depot Operations
- Approvals Required
- Costs
- Promotion & Education
- Resources



Solution A. The truck can drive straight through the CRD



Solution B. The truck has enough room to turn as it exits the CRD

Guidebook Sections (2)

Costs

- Operating & capital costs can vary between depots
- Dependent on a number of factors:
 - Existing site conditions
 - Configuration
 - Staffing requirements
 - Quantity & types of materials managed

***Depot Costing Model** is designed to help determine potential capital & operating costs for new depot development or existing depot program modifications*

Depot Costing Model

- Allows user specific input including:
 - Tonnages & material types
 - Sorting configurations (single, dual, multi stream)
 - Collection & haul vehicle configurations
 - Known & unknown program costs
- The model has defaults where information is unavailable
- Enables users to compare costs
- Compare multiple scenarios
- Not intended as replacement for procurement process or obtaining quotes



Depot Costing Model Highlights



Depot Costing Model

Depot Cost Analysis Model - Tonnages



Directions: Input information in yellow fields, follow pop up prompts

Throughout the model, where 'Stream 1', 'Stream 2', etc. is shown, you may adjust the text to reflect your individual sorting programs

Step 1: Determining Whether Tonnage Estimates are Required

Have you already developed depot tonnage estimations?

no

Skip 2a - Proceed to Step 2b below

Step 2a: Annual Tonnages Requiring Management

RECYCLABLES

	Single Stream	Dual Stream		Multi Stream					
		Fibres	Containers	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5	Stream 6
Annual Tonnes									
Combined Tonnage	0	0				0			0

ADDITIONAL MATERIALS

	Wood	Metal	Drywall	Shingles	Brush	Leaf and Yard Waste	Used Tires	Mattresses	Carpet	Garbage	Concrete	Mixed C&D
Annual Tonnes												

Depot Costing Model

Step 2b: Estimating Annual Tonnage Handling Requirements

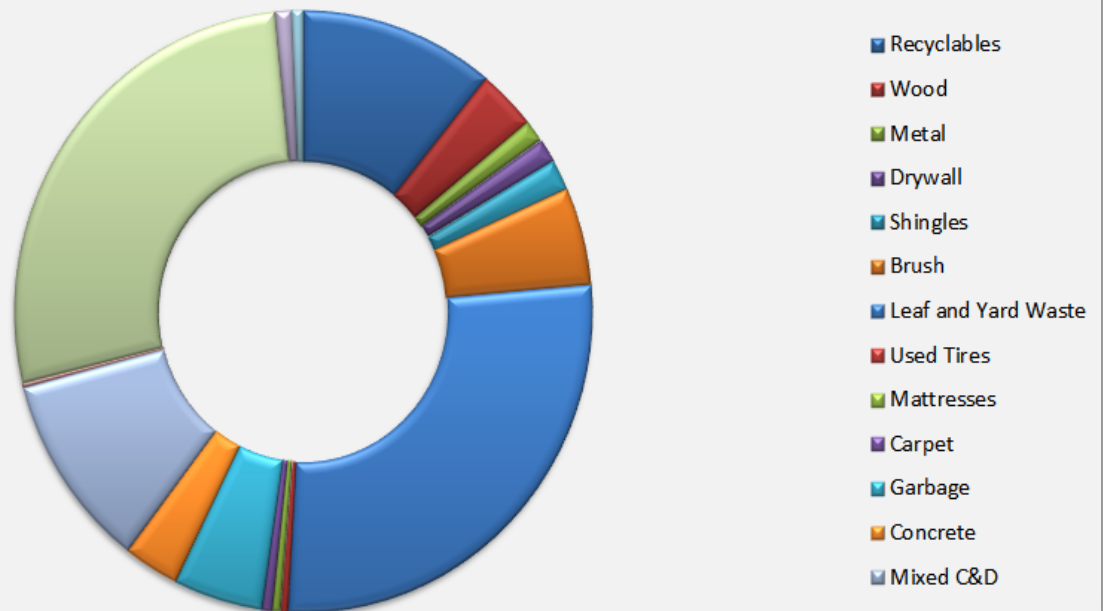
What is the population that will be serviced by the depot?

1000

Once tonnage has been assessed, please proceed to Tab 2 - Density Calculations

Material	Estimated Annual Tonnage Requiring Management
Recyclables	23
Wood	7
Metal	3
Drywall	3
Shingles	4
Brush	11
Leaf and Yard Waste	58
Used Tires	1
Mattresses	1
Carpet	1
Garbage	11
Concrete	7
Mixed C&D	22
CFC	1
Reuse	58
Ewaste	2
MHSW	1

Step 2b - Estimated Annual Tonnage Requiring Management



Depot Costing Model

Depot Cost Analysis Model - Density Calculations



Directions: Input information in yellow fields, follow pop up prompts

Select which materials will be included in each stream (e.g. in a 2 stream paper fibres/containers system, select all applicable materials)

Once you have selected which materials will be included in each stream, please proceed to Tab 3 - Direct Haul Costs

Density averages determined through numerous waste audit and composition studies conducted in Ontario

Step 3: Determining Volumes Requiring Management

On Page 1, were tonnage estimates developed for you (Step 2b)?

yes

Do you have predetermined waste composition percentages?

no

Waste composition percentages have been calculated automatically

Enter the names of your sorting streams into the

Click the check boxes under the

Waste composition percentages have been calculated automatically										Containers	
Materials		Waste Composition	Annual Tonnage	Density (Kg/m3)	Volume	Materials	Volume	Materials	Tonnage	Volume	
Paper Fibres	Newspaper	30.6%	7.08	250	28.30	<input checked="" type="checkbox"/>	28.30	<input type="checkbox"/>	0.00	0.00	
	Magazines and Catalogues	7.6%	1.76	280	6.28	<input type="checkbox"/>	6.28	<input type="checkbox"/>	0.00	0.00	
	OCC	12.4%	2.87	55	52.13	<input checked="" type="checkbox"/>	52.13	<input type="checkbox"/>	0.00	0.00	
	Boxboard	10.5%	2.43	60	40.47	<input checked="" type="checkbox"/>	40.47	<input type="checkbox"/>	0.00	0.00	
	Polycoat and Aseptics	0.8%	0.18	30	6.17	<input checked="" type="checkbox"/>	6.17	<input type="checkbox"/>	0.00	0.00	
	Telephone Books	0.7%	0.16	280	0.58	<input checked="" type="checkbox"/>	0.58	<input type="checkbox"/>	0.00	0.00	
	Residential Fine Paper	0.7%	0.16	150	1.08	<input checked="" type="checkbox"/>	1.08	<input type="checkbox"/>	0.00	0.00	
	Other Paper	6.3%	1.46	150	9.71	<input checked="" type="checkbox"/>	9.71	<input type="checkbox"/>	0.00	0.00	
	Total	69.6%									
Plastics	PET	5.0%	1.16	25	46.25	<input type="checkbox"/>	0.00	<input checked="" type="checkbox"/>	1.16	46.25	
	HDPE Bottles	2.0%	0.46	25	18.50	<input type="checkbox"/>	0.00	<input checked="" type="checkbox"/>	0.46	18.50	
	PVC	1.2%	0.28	25	11.10	<input type="checkbox"/>	0.00	<input checked="" type="checkbox"/>	0.28	11.10	
	Plastic Film	1.7%	0.39	28	14.04	<input type="checkbox"/>	0.00	<input checked="" type="checkbox"/>	0.39	14.04	

Depot Costing Model

Depot Cost Analysis Model - Direct Haul Costs



Directions: Answer questions below in the yellow fields.

Step 4: Determining Direct Haul Costs Using Collection Vehicles (No Depot)

What is the capacity of the collection vehicle? (May enter multiple sizes for comparison)

Vehicle 1	32	cubic metres
Vehicle 2	42	cubic metres
Vehicle 3	48	cubic metres

Please enter compaction ratios for collection vehicles listed above. If only one collection vehicle exists, only enter compaction ratios under the Vehicle

	Fibres	Containers	test name	Stream 4	Stream 5
Vehicle 1	2	2			
Vehicle 2	0	0	0	0	0
Vehicle 3	0	0	0	0	0

What is the driving time to your processing facility (i.e. MRF)?

2 hours

What are your collection costs for recyclables?

\$ 100.00 per hour

Total Annual Volume of Recyclables Collected

Reference:

If current hourly collection costs are not available the following operating cost estimates can be used.
Average Operating Costs for Collection Vehicles in Ontario (includes estimated 20% profit margin):
Fully Automated = \$78/hr
Semi-Automated = \$69/hr

Depot Costing Model

Depot Cost Analysis Model - Transfer Costs



Directions: Answer questions below in the yellow fields.

Step 5: Determining Transfer Vehicle Haul Costs (with Depot)

What is the capacity of the transfer vehicle/ trailer? (May enter multiple sizes for comparison)

Trailer 1	42	cubic metres
Trailer 2	52	cubic metres
Trailer 3	62	cubic metres

Please enter compaction ratios for stationary compactors or transfer vehicles listed above. If only one collection

	Fibres	Containers	test name	Stream 4	Stream 5
Vehicle 1	2	2			
Vehicle 2	3	3			
Vehicle 3	4	4			

Will you own the trailer?

no

What is your average hourly haul cost for the hauler?

\$ 115.00 per hour

What is your average hourly haul cost for the trailer?

\$ 20.00 per hour

What is the driving time to your processing facility (i.e. MRF)?

2 hours

Depot Costing Model

Depot Cost Analysis Model - Depot Capital and Operational Costs



Directions: Depot costs **are estimated and** can be modified as needed. **Insert local costs whenever possible**
Enter chosen amortization period and interest rate

Step 6: Selecting Applicable Depot Components

Select which components will be included in your depot design, siting and construction by entering the quantity into the table below

Blank 'cost per unit' fields indicate costs are still being determined

Depot Components	Quantity	Cost per Unit	Unit	Total Cost	Best Practice
Infrastructure					
Property Purchase				\$ -	
Site Lighting	10	\$ (800.00)	light pole	\$ (8,000)	Site lighting is required when hours of operation extend beyond 18 hours. Poles on site will depend on pole height, lighting intensity and site layout.
Site Electrical		\$ (90.00)	square metre	\$ -	Connect to permanent electrical power source from the street.
Gas/Diesel/Propane/Solar Generator Costs		\$ (2,000.00)	diesel generator	\$ -	May be suitable for very small sites and very small electrical loads.
Water/ Sanitary	100	\$ (500.00)	metre	\$ (50,000)	Potable water supply is required for depot staff. Either connect to municipal water supply or construct a well. Bottled water and well for non-potable uses. Connect to sewer or construct septic system.
Septic Installation		\$ 25,000.00	per unit installed	\$ -	Drilled well and septic system installation.

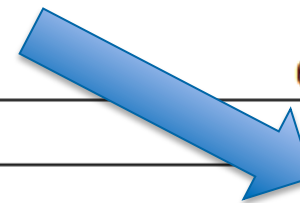
Depot Costing Model

Step 7: Identifying Depot Operating Costs

Operational Requirements	Quantity
Staffing	
Loader Operator (hrs./wk.)	6
Site Supervisor (hrs./wk.)	
Scalehouse Operator, site attendants (hrs./wk.)	
Site admin, legal, HR support (hrs./wk.)	
Staff Training (per staff)	
Staff Material and Supplies	1
Recyclable Containers and Materials Processing	
Utilities	
Electricity	
Propane	
Water	

Depot Costing Model

Operational Requirements	Quantity	Unit Cost
Staffing		
Loader Operator (hrs./wk.)	6	\$ + 35.00
Site Supervisor (hrs./wk.)		= \$25/hr *1.4 (estimated HR& admin costs)
Scalehouse Operator, site attendants (hrs./wk.)		
Site admin, legal, HR support (hrs./wk.)		



Depot Costing Model

Amortization of Capital Costs

Infrastructure

Total Capital Costs	\$	(171,500)
Amortization Period		20 years
Interest Rate		2%

Equipment

Total Capital Costs	\$	(275,000)
Amortization Period		10 years
Interest Rate		0%

Amortized Capital Costs (Annual Payment)

\$10,488

Amortized Capital Costs (Annual Payment)

\$27,500

Depot Costing Model

Depot Cost Analysis Model - Cost Summary



Total Annual Direct Haul Collection Costs	
Collection Cost	\$ 1,200.00

Total Depot Costs

Haul/Transfer Costs	
Vehicle 1	\$ 1,080.00
Annual Amortized Depot Capital Cost	
Infrastructure	\$10,488.38
Equipment	\$27,500.00

Annual Depot Operating Cost	
\$	10,920.00



Total Annual Depot Transfer \$

Step 9: Determining Costs per Tonne for Depot and Collection Scenarios

If tonnage estimates were determined for you on Tab 1, please refer to the costs in Table 3 below

Table 1: Costs per tonne for pre-determined recyclables tonnages

	Single Stream	Dual Stream		Multi Stream				
		Fibres	Containers	Stream 1	Stream 2	Stream 3	Stream 4	Stream

Depot Costing Model

Step 9: Determining Costs per Tonne for Depot and Collection Scenarios

If tonnage estimates were determined for you on Tab 1, please refer to the costs in Table 3 below

Table 1: Costs per tonne for pre-determined recyclables tonnages

	Single Stream	Dual Stream		Multi Stream				
		Fibres	Containers	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Annual Tonnes	0	0	0	0	0	0	0	0
Combined Tonnage	0	0				0		
Annual Cost per Tonne with Collection								
Annual Cost per Tonne with Depot								

Table 2: Costs per tonne for pre-determined additional material tonnages

ADDITIONAL MATERIALS								
	Wood	Metal	Drywall	Shingles	Brush	Leaf and Yard Waste	Used Tires	Mattresses
Annual Tonnes	0	0	0	0	0	0	0	0
Annual Cost per Tonne with Depot								

Table 3: Costs per tonne for calculated material tonnages

Material	Estimated Annual Tonnage	Annual DIRECT HAUL Cost/Tonne	Annual DEPOT Cost/Tonne



Small Depot Program Success: A Case Study from the Township of McMurrich-Monteith

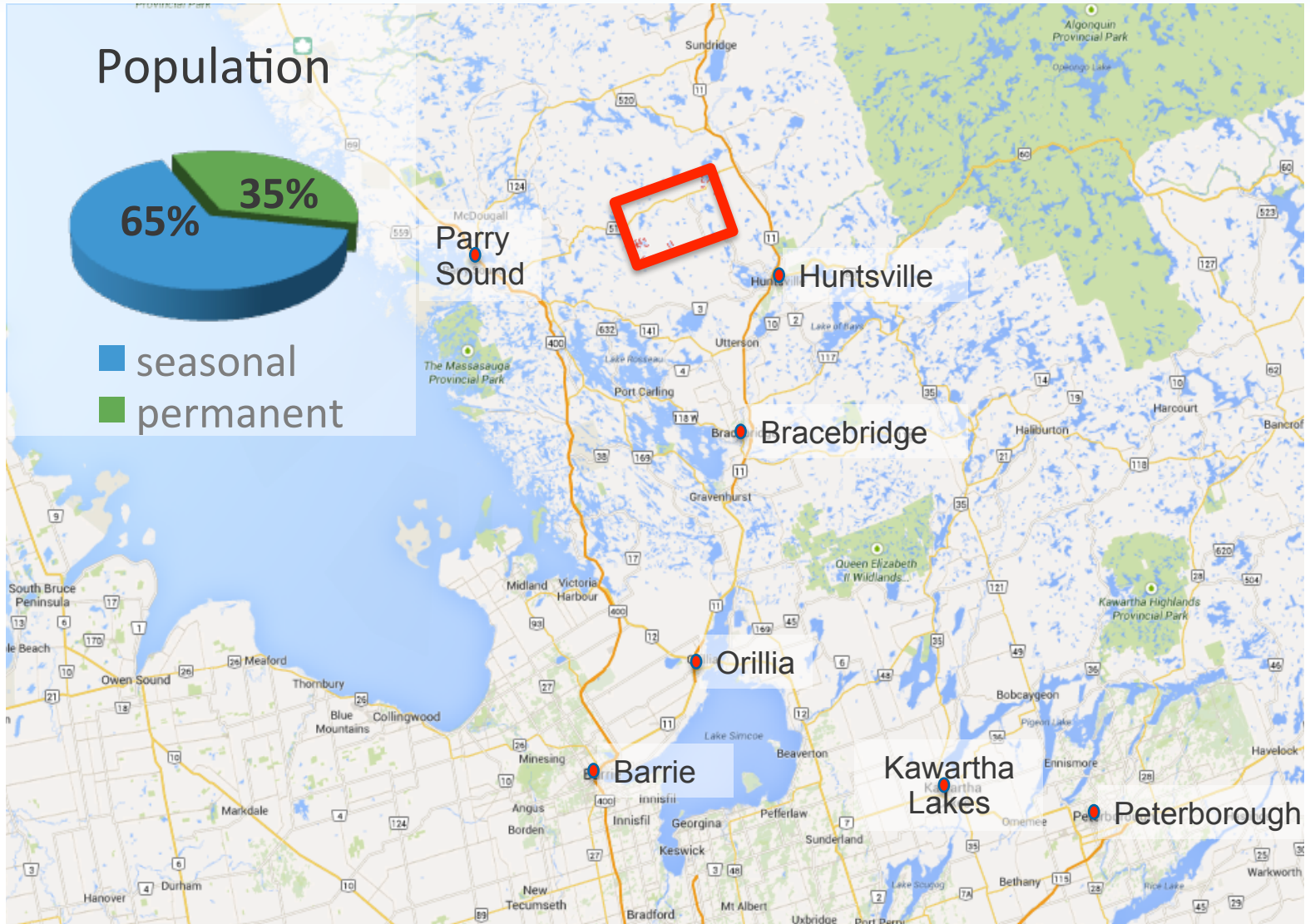
April Stockfish

Township of McMurrich-Monteith

Project Highlights

- Project goal: Improve customer service & communication to achieve full participation & maximize diversion
- Impacts: BB tonnes are increasing, costs are under control, & residents are satisfied
- More information:
 - astockfish@Hotmail.com
 - www.mcmurrichmonteith.com

Township of McMurrich-Monteith

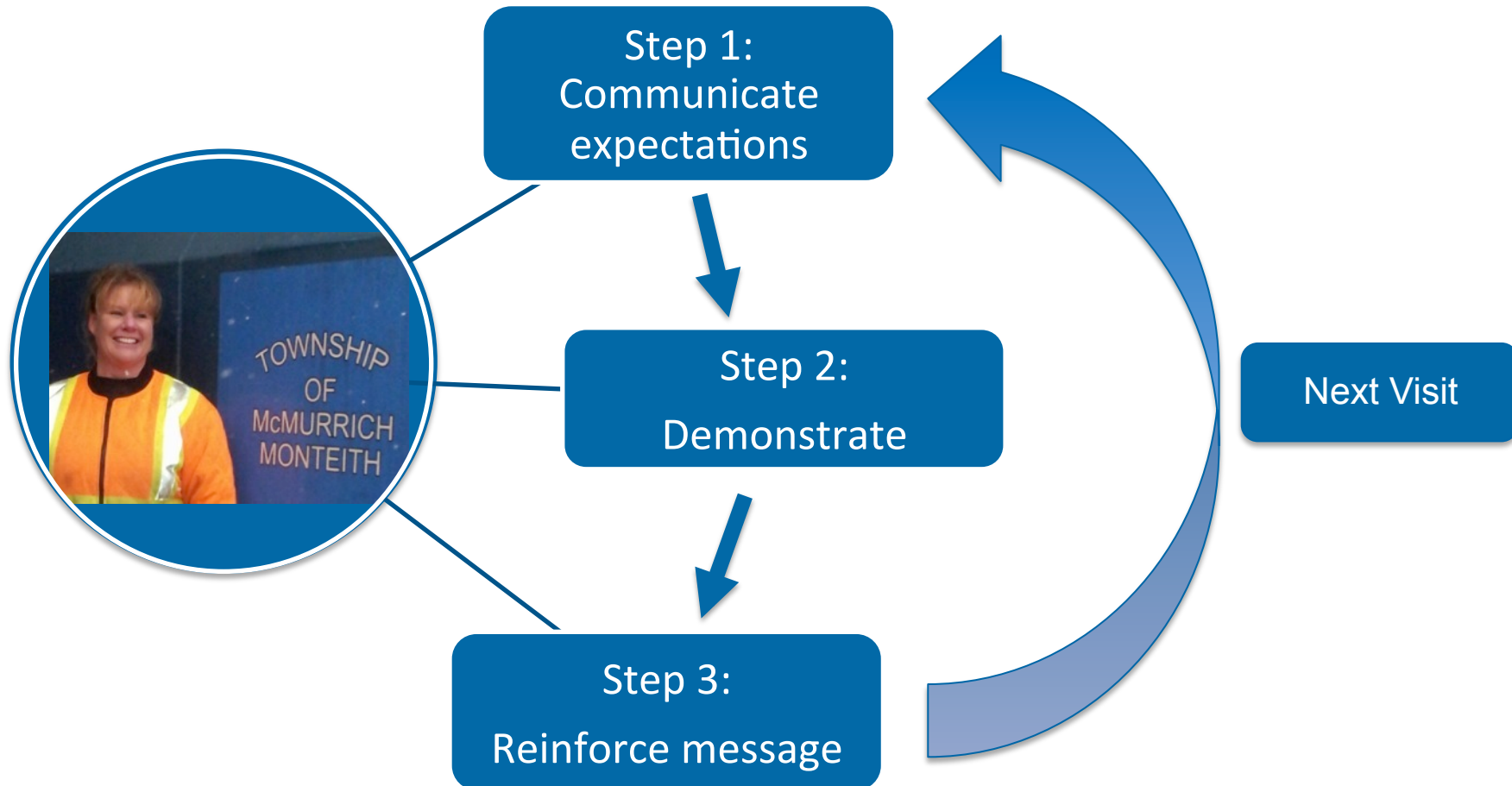


Make Changes that Make Sense

- 2011 – assessment of operations
 - Good policy
 - Underachieving results
- Fall, 2011 – identify opportunity
- June, 2012 – clear bags launch






Strategy: Customer Service Model








Step 1: Communicate Expectations

PAPER PRODUCTS

 BOXBOARD CEREAL - CRACKER-PASTA BOXES	 MAGAZINES
 EGG CARTONS	 JUNK MAIL & ENVELOPES
 SPIRAL WOUND CONTAINERS	 TAKE OUT COFFEE CUPS KEEP LIDS ON
 MILK & JUICE CARTONS TETRA PACKS - JUICE BOXES	 WRAPPING PAPER BOWS-RIBBONS-GIFT TAGS
 NEWSPAPER	 CARDBOARD BOXES BREAK DOWN TO SIZE OF BLUE BOX OR SINGLE NO LARGER THAN 150CM X 150CM X 25CM
 BOOKS HARD COVER - SOFT COVER	 FABRIC TEXTILES NO BUTTONS OR ZIPPERS SECURE IN A CLEAR PLASTIC BAG

CONTAINERS

 PLASTIC BOTTLES & JUGS	 PLASTIC BAGS & FILM
 PLASTIC TUBS & LIDS	 FOOD & BEVERAGE CANS
 CHIP BAGS & WRAPPERS GRANOLA BAR - FRUIT SNACK	 GLASS JARS & BOTTLES
 PLASTIC CLAMSHELLS	 EMPTY DRY PAINT CANS
 SMALL PLASTIC PLANT POTS	 ALUMINUM TRAYS & FOIL
 GROCERY STORE STYROFOAM	 AEROSOL CANS HEALTH, BEAUTY, & FOOD ONLY

RECYCLING RULE: IF IT IS PACKAGING FROM THE GROCERY STORE IT CAN BE RECYCLED IN THE BLUE BOX

NOT RECYCLABLE X	METAL OR PLASTIC HANGERS, VHS TAPES, CD'S OR CASSETTE TAPES, LIGHT BULBS LAUNDRY BASKETS, CONSTRUCTION WASTE, DIAPERS, CHRISTMAS LIGHTS, ARTIFICIAL XMAS TREES
NOT RECYCLABLE X	PACKING STYROFOAM & PEANUTS, DRINKING GLASSES, CERAMIC DISHES, WOODEN ORANGE CRATES, POTS OR PANS, MIRROR OR WINDOW GLASS, PLASTIC TPYS OR OTHER DURABLE PLASTIC PRODUCTS

LANDFILL HOURS

SUMMER HOURS APRIL 1- NOVEMBER 30		WINTER HOURS DEC. 1 - MARCH 31	
MONDAY	9 am - 5 pm	1 pm - 5 pm	
TUESDAY	9 am - 5 pm	1 pm - 5 pm	
WEDNESDAY		CLOSED	
THURSDAY		CLOSED	
FRIDAY	9 am - 5 pm	1 pm - 5 pm	
SATURDAY	9 am - 5 pm	1 pm - 5 pm	
SUNDAY	9 am - 5 pm	1 pm - 5 pm	

OUR LANDFILL SITE ACCEPTS ONLY CLEAR GARBAGE BAGS

LANDFILL SITE IS CLOSED ON STATUTORY HOLIDAYS BETWEEN NOVEMBER 1st - MAY 1st

Residents may now drop off their used tires without rims, free of charge

Take Pride, Where you Reside

DON'T LITTER!!

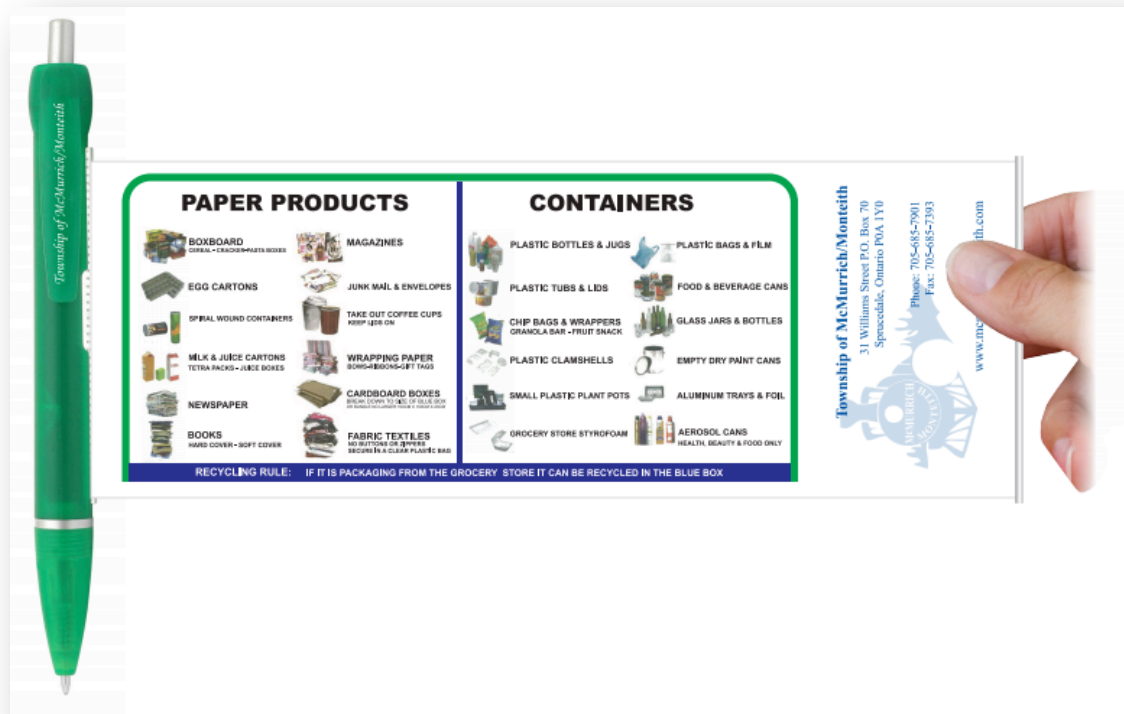
Step 2: Demonstrate Sorting & Build Relationships

- First time offenders
 - Get dirty
 - Demonstrate how/what to sort
- Explain infractions
 - This is the bylaw
 - These are your resources
- Develop the relationship
 - Always here for questions
 - P&E for home



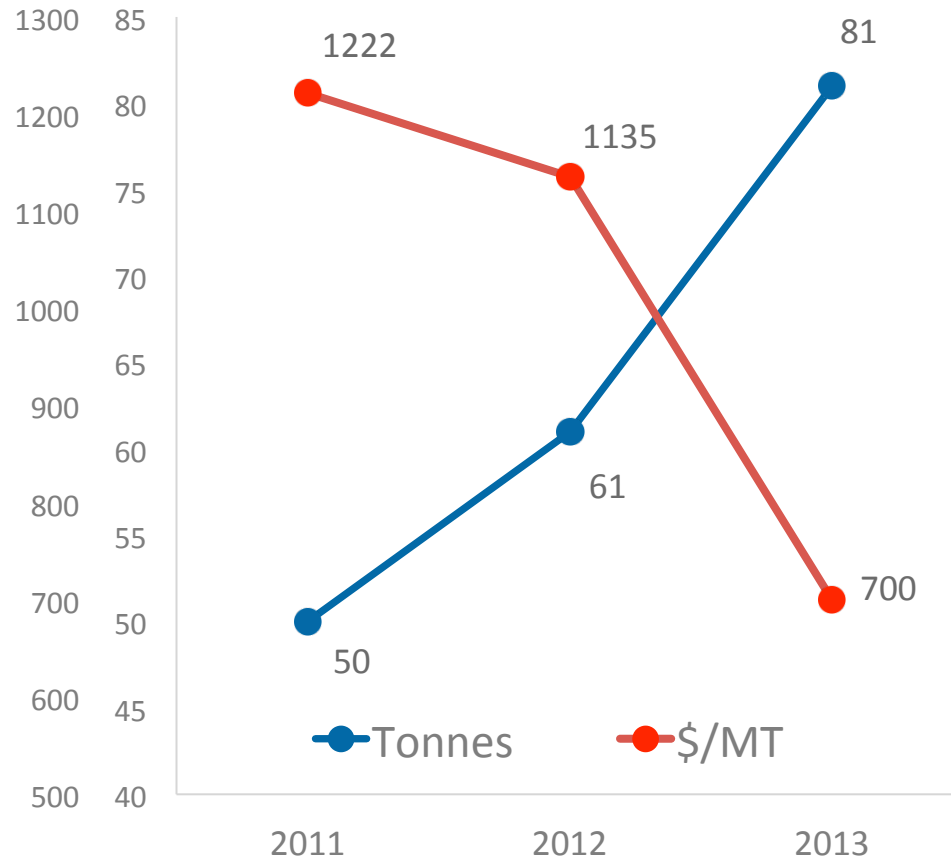
Step 3: Reinforce the Message at Home – P&E

- Promotional packages
 - Clear bag
 - Information on sorting
 - Magnet
 - Pen



Our Customer Service Model Works...

\$/MT MT



- More **material** is being diverted
- Program costs have remained constant, &
- Relative **costs** are improving
- Why else is April happy?

Key Learnings

- Plan to have additional staff for transition
 - Permanent residents: 3-4 months notice
 - This was really big change for community
 - Needed the summer assistant (as backup)
- Implementation
 - Create comprehensive plan
 - Plan for enforcement
- P&E – repeating the message
 - At depot
 - At homestead

6 Things that Make our Program Successful



1. Control of waste disposal site
2. Strong bylaws allow enforcement
3. Clear bags work
4. Signage reinforces expectations
5. P&E reinforces messaging at home
6. Professional staff dedicated to
 - A. Customer service
 - B. Meeting recycling objectives



Opportunities for Depot Improvements

CIF Project # 739

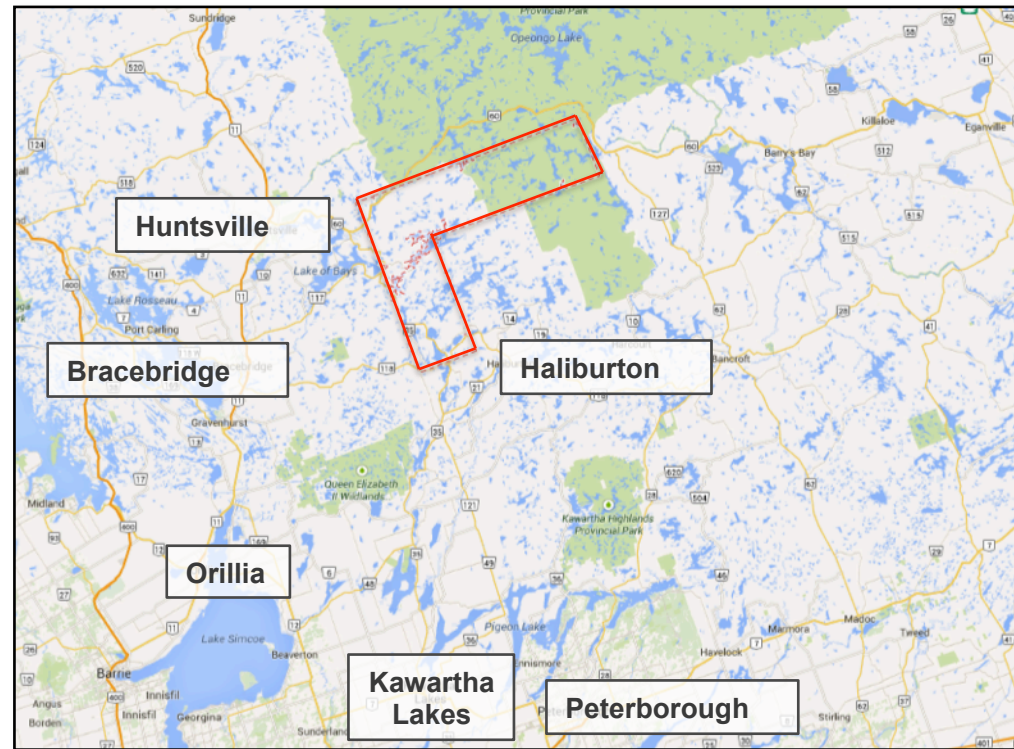
Gayle Short
Township of Algonquin Highlands

Project Highlights

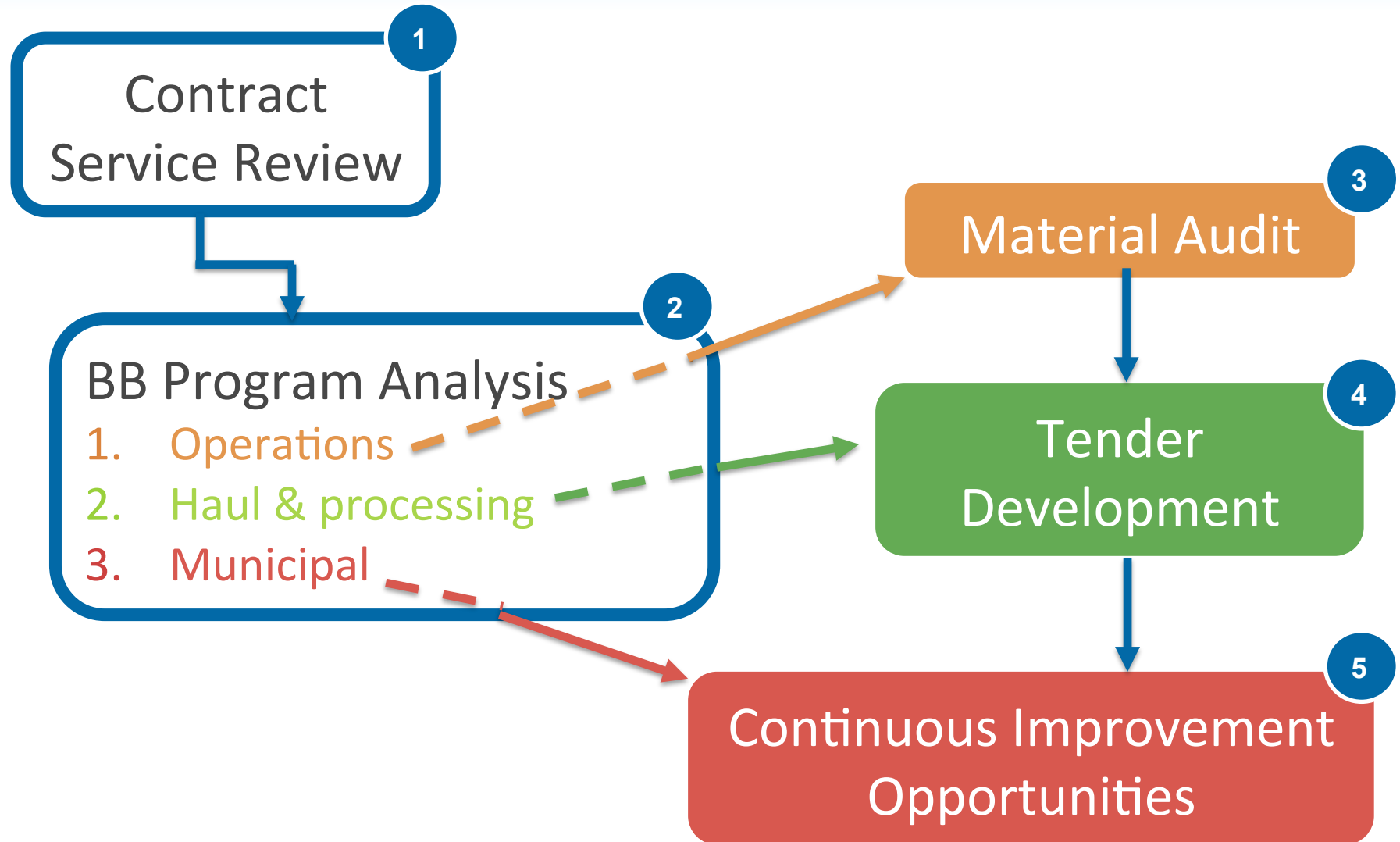
- Project goal: Improve depot service & procurement practices
- Impacts: Anticipated improved diversion & decreased operating cost
- More information:
 - gshort@algonquinhighlands.ca
 - www.algonquinhighlands.ca

Township of Algonquin Highlands

- HH 4,439
 - 992 HH permanent
 - 3447 HH seasonal
- Depot based program
 - 5 sites
 - Staffed
 - 2-stream system
 - Clear bag policy
 - ~400 tpy
 - 6,200 hours of depot service



5-Step Review

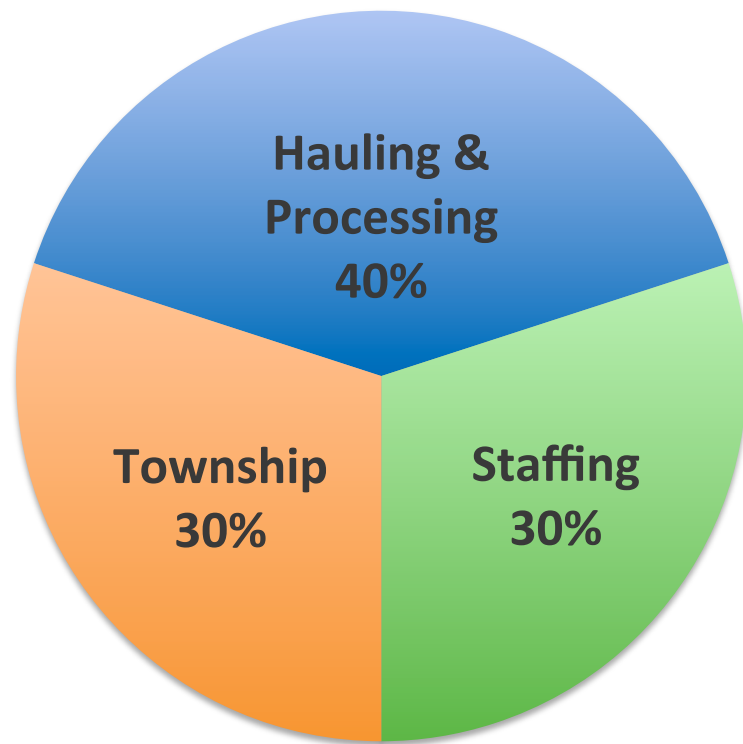


Step 1: Contract Service Level Review

- Operation (Staffing)
 - Interaction with residents
 - Enforcement of clear bag policy
- Haul & processing
 - Set lift rate/ bin
 - Includes a residual fee
 - Weight of each lift
- Township
 - Contractor oversight
 - Site maintenance & utilities
 - Provides roll-off bins
 - P&E for residents



Step 2: Current Costs & Diversion Rate Review



■ Cost/Tonne \$369.13

1. ~ 30% staffing
2. ~ 40% hauling & processing
3. ~ 30% township



Hauling & Processing Structure

- 11.08% residual fee built in
- 4% of our overall budget

Step 3: Material Audit (1)

- Material composition
 - 62.38% fibres
 - 30.74% containers
 - 6.87% residue
- Residue rate is lower than contract rate 4.28%
- Improper sorting is an issue
- Recyclables have a annual value of roughly \$37,700

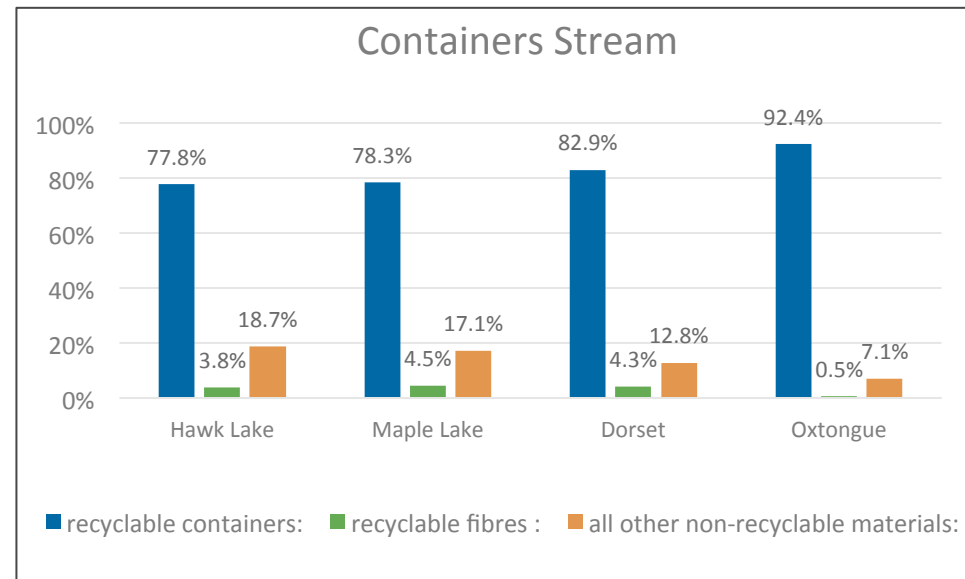
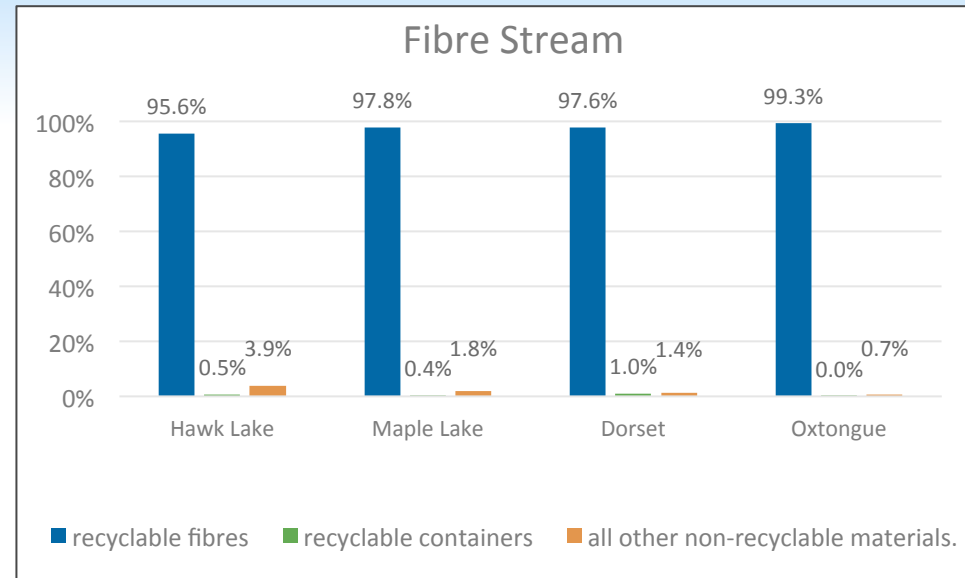


Step 3: Material Audit (2)

Contamination

- Fibre stream
 - Great performance
 - Little to no contamination

- Container stream
 - Contamination = ~17.2%
 - Performance differs between depot sites, why?



Step 4: Ensure Competitive Pricing

- Developed Tender that incorporated best practices
 - Separate hauling & processing rates
 - Liquidated damages
- Circulated Tender widely
- Tender – 7 weeks
 - Release date: Nov. 3, 2014
 - Bidders questions: Dec. 5, 2014
 - Closing date: Dec. 19, 2014



TENDER NO. PW-2014-003

**CONTAINER HAULAGE & PROCESSING
Blue Box Recycling Program**

Issue Date: Monday, November 3, 2014
 Questions from Bidders Due on or Before: Friday, December 5, 2014 at 4:00 p.m. local time
 Closing Date & Time: Friday, December 19, 2014 at 2:00 p.m. local time
 Address: Township of Algonquin Highlands
 1123 North Shore Rd.
 Algonquin Highlands, ON K0M 1J1
 Attention: Mike Thomas, CRS-I
 Operations Manager

**LATE TENDERS WILL NOT BE ACCEPTED.
 THE LOWEST OR ANY TENDER NOT NECESSARILY ACCEPTED.**

Township of Algonquin Highlands
 1123 North Shore Rd.
 Algonquin Highlands, ON K0M 1J1
www.algonquinhighlands.ca

What's Next for Algonquin Highlands?

Using the 5-step framework, we'll consider:

- P&E efforts to address the contamination issues
 - Staff training
 - Signage & sorting guides
- Improved clear bag policy enforcement

Operating Efficient Depot Programs

Rick Vandersluis
TRY Recycling

About TRY Recycling

- Depot Operator
 - Renovation waste, household rubbish, yard & garden materials
- Product Development
 - Compost, garden mulch, TRYpave, aggregate products
- Contractor
 - Municipal depot operation
 - 20 locations, London, Strathroy & others



Overarching Principles of Efficient Depot Operation

- Site design
- Site operation
- Signage
- Safety
- Customer Service
- Advertisement



Site Design Considerations

- Traffic Flow
 - Entrance, exit
- Container selection
 - Roll off, carts
- Container placement
 - Saw tooth
- Signage
 - Directional; instructional



Site Operation Considerations

- Minimize material handling
- Use largest haulage vehicle possible
- Maximize payload
- Know your costs!



Signage Consideration

- Size
 - Large, must be visible to the driver who will be several feet away
- Wording
 - Keep it simple – few words
- Placement
 - On the container or a post
- Quantity
 - Don't post too many signs



Safety Considerations

- How to identify
- How to prevent
- How to avoid
- How to minimize harm



Customer Service

Ensuring the resident has a good experience is critical:

- Ensures on-going participation
- Promotes proper sorting

Aspects of good customer service

- Easy to identify
- Knowledgeable
- Friendly
- Prioritizes customer interactions



Advertising

KISS Rule

- Location
- Hours
- Accepted materials

Drop-Off Locations



NORTH London Community Environmental Recycling Centre

21463 Clarke Road, London, Ontario

Tel: 519.457.1566

Hours of Operation: Monday-Friday 7am-5pm, Saturday 8am-noon, Sunday – Closed

Materials Accepted

Top five things we focus on?

1. Tracking
2. Issue resolution
3. Site cleanliness
4. Staffing
5. Service



**CIF Center of Excellence
Density Study
CIF Project # 737**

Gary Everett, CIF

Project Highlights

Purpose:

- Update density info by (8) material types
- Allow comparison local density with multi-municipal avg.
- Compare bin/truck sizes with density/payload
- Compare bin/truck sizes with/without compaction



Thank You to 17 Munis that Provided Initial Info!

**Admaston Bromley
Algonquin Highlands
Bancroft
Brantford
Chatham
EWSWA
Goderich
Grey Highlands
Kingston**

**London
Muskoka
North Grenville
Oliver Paipoonge
Orillia
Peel
Peterborough (City)
Wellington**

Spreadsheet Format

Scroll right for bin sizes →
 Scroll down for material types ↓

Click Cells for Notes

Densities of Recyclable Materials for Bins and Trucks

Material Type	Bin Size				Truck Size			
Fibre with OCC	38 (yd ³)				40 (yd ³)			
Compaction	yes	no	yes	no	yes	no	yes	no
Average (kg/m ³)			174.9	44.5	166.9	106.9		
Average (t/m ³)			0.17	0.04	0.17	0.11		
Average (t/load)	0.00	0.00	4.94	1.16	5.20	3.36	0.00	0.00
Standard Deviation (kg/m ³)				13.1	21.2	28.3		
Material Type	Bin Size				Truck Size			
Fibre with no OCC	38 (yd ³)				40 (yd ³)			
Compaction	yes	no	yes	no	yes	no	yes	no
Average (kg/m ³)					160.0			
Average (t/m ³)					0.16			
Average (t/load)	0.00	0.00	0.00	0.00	4.89		0.00	0.00
Standard Deviation (kg/m ³)					29.4	74.4		
Material Type	Bin Size				Truck Size			

Pop Up Notes

2	Click Cells for Notes						
3		Material Type Fibre with OCC	Bin Size		Truck Size		
4			40 (yd ³)				
5			Compaction	yes	no	yes	no
11			Average (kg/m ³)	166.9	106.9		
12			Average (t/m ³)	0.17	0.11		
13	>	Average (t/load)	5.20	3.36	0.00	0.00	
14		Standard Deviation (kg/m ³)	Average tonnes per cubic meter x bin size in cubic meters converted to cubic yds. May be used to compare to local average load weight.				
15							
16		Material Type Fibre with no OCC	Bin Size		Truck Size		
17			40 (yd ³)				

Average tonnes per cubic meter x bin size in cubic meters converted to cubic yds. May be used to compare to local average load weight.

How it Works

Material Type	Bin Size		Truck Size		Bin Size		Truck
	20 (yd ³)				30 (yd ³)		
Compaction	yes	no	yes	no	yes	no	yes
Average (kg/m ³)		392				343.4	
Average (t/m ³)		0.39				0.34	
Average (t/load)	0.00	5.97	0.00	0.00	0.00	7.80	0.00

What's it For?

- Planning
- Efficiency
- Training, P&E, policy
- Monitoring & measurement
- Justification to get some help

Next Steps (1)

- Check for anomalies
- Send it out for peer review
- Verify, repair & improve results
- Release – Winter 2015

Next Steps (2)

- We need your help!
- Send us your comments & wish list
- Let us know if you want to peer review
- Send us more data:
 - Avg. bin/truck weights over 1 yr.
 - Type of material collected
 - Size of bin/truck, open or closed, compacted or not

Questions



Contact:

Gary Everett, CIF

519-533-1939

Gary@Egroup1.com

Monitoring & Measuring Program Impacts

Alec Scott, CIF

Why Measure & Monitor?

Why?

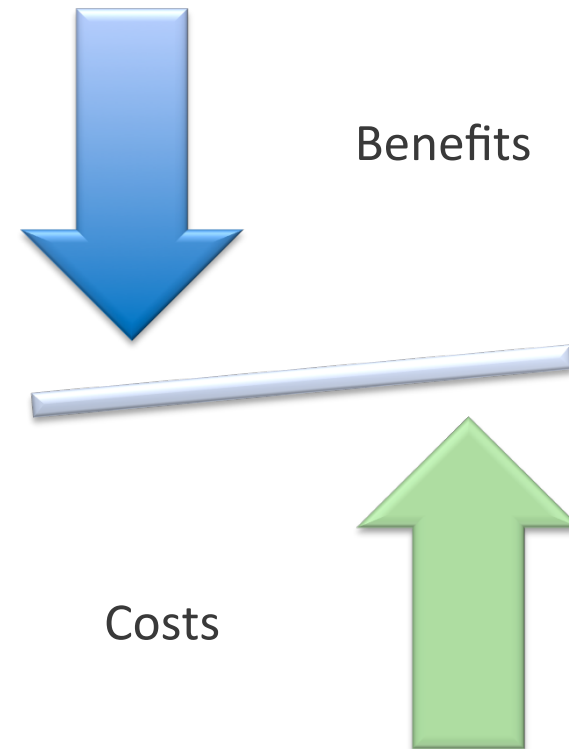
- Measure actual performance
- Identify problems & their causes
- Assess compliance
- Rethink the “obvious”

How?

- Identify key characteristics or indicators
- Develop a baseline
- Identify goals & objectives
- Track performance against baseline & goals
- Check your technique – are you actually measuring what you think you’re measuring?

Re-Thinking Old Ideas

- New Technology
- New Materials
- New Ideas
- Are we getting more
 - Revenue per tonne?
 - Efficiency in Collection?
 - Efficient Recovery?



Speakers

- What's new with the RSE Ontario Price Sheet
 - Neil Menezes, Reclay StewardEdge Inc.
- Monitoring Curbside Participation Rates with a GoPro Video Camera
 - Chris Fast, Dufferin County
- Diversion vs. Net Cost Analysis for Ontario BB System
 - Maria Kelleher, Kelleher Environmental



Reclay StewardEdge

Product Stewardship Solutions

What's New With the RSE Ontario Price Sheet CIF #868 & #869

Neil Menezes

Reclay StewardEdge Inc.

CIF
CONTINUOUS
IMPROVEMENT FUND

Project Highlights

- Project goal:
 - Update Price Sheet to reflect current municipal needs & commodity markets
 - Provide additional resources for municipalities
- Anticipated Impacts:
 - Enable municipalities to obtain better commodity pricing
 - More information:
 - nmenezes@reclaystewardedge.ca
 - www.reclaystewardedge.com





RSE Ontario Price Sheet

The Price Sheet

Ontario Market Price Trends for October 2014

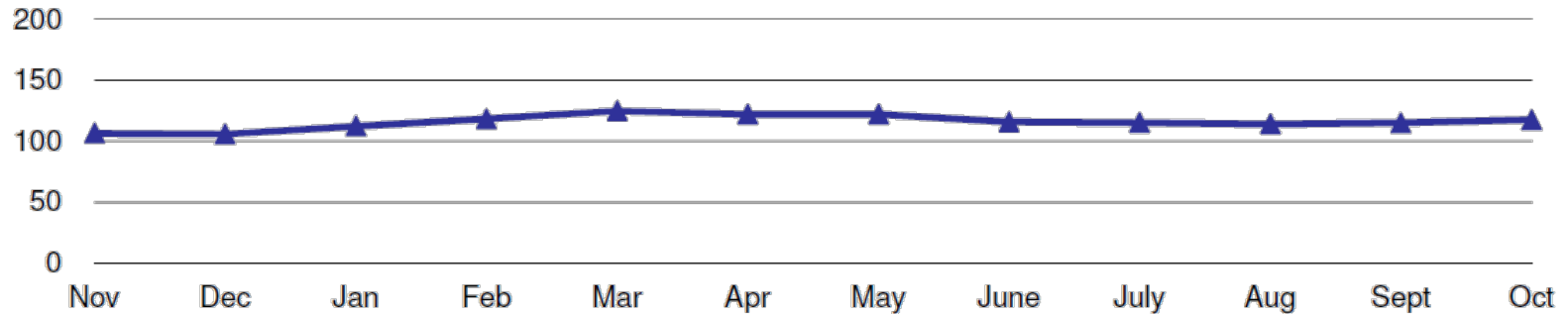
	MONTHLY AVERAGES (CDN\$/Metric Tonne)																	
	May 2013	June 2013	July 2013	Aug 2013	Sept 2013	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	June 2014	July 2014	Aug 2014	Sept 2014	Oct 2014
Aluminum Cans	1583	1539	1470	1519	1481	1481	1487	1485	1556	1663	1747	1782	1794	1758	1813	1831	1840	1852
Steel Cans	232	230	250	242	242	247	275	301	324	302	294	305	313	305	310	310	311	296
Glass (clear)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Glass (mixed)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)	(22)
PET (mixed)	398	378	366	375	372	340	339	340	348	386	433	441	458	361	336	323	342	346
HDPE (mixed)	476	435	392	391	400	441	535	582	597	683	715	662	603	610	609	571	673	764
Plastic Tubs & Lids	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Mixed Plastics*	40	40	40	34	33	40	37	34	35	39	44	41	49	49	46	47	49	47
Film Plastic	15	15	15	10	8	6	7	15	12	12	12	21	28	32	30	30	30	50
Polystyrene	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Newspaper (ONP #8)	74	72	71	64	65	67	68	67	69	71	72	71	71	69	69	69	68	70
Corrugated (OCC)	124	126	129	135	140	141	141	131	133	140	156	141	140	134	131	127	119	121
Hardpack (OBB/OCC)	54	54	55	46	53	51	52	48	49	53	60	53	53	51	50	51	46	48
Boxboard (OBB)	38	45	47	44	49	49	45	46	48	50	48	49	49	48	46	46	47	43
Polycoat Containers	65	65	65	65	67	67	61	59	61	64	72	78	79	77	76	84	85	88
Composite Index	108	105	104	101	102	103	106	106	112	118	125	122	122	116	115	114	115	118



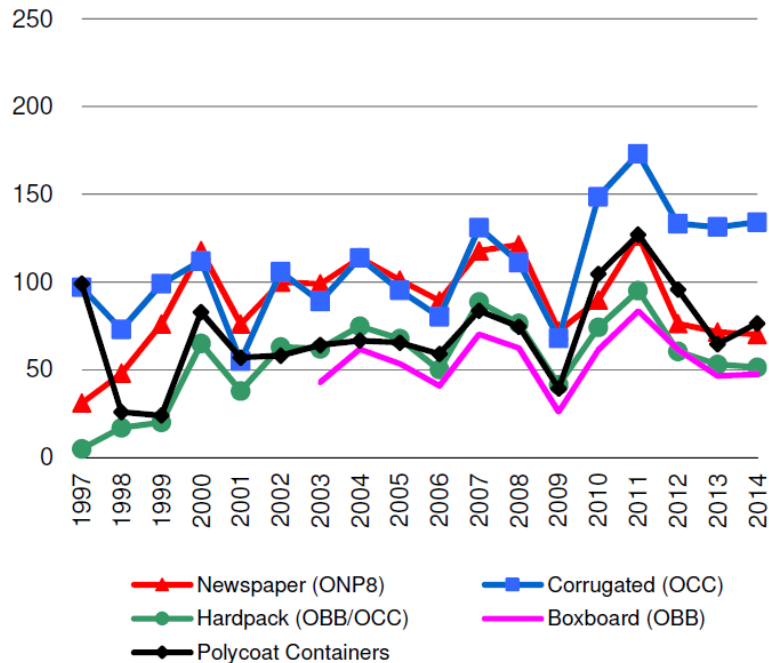
Reclay StewardEdge
Product Stewardship Solutions

RSE Price Sheet

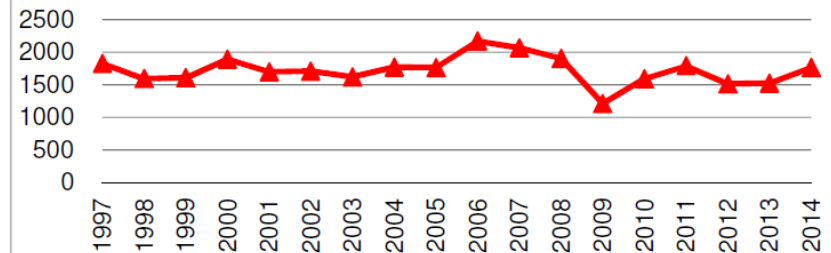
COMPOSITE INDEX



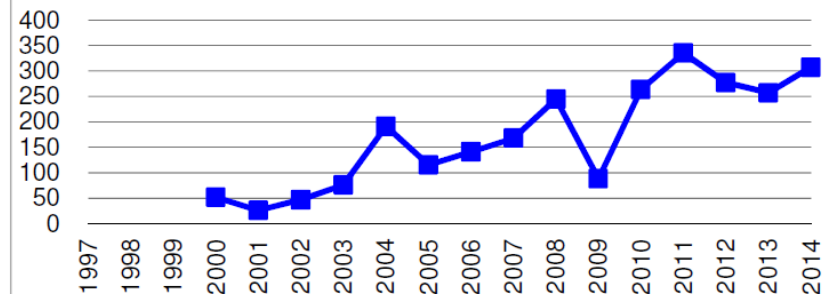
FIBRE



ALUMINUM CANS



STEEL CANS

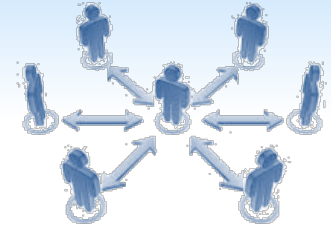


How We Create the Price Sheet



- Monthly reminders sent on 3rd Monday each month
- 17 municipal contacts + 5 other sources
 - brokers/end markets/news articles, etc.
- Data reported consistently as \$/MT & as picked-up price
- Use trim mean
 - removes highest & lowest price
 - no weighting of the price
- Posted on RSE website & sent to ~200 email recipients

Who (Can) Benefit?



- Municipalities
 - Provides local data to municipalities that don't have the ability to market their own material
 - Enables municipalities to benchmark performance internally & anonymously against peers
 - Better pricing for municipalities means lower system costs
- Stewardship Ontario/Stewards
 - Municipalities that achieve higher price revenue over time help reduce system costs
- Markets/Brokers
 - Feedback service on what “market” is doing

Issues & Challenges

- Varying composition of commodities
- How to increase sample size?
- Adding other commodities/removing old commodities
- Weighting of average price
- Reflect current market conditions
- How to improve pricing?
- Consistent market terminology



Newspaper Commodities

■ ONP#8

- Sorted newspapers, not sunburned, & other acceptable papers. This grade is to be **relatively free from magazines** & contain not more than the normal percentage of rotogravure & colored sections.
- Prohibitive Materials may not exceed 1%
- Outthrows plus prohibitives may not exceed 2%
- **Other acceptable papers may not exceed 10%**

■ ONP#6

- Sorted newspapers & other acceptable papers as typically generated by voluntary collection & curbside collection programs.
- Prohibitive Materials may not exceed 2%
- Outthrows plus prohibitives may not exceed 4%
- **Other acceptable papers may not exceed 30%**

CIF Project #869: RSE Ontario Price Sheet Continuation (1)

■ Project Objectives

- Continuation of Price Sheet
- Update the Price Sheet to reflect the needs of municipalities
- Provide additional metrics (composite index for commingled fibres, composite index for commingled containers, etc.)



CIF Project #869: RSE Ontario Price Sheet Continuation (2)

■ Project Status & Next Steps

- CIF established a municipal steering committee including several municipal representatives & RSE
- Proposing changes to current Price Sheet including:
 - Additional metrics
 - Updated list of commodities
- Questionnaire to be released to all recipients of the Price Sheet to provide feedback
- Goal to implement changes by **January 1, 2015**

CIF Project #868: Online Markets Directory

- Project Objectives

- Online database of brokers & end markets

- Project Status & Next Steps

- CIF looking to establish a similar steering committee
 - Need to determine if municipalities see a need for a database
 - RSE to contact municipalities for suggestions/feedback
 - RSE to contact brokers & end markets to gauge interest
 - A recommendation will be made to the CIF whether or not to develop the database

What we Need?

- Increase municipal participation for Price Sheet
- We are looking for feedback & suggestions from all stakeholders
- What do you want to see?



RSE Contact:

Neil Menezes
416-644-8349

nmenezes@reclaystewardedge.ca

CIF Contact:

Alec Scott
705-722-0225

archenv@sympatico.ca



Monitoring Curbside Participation Rates with a GoPro Video Camera CIF #809.5

Chris Fast
Dufferin County

Project Highlights



- Goals

- Evaluate bag limits & program participation rates
- Evaluate **GoPro video camera** as a monitoring tool

Impacts

- Assisted Council in bag limit review
- Bag limits streamlined

- More information:

- cfast@dufferincounty.ca
- <http://www.dufferincounty.ca/waste>

New Curbside Program

- New program 2013 – County-wide
 - New bylaw – clear bags – different bag limits
 - County provided new BB (CIF #809.5)
- How can we *easily* measure:
 - Set out rates/participation
 - Bag limits
 - Compliance

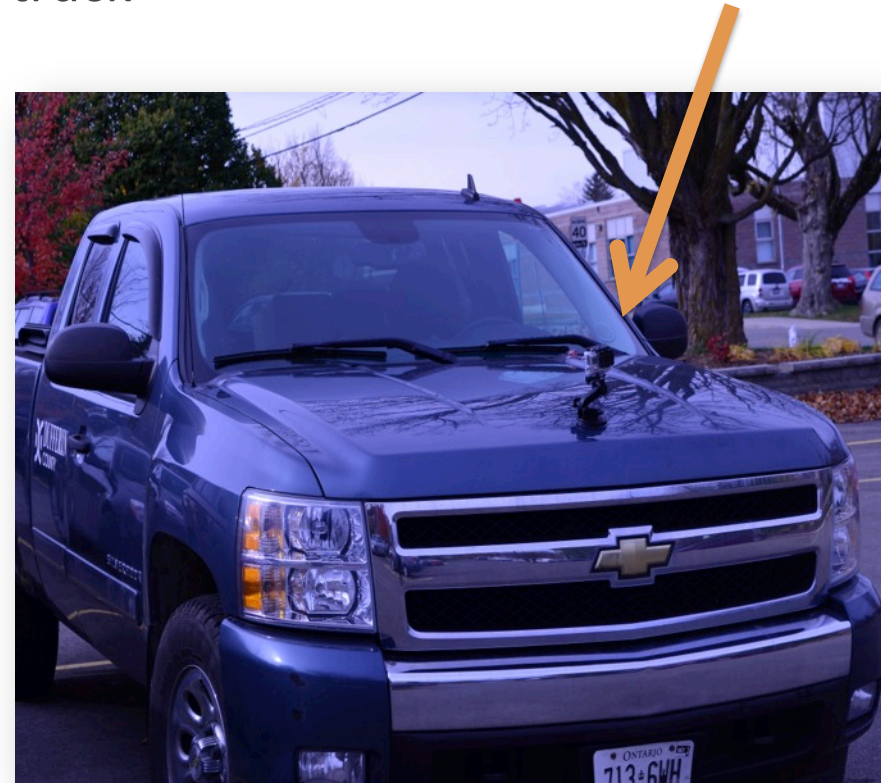


Options for Assessing Set-out & Participation Rates

Options	Pros	Cons
GPS/RFID	Automated software collects/consolidates data	High cost upfront for capital
Contractor	Collection staff already on road, knowledge of routes	Lower data quality, potential bias, disruption in service
Ride Along	Low bias & capital costs	High staffing costs, errors in data recording
GoPro	Low cost, less staff resources, video storage capability	Unused previously

Participation/Set-out Study Details (1)

- Pilot & camera troubleshooting
 - Positioned on front – center of truck
 - Easy installations/adjustments
- Paralleled previous ride along routes – comparison
 - Urban vs. rural
 - High vs. low density
- Parameters
 - 1,542 homes
 - 12 collection routes
 - Video transfer & storage



Participation/Set-out Study Details (2)



Address	# Garbage Bins	# Garbage Bags	# Recycling Bins	# Recycling Bags	# Green Bins	Yard Waste (Y/N)	Garbage Box (Y/N)
232135	1	0	1	0	1	N	N
232167	1	0	2	0	0	Y	N
232227	0	1	1	1	1	N	N
232250	0	0	0	0	0	N	N
232135	0	0	1	0	0	Y	N

GoPro Evaluation

Metric	Ride Along	GoPro
# Homes	1,356	1,356
# Staff	2	1
Staff – hourly wage	\$25	\$25
Hours of staff time	65	35
Total Cost	\$1,625	\$875

■ Advantages

- Driving speed limit while capturing data
- Storage of video for later review
- Cost-savings versus previous method

GoPro Capital Cost
\$550/unit

Participation/Set Out Study Results (1)

Metric	Set Out / Week	Participation Rate
Garbage (Overall)	0.968 bags/containers	N/A
Garbage (Rural Areas)	0.678 bags/containers	N/A
Garbage (Urban Areas)	1.01 bags/containers	N/A
Blue Box	1.344 blue boxes	94.80%
Green Bin	N/A	79.27%

■ Challenges

- Parked cars → use audio component to describe
- Multiple setouts at one location

Participation/Set Out Study Results (2)

Garbage Weekly limit	Municipalities	Avg set out / hh
One	Mulmur, Orangeville	0.830
Two	Amaranth, Grand Valley, Melancthon, Mono, Shelburne	1.036
Three	East Garafraxa	1.091

- Council approved single bag limit – June 1, 2014
- GoPro is now a current monitoring tool
 - Expand data collection for P&E, other Public Works' functions

Key Takeaways

- GoPro: an effective & multi-purpose tool
 - Easy installation & adjustments
 - Minimal logistics management
 - Video storage for later review is great
 - Demonstrated cost/time – savings
 - Will cost \$500 upfront – payback in one study
 - You can go back & add parameters to your study



Diversion vs. Net Cost Analysis for Ontario Blue Box System CIF Project #722

Maria Kelleher
Kelleher Environmental

Project Highlights

- Project goal: Carry out high level analysis of most cost efficient way to add materials & increase BB system diversion performance
- Impacts:
 - Estimated impacts of adding or removing materials from Provincial BB system
 - Assessed impacts of changing BB material composition on costs & diversion levels in future
- More information:
 - maria@kellenv.com
 - www.kelleherenvironmental.com

Blue Box System Diversion & Cost Statistics (2012)

2012 Ontario BB System Performance & Net Cost

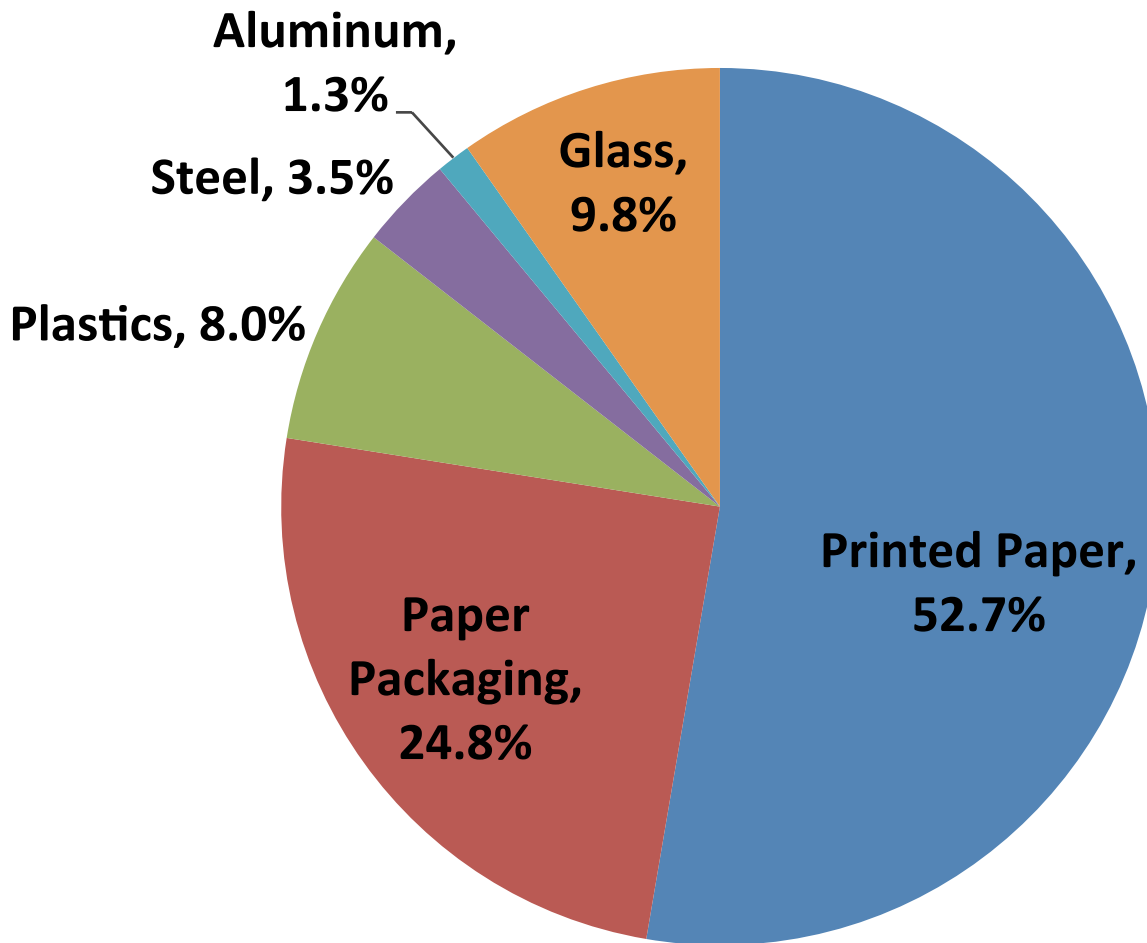
- BB diverted almost 893,000 tonnes of residential printed paper & packaging in 2012
 - 62.8% diversion rate
- Net system cost \$198M
 - Gross cost \$313M
 - Revenues \$115M

Most of BB Diversion is Paper Based Material

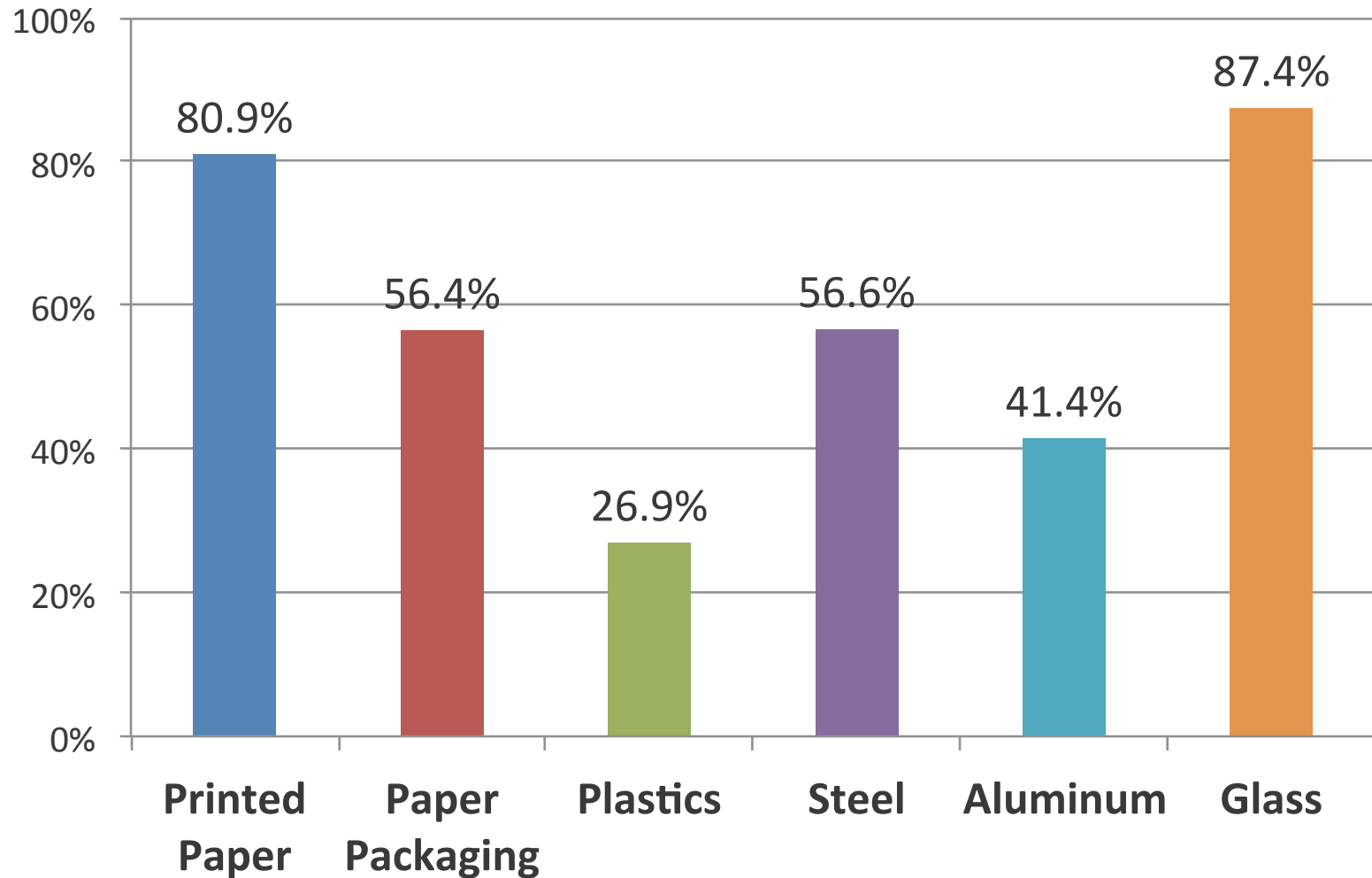
Of the 893,000 tonnes diverted:

- **77.5%** is paper based materials
 - 52.7% was printed paper (newspapers, magazines, catalogues, flyers, junk mail, etc.)
 - 24.8% was paper packaging (OCC, boxboard, etc.)
- **9.8%** was glass packaging
- **8.0%** was plastic packaging
- **4.8%** was metal packaging (steel & aluminum cans, pie plates, etc.)

Contribution of Different Materials To BB Diversion (% in 2012)



Recycling Rate By Material (2012)



Cost vs. Diversion Analysis Approach & Key Assumptions

Approach To Developing Cost vs. Diversion Analysis

- Start from today's (2012) BB mix & cost/tonne by material (from 2014 PIM*)
- Each 1% increase/decrease in diversion – add/subtract 14,000 tonnes to BB
- Remove most expensive materials first to reach lower diversion
- Add least expensive materials first to increase diversion
- Each material had an upper limit recycling rate

**Pay In Model available at www.stewardshipontario.ca/stewards-bluebox/fees-and-payments/fee-setting-flow-chart/the-pay-in-model/*

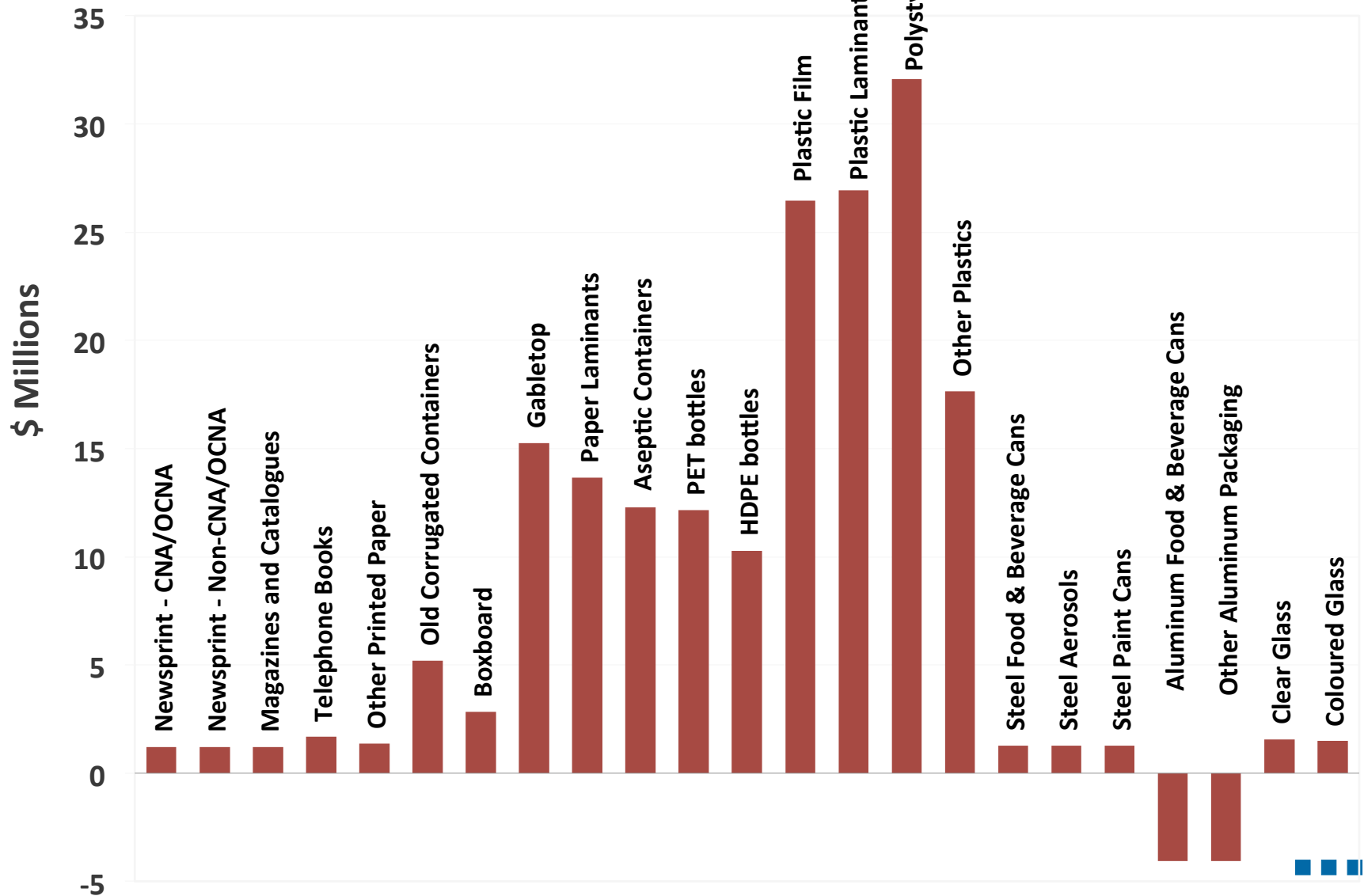
2012 BB – Net Costs By Material – Printed Paper & Paper Packaging

BB Material	Gross Cost (\$/tonne)	Revenue (\$/tonne)	Net Cost (\$/tonne)
Newspapers, magazines, catalogues	\$173	\$88	\$85
Other printed paper	\$185	\$89	\$96
Telephone books	\$211	\$92	\$119
Boxboard	\$288	\$89	\$199
Old corrugated containers (OCC)	\$483	\$118	\$365
Aseptic containers	\$960	\$96	\$865
Paper laminates	\$960	-	\$960
Gabletop	\$1,171	\$98	\$1,073

2012 BB - Net Costs By Material - Packaging

BB Material	Gross Cost (\$/tonne)	Revenue (\$/tonne)	Net Cost (\$/tonne)
Aluminum	\$1,114	\$1,400	-\$286
Steel cans	\$352	\$263	\$89
Coloured glass	\$125	\$21	\$105
Clear glass	\$136	\$26	\$110
HDPE	\$1,196	\$474	\$723
PET	\$1,281	\$425	\$855
Other plastics	\$1,388	\$146	\$1,242
Plastic film	\$1,895	\$33	\$1,862
Plastic laminates	\$1,895	-	\$1,895
Polystyrene (PS)	\$2,292	\$37	\$2,255

Cost To Recycle 14,000 Tonnes (1% Additional Diversion) By Material



Current Recycling Rate & Max Potential Recycling Rate – Printed Paper & Paper Packaging

BB Material	Current Recycling Rate (%)	Max Recycling Rate (%)
Newspapers, magazines, catalogues	93.7%	95%
Other printed paper	45.2%	75%
Telephone books	95.7%	No increase
Boxboard	41.5%	85%
Old corrugated containers (OCC)	85.3%	90%
Aseptic containers	16.4%	85%
Paper laminates	3.2%	25%
Gabletop	48%	85%

Current Recycling Rate & Max Potential Recycling Rate – Packaging

BB Material	Current Recycling Rate (%)	Max Recycling Rate (%)
Aluminum	48.2% f&b* 7.7% other	80% f&b 60% other
Steel cans	64.5% f&b 23.1% aerosols	85%
Coloured glass	68.1%	80%
Clear glass	94%	94%
HDPE	59.5%	85%
PET	57.5%	90%
Other plastics	22.8%	75%
Plastic film	9.1%	60%
Plastic laminates	0%	25%
Polystyrene (PS)	6.8%	25%

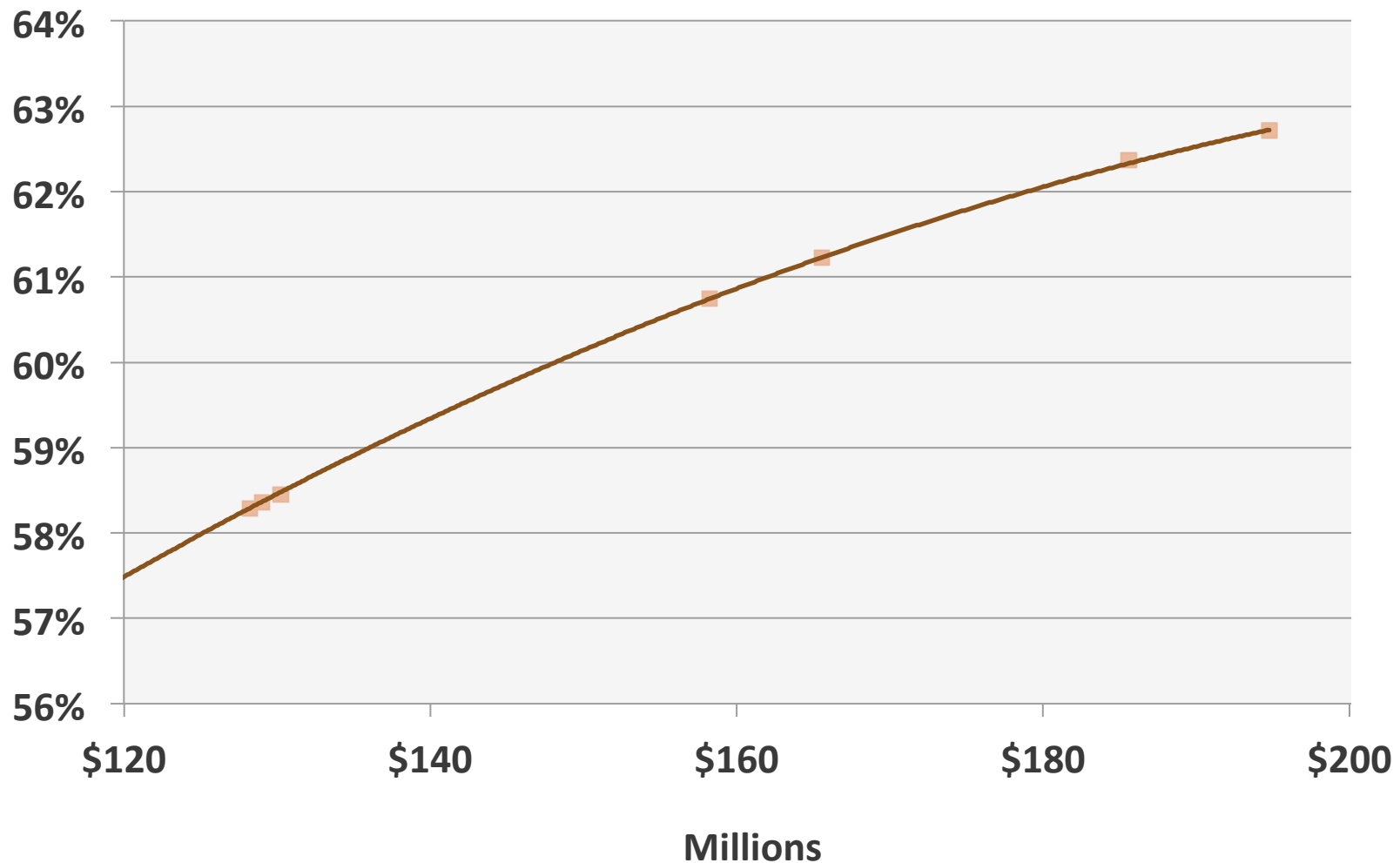
* Food & Beverage

Cost vs. Diversion Analysis Results

Scenario 1: Starting From Today – 62.8% Diversion & \$198 M/Year... Remove Most Expensive Materials

BB Material No Longer Collected in BB System	Net Cost Reduction (\$M/year)	Reduction in Diversion (%)	Theoretical BB Annual System Net Cost (\$M/year)	Tonnes (tonnes)	BB Diversion Rate (%)
Polystyrene	\$2.24	1.51%	\$194.76	1,018	62.7%
Plastic Laminates	\$0.01	0.00%	\$194.75	7	62.7%
Plastic Film	\$9.16	0.35%	\$185.59	4,923	62.4%
Other Plastic	\$20.05	1.14%	\$165.54	16,146	61.2%
Gabletop	\$5.77	0.74%	\$159.77	6,833	60.4%
Paper Laminates	\$1.21	0.09%	\$158.56	1,264	60.4%
Aseptics	\$0.83	0.07%	\$157.73	955	60.3%
PET	\$29.53	3.52%	\$128.20	32,701	56.8%

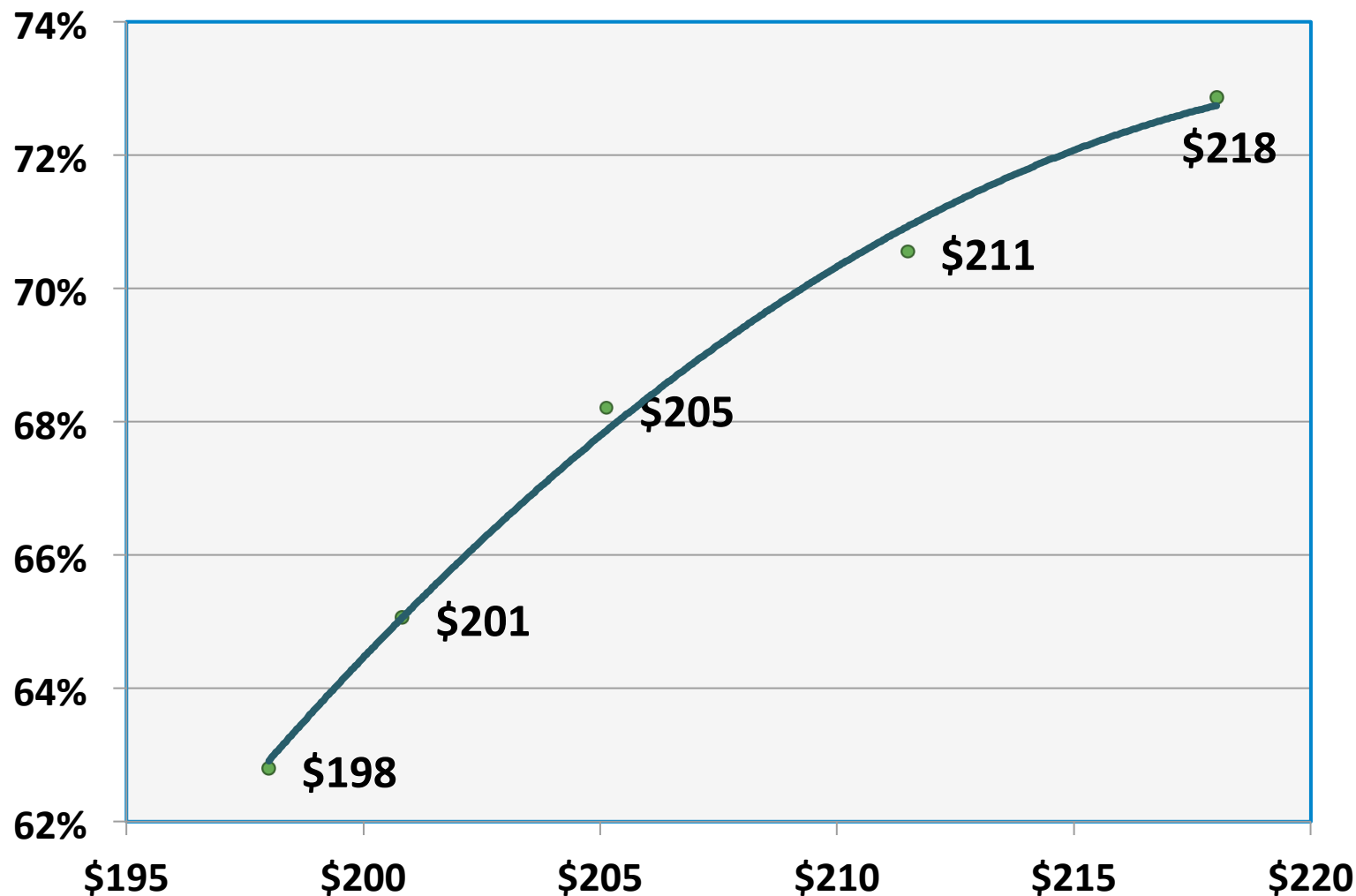
Scenario 1: Starting From Today – 62.8% Diversion & \$198 M/Year... 60.3% Diversion Costs \$158 M/Year



Scenario 2: Increase Recovery of Existing BB Materials To Increase Diversion

Strategy	Additional Tonnes Recycled	Additional \$ to 2012 BB System Cost (\$/y)	Additional Diversion (%)	BB System Cost (\$)	Total BB Diversion (%)
2012 – Base Case				\$ 198	62.8%
A – Increase recovery of Printed Paper to 95% & Steel Food & Beverage Cans & Steel Aerosols to 85%, & Steel Paint Cans to 60%	32,100	\$ 2.8	2.3%	\$ 201	65.1%
B – increase Recovery of Other Printed Paper & Coloured Glass to 80%	44,650	\$ 4	3.1%	\$ 205	68.2%
C – Increase Boxboard recovery to 60%	33,400	\$ 6	2.4%	\$ 211	70.6%
D – Increase Boxboard recovery to 80%	32,800	\$ 7	2.3%	\$ 218	72.9%

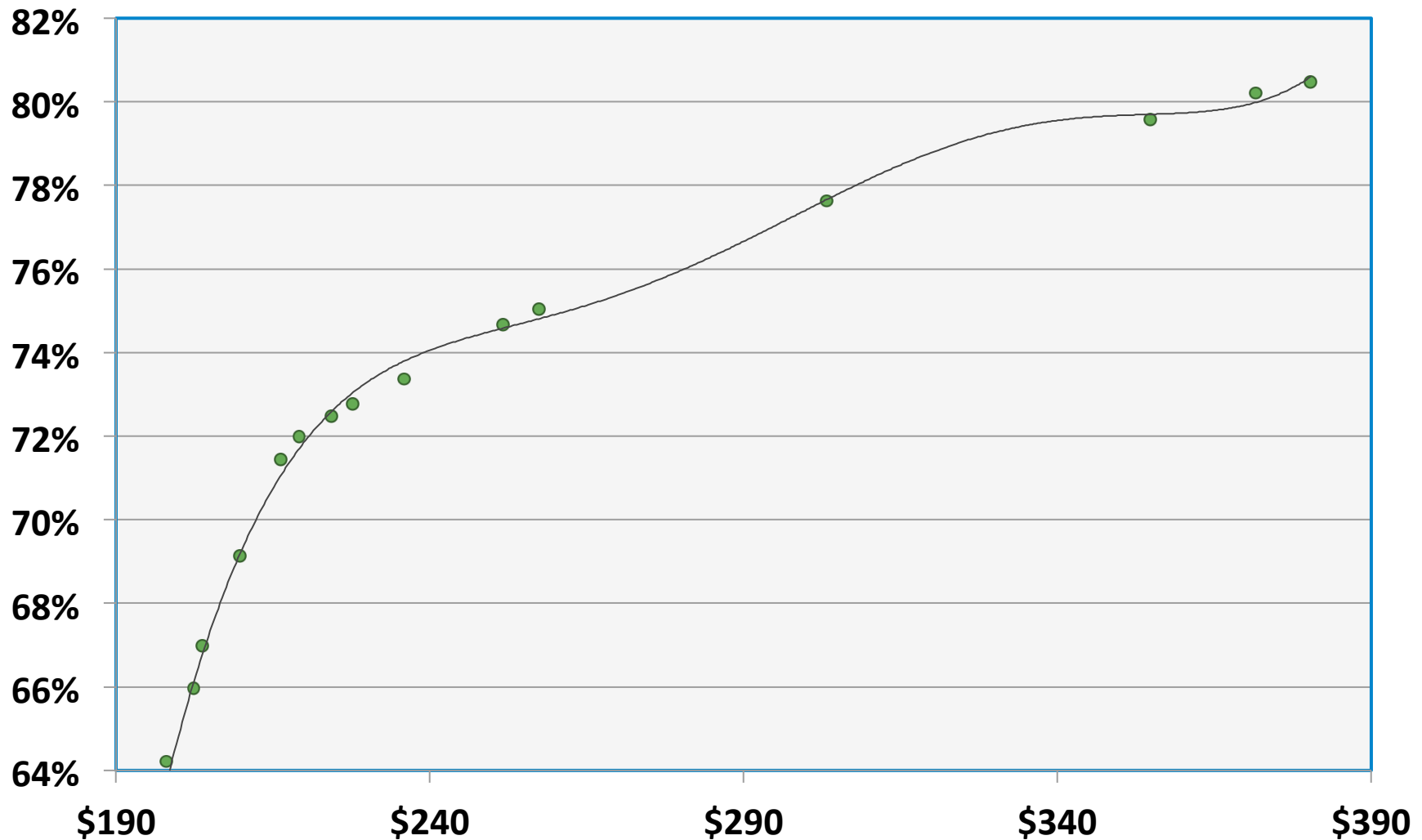
Scenario 2: Increase Recovery of Least Cost Materials – 73% Diversion Would Cost \$218 M/Year



Scenario 3: Maximum Potential Diversion Through Existing BB System

- Increase recovery of existing materials to maximum potential
- 82% Diversion
- BB System Cost \$382 M
 - \$198 M for 62.8% Diversion (2012)
- “Break Point:” at about 72% diversion
 - each additional 1% costs a lot

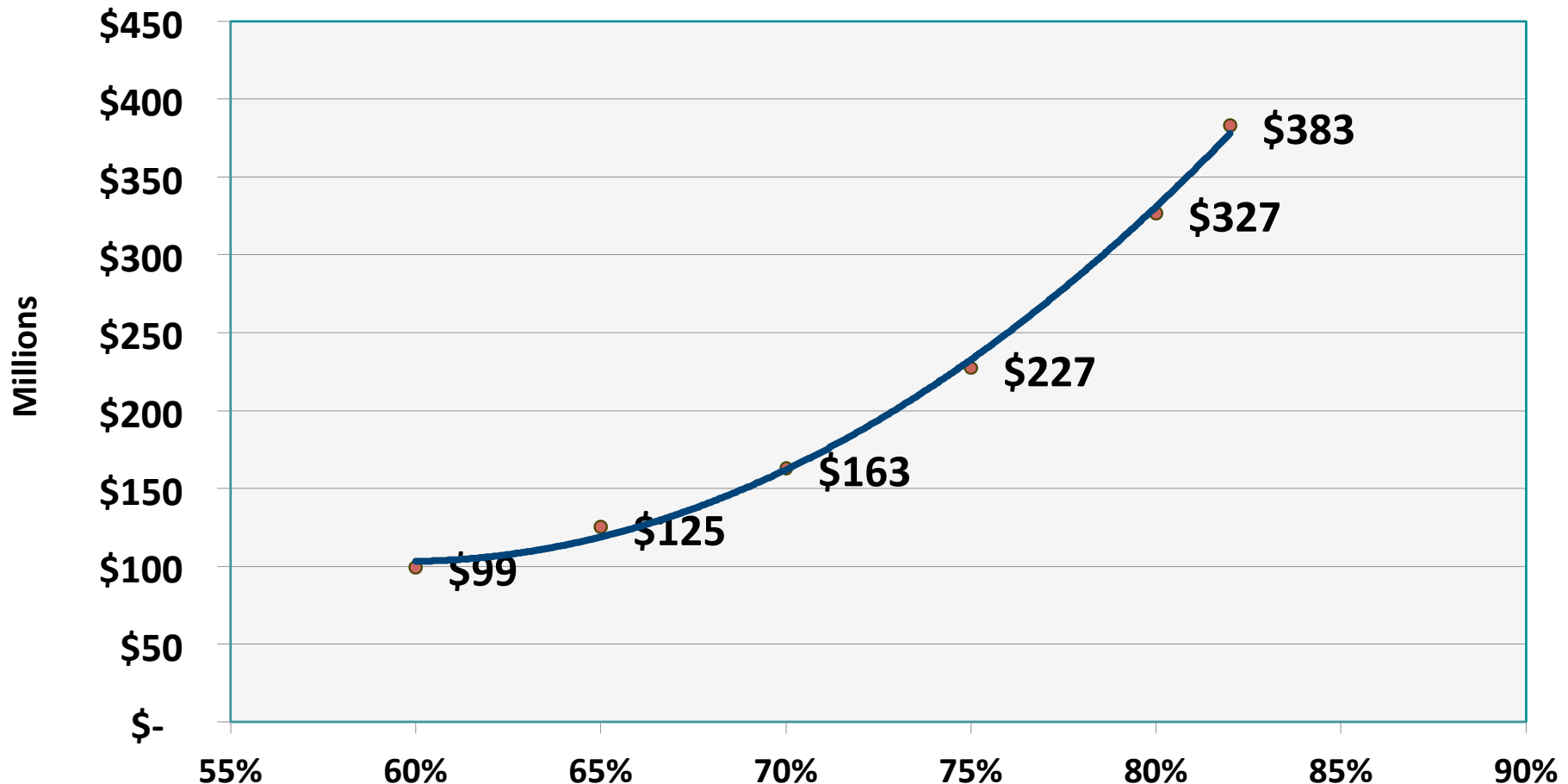
Scenario 3: Maximum Possible Diversion – 83% at \$430 M/Year



Scenario 4: Blank Slate ... If We Were Starting From Scratch Today ... & Wanted to Reach 60% ...

- BB could achieve 60% diversion for \$99 M/year (2012 costs & composition)
 - Half the current cost
- Materials in BB:
 - Newsprint, magazines & catalogues, printed paper, telephone books
 - Steel cans, aluminum
 - Clear & coloured glass
 - Boxboard & OCC
- No PET or HDPE
 - Ontario Reg 101/94 mandates collection of PET

Scenario 4: Blank Slate – If We Were Starting Today ... 60% Could Cost \$99 M/Year

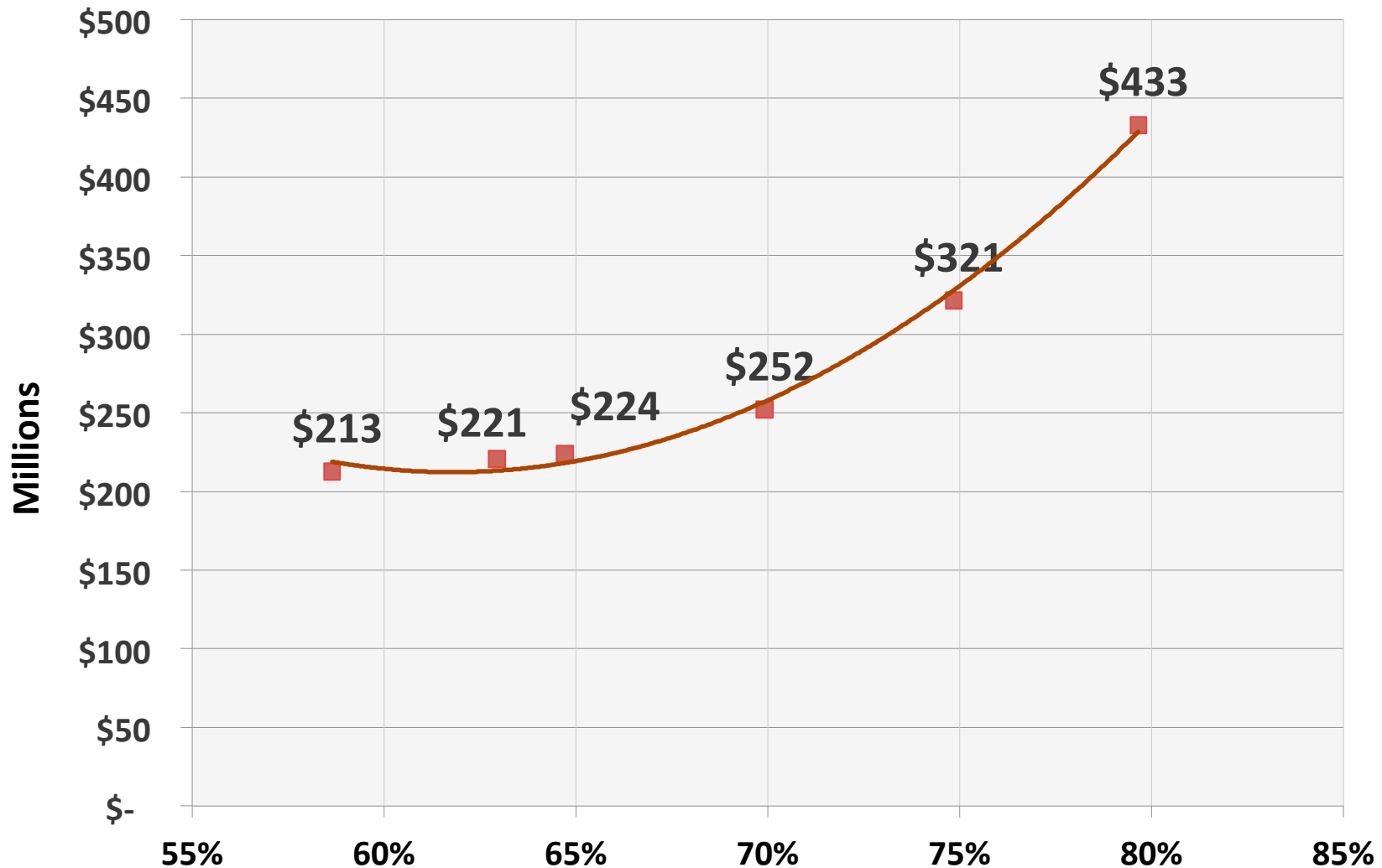


Scenario 5: Implications of Future BB Composition – The “Evolving Tonne”

- BB composition is changing with less newsprint & printed paper & more lightweight materials (plastics)
- Costs will increase as density of BB material mix decreases

BB System Diversion	Estimated BB System Costs Based on 2012 Cost Data (\$M/year)	Estimated BB System Costs With Future Composition (\$M/year)
60%	\$158	\$218
65%	\$201	\$224
70%	\$211	\$252
75%	\$242	\$321
80%	\$325	\$433

Scenario 5: Impacts of Future BB Composition on System Costs



Conclusions (1)

- Adding new materials is not cheapest way to increase diversion
- Increasing recovery of existing low cost materials is best way to get higher diversion
- Maximizing “other printed paper” recovery (currently 45.2%) to 80% is the most cost efficient way to increase diversion

Conclusions (2)

- No new materials should be added to a BB program until cost & diversion implications are fully understood
- Practicality of collecting materials with a net cost of >\$1,000/tonne by a comprehensive depot system in Ontario rather than curbside should be explored
- Future BB composition (more plastics, less paper) will increase system costs



CONTINUOUS
IMPROVEMENT FUND

In Summary...



Enjoy Your Lunch



Ready to Start-Up Again...



Welcome Back!



This Afternoon's Agenda

- P&E Matters
- Insights from the MRF
- *Afternoon Break*
- Procurement, Contracting & Management: Working Toward Better Practices Factors Affecting Collection
- Summary & Concluding Remarks

P&E Matters

Barbara McConnell,
McConnell Weaver Strategic
Communications

P&E Requires Us To ...



- Consider our programs businesses
- Monitor behaviour & be proactive to capture opportunities & address issues
- Reach wide audiences
- Compete for resident attention
- Show results

P&E ROI Accountability

Increasingly we need to demonstrate :

- Strategic approaches to continuous quality improvement
- Impact on attitudes, knowledge & behaviour
- Improved results
- Return on Investment



Speakers

- Measuring & Monitoring P&E Impacts in a Small Program
 - Ryan Frew, Township of McNab/Braeside
- Paper is In
 - Angela Porteous, City of Kawartha Lakes
- A Consolidated look at CIF's P&E Projects: Lessons Learned & Next Steps
 - Carrie Nash, CIF



Measuring & Monitoring P&E Impacts in a Small Program CIF # 816.6

Ryan Frew

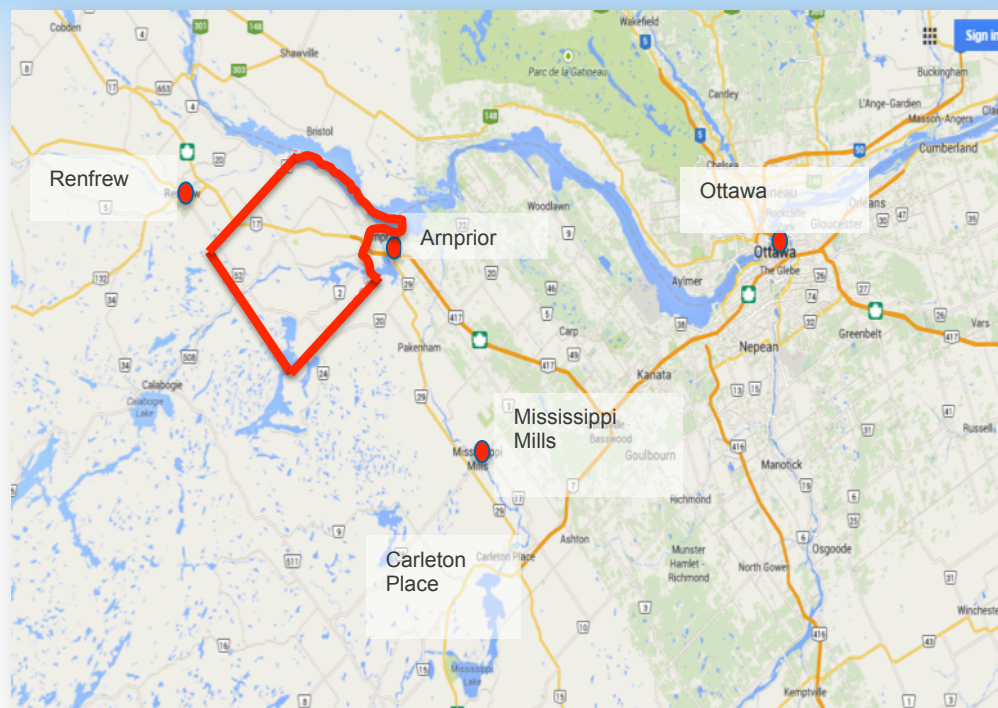
Township of McNab/Braeside

Project Highlights

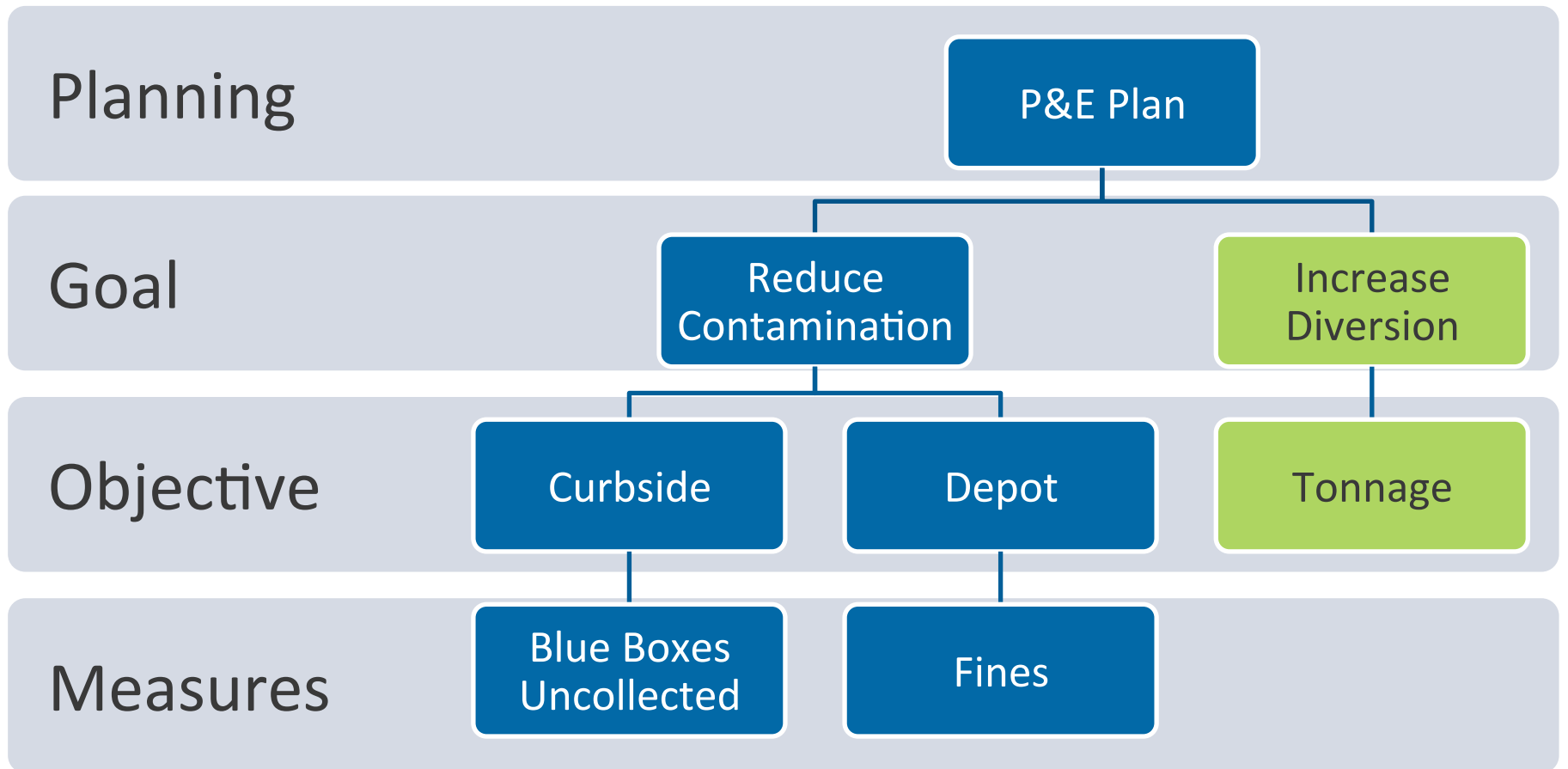
- Project goal: Implement P&E to help manage contamination at curbside & depot
- Impacts: Fewer BB left uncollected curbside, elimination of fines on material from depot, & an improved monitoring system
- More information:
 - rfrew@mcnabbraeside.com
 - www.mcnabbraeside.com

Community Description

- 2-stream recycling
- Curbside collection
 - 3300 HH biweekly
- Staff depot
 - 1,800 users annually
 - Material collected:
 - ~35 MT OCC + 1.4 MT PS annually
 - Unknown amount of containers & other fibres

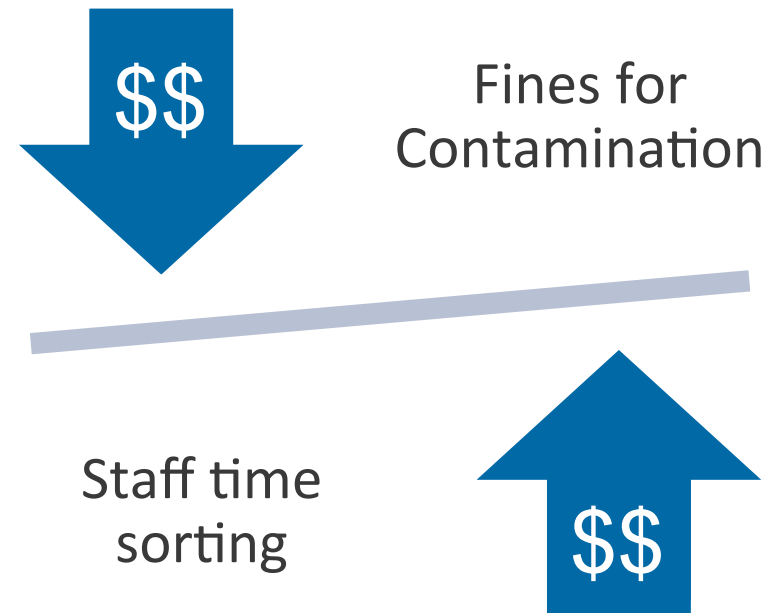


P&E Planning



P&E Plan – Contamination Focused for 2014

- 2013
 - \$1200 in fines
 - Avg 16.5 BB/wk left behind
- Objectives
 - Depot
 - Reduce fines to \$0
 - Limit staff time to sort
 - Curbside
 - Reduce BB left behind at curb



Signage at the Depot




New signage
August 2014



Interim Depot Results

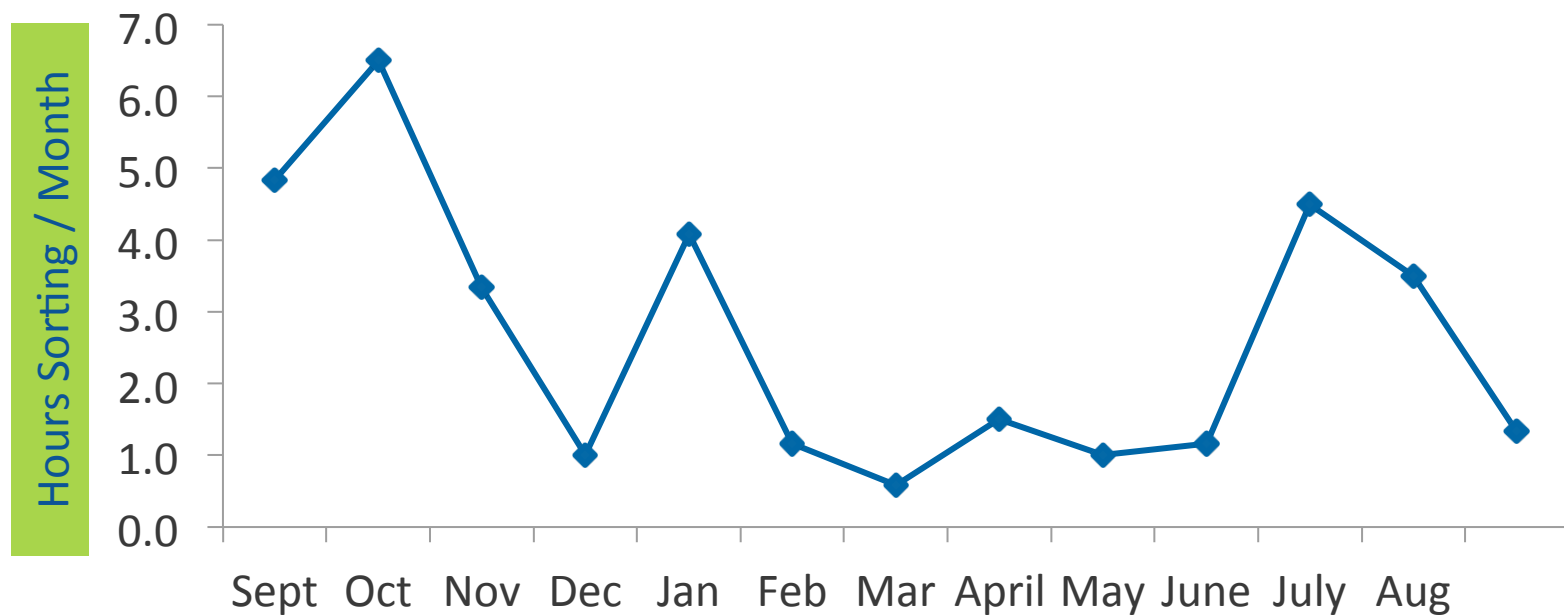
	2013	2014
Fines	\$1,200	\$0
Staff time sorting*	\$0	\$588
Amortized signage	–	\$69
Total	\$1,200	\$657
Savings		\$543

Costs of Signage	
Signs	\$435
Labour	\$250
Total	\$685

- 
- Increase staff involvement
 - Training on proper sorting & monitoring
 - Signage to assist residents
 - Support proper sorting & minimize staff time sorting

Monitoring – Depot

- Tracking staffing resources
 - Identify monthly trends
 - Monitor for issues



Curbside

- Recycling guides – Sorting
 - Mail delivery
 - March 2014
- Impact – missed collections
 - Pre – 16.5 HH/collection
 - Post – 12.4 HH/collection
- Next steps for Curbside
 - Provide feedback on missed collections
 - OOPS Stickers

Recycling Guide

Use separate recycling boxes, one for paper products and one for comingled containers.

Comingled Containers

Glass Bottles and Jars:
Food and Beverage ONLY. Rinse off Food Residue. Labels are permitted. Remove and include lids.
DO NOT include: light bulbs, window glass, drinking glasses.

Metal Food and Beverage Cans:
Place lid inside and pinch top to keep lid inside. Please rinse.

Paint and Aerosol Cans:
EMPTY paint cans – remove and include lid (NO PLASTIC with metal tops and/or bottoms or handles).
EMPTY aerosol cans (includes herbicide and pesticide cans).

Aluminum Foil Containers:
Includes: pie plates, baking pans and foil only take-out food containers. Only CLEAN items are accepted.

Plastic Bottles, Jugs and Tubs:
Containers MUST be marked as follows:
#1 PETE Bottles
#2 - #7 Bottles, tubs and lids
Please rinse. DO NOT include: plastic items other than those listed above, children's toys, flower pots, unmarked bottles and jugs, motor oil containers.

Film Plastic:
Grocery & shopping bags, outer wrap from cases of water, toilet paper & paper towel. Place all bags into one and tie closed.

Styrofoam:
#6 Foam packaging type ONLY. Clean White, blue, pink foam type. Break foam down into 10-12 inch pieces and place loose inside the comingled box.

Milk and Juice Cartons and Tetra Packs:
Includes milk and juice cartons, tetra packs including boxes, ice cream containers. Please rinse.

Paper Fibres

Household Paper:
Includes mail, computer paper, white and coloured paper, envelopes, folders and hanging folders (metal hanger removed). DO NOT include: soiled papers, waxed or foil coated paper.
Shredded or whole paper in a clear plastic bag is acceptable (Place beside blue box).

Newspaper and Telephone Books:
Includes newspaper, inserts and flyers.

Magazines and Catalogues:
Includes magazines and catalogues.

Boxboard:
Includes cereal boxes, cracker boxes, tissue boxes, detergent boxes, paper egg cartons, toilet paper/paper towel rolls and shoe boxes. Flatten and remove liners and plastic windows.

Corrugated Cardboard Boxes:
Corrugated cardboard is the strong waffle type cardboard. Flattened and tie in bundles no larger than 60 cm x 60 cm x 20 cm (24" x 24" x 8"). Please remove food residue and liners from pizza boxes.

Paper Bags and Paper Pet Food Bags:
Includes brown "kraft" paper bags, paper pet food bags (coated liners are acceptable).

Items not accepted in the Blue Box

- Textiles, clothing, shoes, plastic toys.
- "Real" zippered plastic bags (usually for blankets, etc.)
- Fibre glass feed bags.
- Hard cover books.
- Broken window glass, ceramic dishes, mirrors.
- Pots and pans.
- Bubble wrap, sponge foam, Styrofoam packing pellets.
- Tupperware, Rubbermaid or similar products.
- Batteries.
- Electronics.

Agricultural Bale Wrap Recycling

Clean agricultural bale wrap is acceptable free of charge at Beaumen's located at 610 Ligar Ave., Renfrew. Ensure that the wrap is free of "contaminants" (rocks, stones or forage residue). Contact Beaumen's for more information.

Blue Boxes are available at the Township Office for \$7.00 each.

Please use Blue Boxes no larger than 18" x 20" x 21" or an equivalent size container for recycling.

Do not use garbage bags, garbage containers or clear plastic bags for recycling items.

Clear plastic bags can be used for shredded paper only.

Common reasons why your recycling may not have been picked up:

- Recycling was not out on time when the truck went by; (Blue Box is to be at the curb by 7:30 a.m.)
- The material was not sorted properly and/or was mixed; (Containers and Paper Fibres must be kept separate)
- There were significant non-recyclable items mixed with good recyclables;
- The "plain view" of your container was blocked from the driver's view.

If your recyclables are not separated as per the above instructions, your Blue Box will not be picked up by the recycling contractor.

Please call Beaumen Waste Management Systems if you have any questions or concerns regarding your recycling.

Beaumen is open Monday to Friday, 8:00 a.m. to 4:00 p.m. Tel: (613) 432-7555 or toll free 1 (877) 335-1184

Key Learnings

- Depot: staff training & signage
 - Use an iterative process towards continuous improvement
 - Long term
 - Transfer responsibility to residents
 - Where is the barrier?
 - Signage: Design required more resources than anticipated
- Curbside: sorting guides are effective
 - Long term
 - Provide residents feedback for missed collections
 - Identify & achieve minimum level of missed collections



'Paper Is In' Campaign CIF Project #812.6

Angela Porteous
City of Kawartha Lakes

Project Highlights

- Project goals:
 - Create a consistent harmonized message
- Impacts:
 - Changes in behavior led to increased capture rates of paper recycling
- More information:
 - aporteous@city.kawarthalakes.on.ca
 - 705-324-9411, Ext. 1158



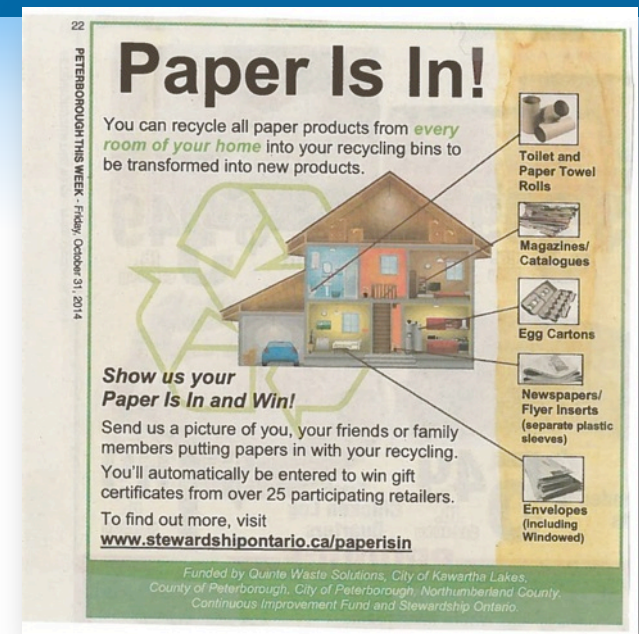
About 'Paper Is In'...

- Joint campaign
 - 5 municipal partners
 - 2 funding agencies
- One campaign lead
 - Budget preparation
 - Coordinating materials
 - Data tracking & reporting
- Main Message
 - **Paper Is In!**



Developing the Campaign

- Keys to the campaign
 - Outcomes & results
 - Messaging & target audience
- Tricky in 5 municipalities
 - What are the similarities?
- Focuses
 - Message
 - Format
 - Design



Campaign Details

- Budget of \$221,000
 - \$75,000 – CIF, SO, & Municipalities
 - \$50,000 – Radio ads by SO
 - \$96,000 – Audits by SO
- P&E - 12 week campaign
 - Radio ads
 - Newspaper ads, brochure
 - Website, social media
 - Contest
 - Billboards, bus shelters & mall displays



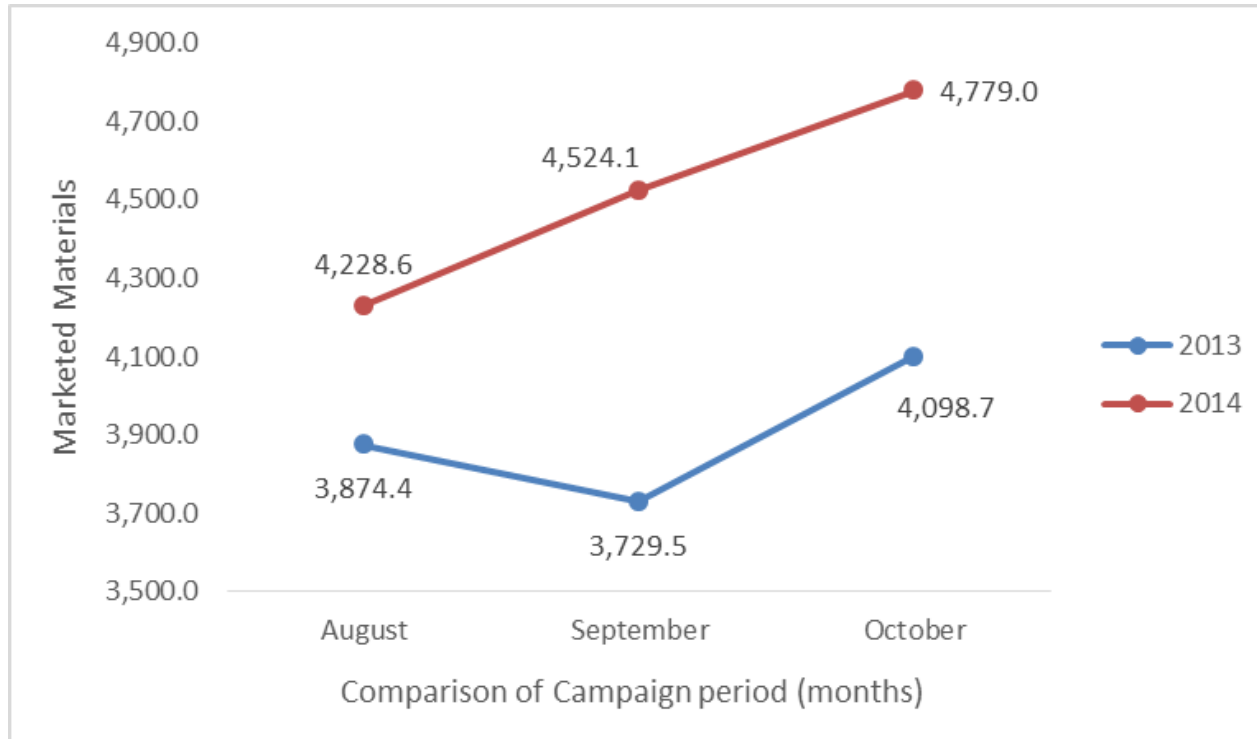
P&E Materials Budget

Campaign Materials	Exposure	Cost
Brochures	70,000	\$ 29,868
Contest	33 entries	\$ 2,700
Billboards, bus shelters, & mall displays (42 faces)	15,516,149	\$ 33,279
Newspaper ads (34)	4,615,330	\$ 9,206
Radio ads (2 developed; stations)		\$50,000
Total		\$125,000

- Campaign Lead – Staff time
 - 2-3 days per week pre-campaign
 - 1 day per week during campaign

Results (1)

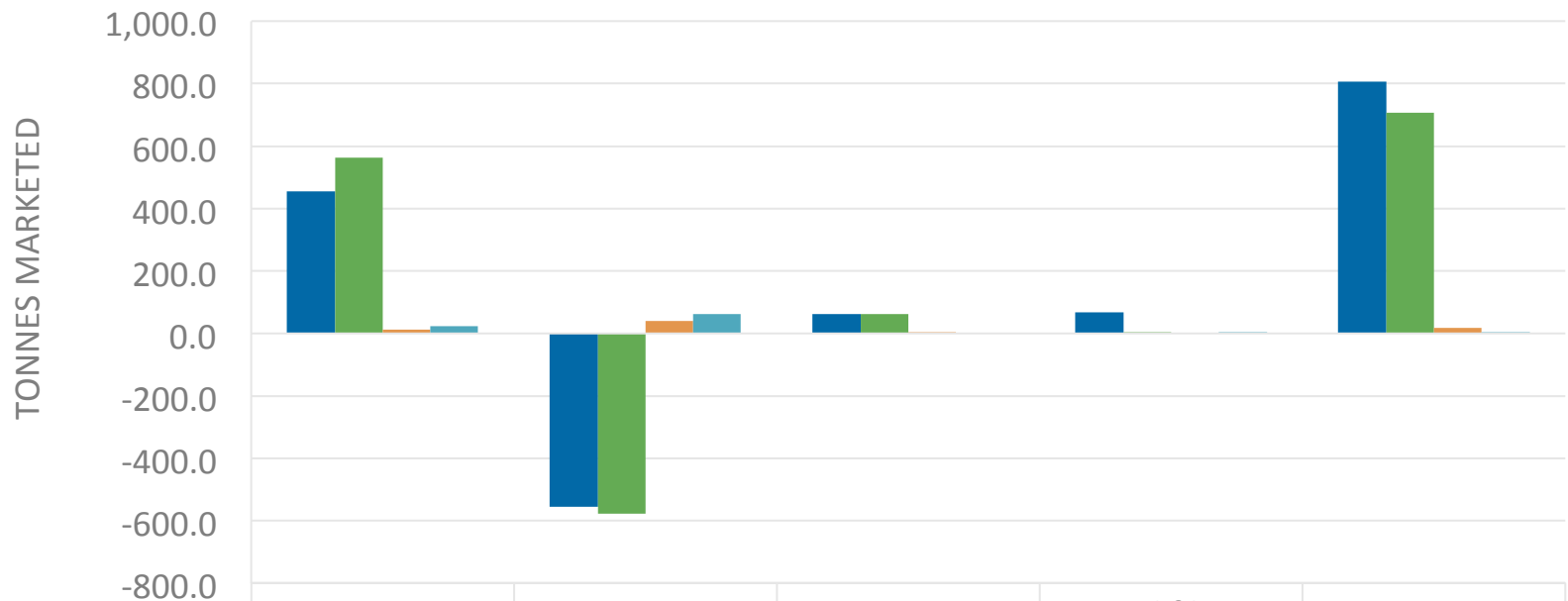
Paper Is In!



- Tonnage is up 1370 MT from previous period
 - ~15% increase in capture of paper products!...?

Results (2)

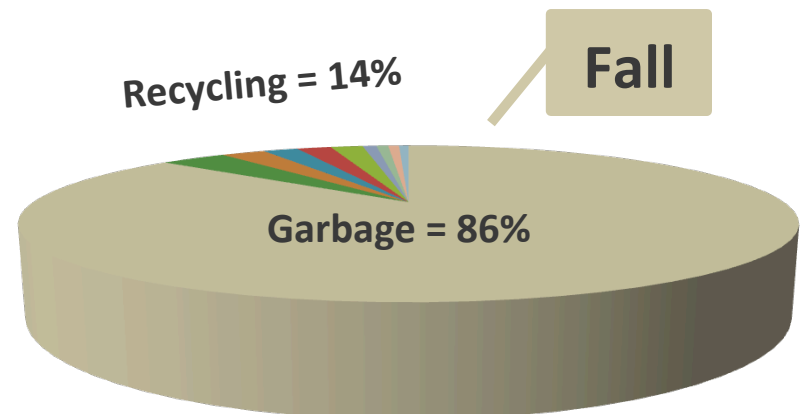
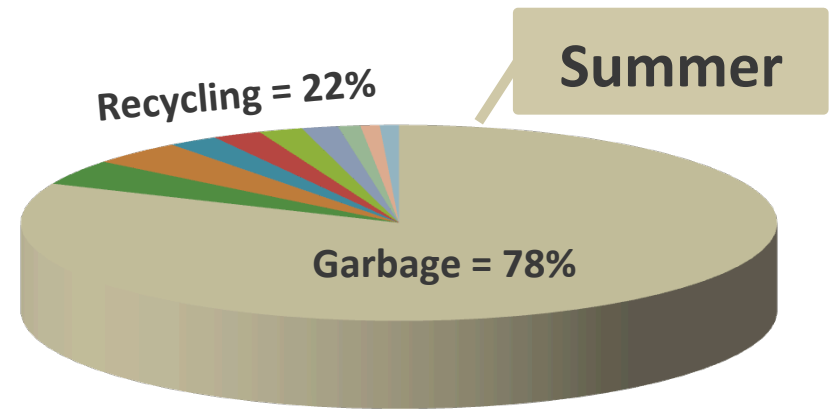
TONNES OF MATERIAL MARKETING



	Boxboard	Newspaper	Office	Mixed fibres - Poly/Tetra	OCC
County of Peterborough	456.1	-554.5	62.3	68.7	806.0
City of Peterborough	563.0	-577.4	62.2	0.9	706.8
Quinte	13.6	41.1	2.7	0.0	17.7
Northumberland	22.0	61.5	0.0	1.3	1.8

Waste Audit Data – What's in the Garbage?

Material Category	Pre	Post
Newsprint	1.06%	0.28%
Magazines & Catalogues	0.64%	0.26%
Other Printed Paper	1.80%	1.83%
Gable Top Cartons	0.16%	0.08%
Corrugated Cardboard	0.91%	0.57%
Boxboard	2.05%	1.68%
"Papers" in the garbage	7.68%	4.98%



Key Learnings

- **Marketed Tonnes**
 - A good measure of success?
- **Sharing Costs**
 - What would we do differently?
- **Campaign Materials**
 - What worked?



Recommendations

- Thinking about a multi-municipal campaign??
 - Be clear what the objectives are
 - How do you initiate?
 - Does there need to be a leader?
 - What P&E should you use?
 - How do you share costs?



A Consolidated look at CIF's P&E Projects Lessons Learned & Next Steps

Carrie Nash
Continuous Improvement Fund

Project Performance

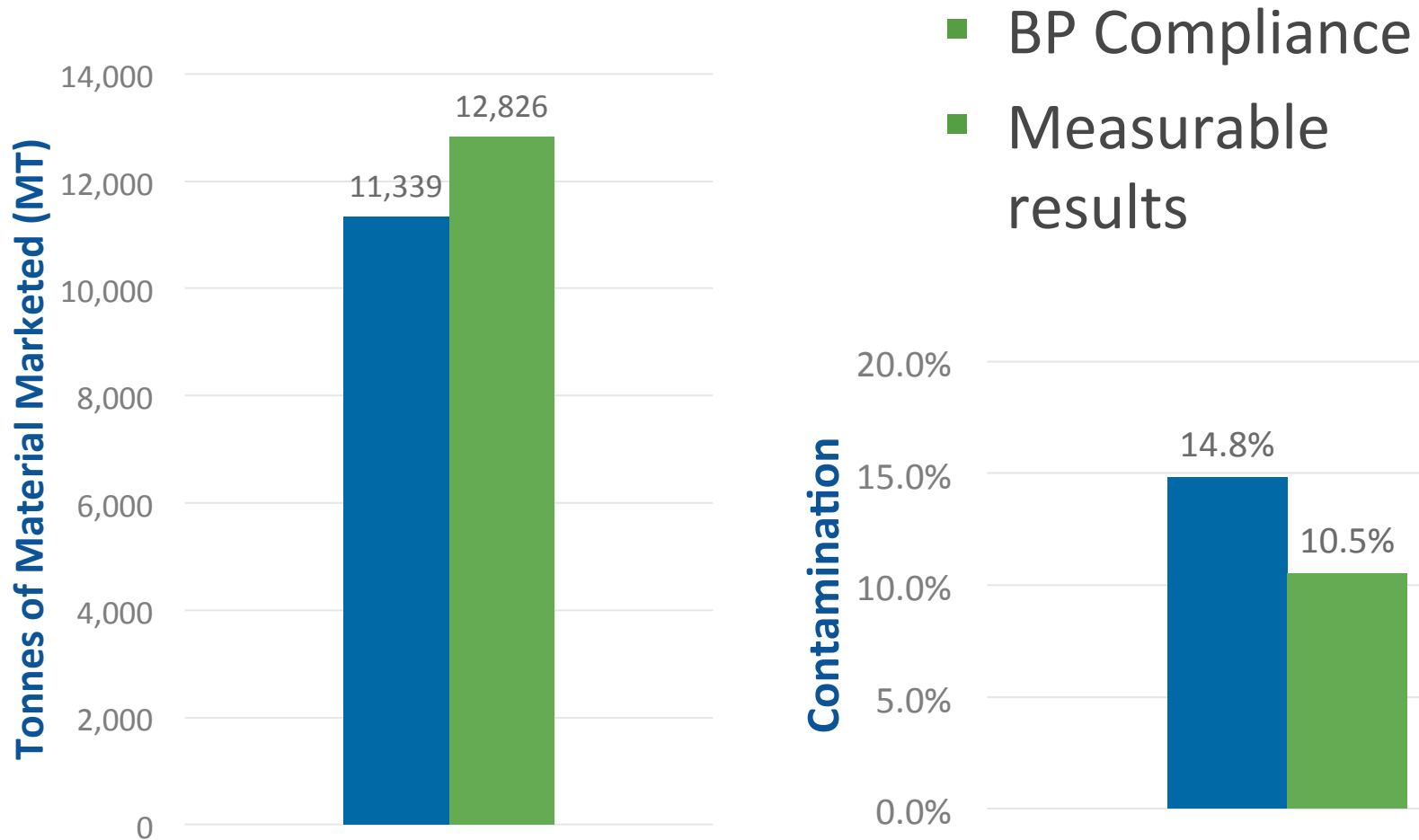
- Goal of Portfolio: Develop communication plans to meet BP compliance
- Impacts: BP compliance & program performance
- More information
 - carrienash@wdo.ca
 - <http://cif.wdo.ca>

Small Program P&E Funding Portfolio

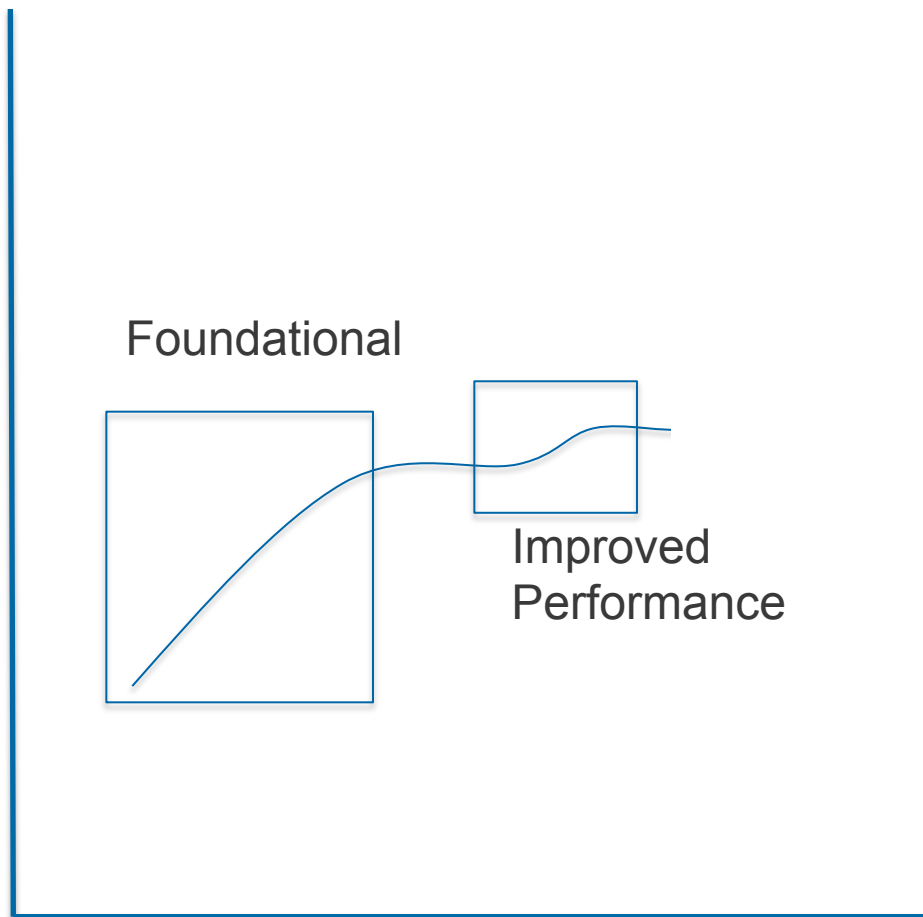
- \$5,000 for municipalities <5,000 households
- 57 grants totalling \$285,000
 - 34 complete
 - 23 very near completion



Effects on the Ontario BB Program



Key Learning: Address the Basics First



- Foundational (basics)
 - Focused on what, where, & how
 - Small investment
 - Big returns
- Improved performance
 - Good return when objective clearly defined

Foundational Ads

Residents need to know when their material will be collected

- Large single faced calendar magnet works well
 - Sables-Spanish distributed calendar magnets & flyers @
 - \$0.93/magnet
 - North Frontenac distributed calendars & created signage specific for seasonal residents
 - \$0.60/magnet

TOWNSHIP OF SABLES-SPANISH RIVERS

2013 RECYCLING SCHEDULE

ITEMS = GLASS / METALS / PLASTICS (1-6)
ITEMS = PAPER / CARDBOARD / BOXBOARD

Month	S	M	T	W	T	F	S
JANUARY			1	2	3	4	5
FEBRUARY	3	4	5	6	7	8	9
MARCH	3	4	5	6	7	8	9
APRIL	1	2	3	4	5	6	7
MAY	5	6	7	8	9	10	11
JUNE	2	3	4	5	6	7	8
JULY	1	2	3	4	5	6	7
AUGUST	4	5	6	7	8	9	10
SEPTEMBER	1	2	3	4	5	6	7
OCTOBER	6	7	8	9	10	11	12
NOVEMBER	3	4	5	6	7	8	9
DECEMBER	1	2	3	4	5	6	7

For info: Riverside Enterprises (705) 869-2447 or www.sables-spanish.ca

P&E Spending & Ad Frequency

- Key components
 - Keep it simple
 - Repeat, repeat, repeat
- Dollars to diversion
 - Fort Frances
 - \$0.18/hh → \$0.60/hh
 - 404 → 528 MT
 - Horton Township
 - \$0.77/hh → \$3.85/hh
 - 178 → 200 MT



**THINK INSIDE THE BOX!
HELP HORTON RECYCLE!**



**Placing items in the blue box saves the environment.
Recycling Saves Energy, Reduces Pollution, Conserves Resources**

By using recycled materials to manufacture new products, recycling saves petroleum used to make plastic bottles, trees used to make paper and minerals used to make aluminum.

Thank you for recycling in Horton Township!

In-person Interactions with Residents

- Community Based Social Marketing works
 - A flyer in hand is worth 2 in the mail
 - McMurrich Monteith increased tonnage significantly (62%)



Teamwork!

- Work together
 - Share costs, designs, & ideas
 - Promotes harmonization

New Recycling Program Starts June 1, 2013!

CURBSIDE RECYCLING WHAT GOES IN YOUR BLUE BOX:



As of **June 1, 2013**, the list of acceptable containers will be expanded to **include plastics #1 through #7** in the municipalities of Beckwith, Carleton Place, Drummond/ North Elmsley, Mississippi Mills and Montague. In addition, tetra paks (juice boxes), gable tops (milk cartons) and spiral containers (frozen juice containers) will be included. The program does not accept styrofoam, household hazardous waste or bulky plastics.



PLASTIC	GLASS	METAL	GABLE TOPS AND TETRA PAKS	PAPER
• #1 - #7 (#6 Polystyrene not included)	• Food and beverage jars ONLY	• Aluminum pop cans, steel food cans, aluminum foil and trays (clean)	• Including milk, juice cartons, drinking boxes and spiral wound containers	• Newspapers, magazines, and telephone books • Bookboard (from cereal and other food boxes, tissue boxes) • Rolls from paper towels or toilet paper • Paper egg cartons • Cardboard (flattened and banded) • Pizza boxes (clean) • Soft cover books, hard cover books (remove cover first)

WE CANNOT RECYCLE:

- styrofoam
- non-container glass

This new recycling program will take effect on June 1, 2013!

ALL CONTAINERS NEED TO BE CLEAN & EMPTY.

SAVE ROOM IN YOUR BLUE BOX AND...

Stamp & Stack



Branding & Consistent Messaging

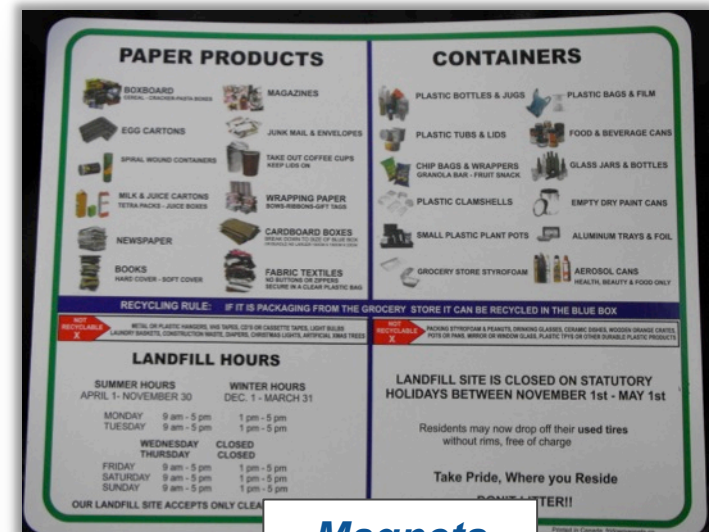
- It works!



Depot Signage



Pens



Magnets

Where Have People Struggled

- Many projects funded in 2010-2012 finishing in 2015
- Required support for development of plan & especially in selecting meaningful objectives
- Feedback from municipal proponents
 - They wear many hats, other issues take priority
 - Designing P&E takes a lot of time & effort since it's a hat they don't regularly wear

CIF Support

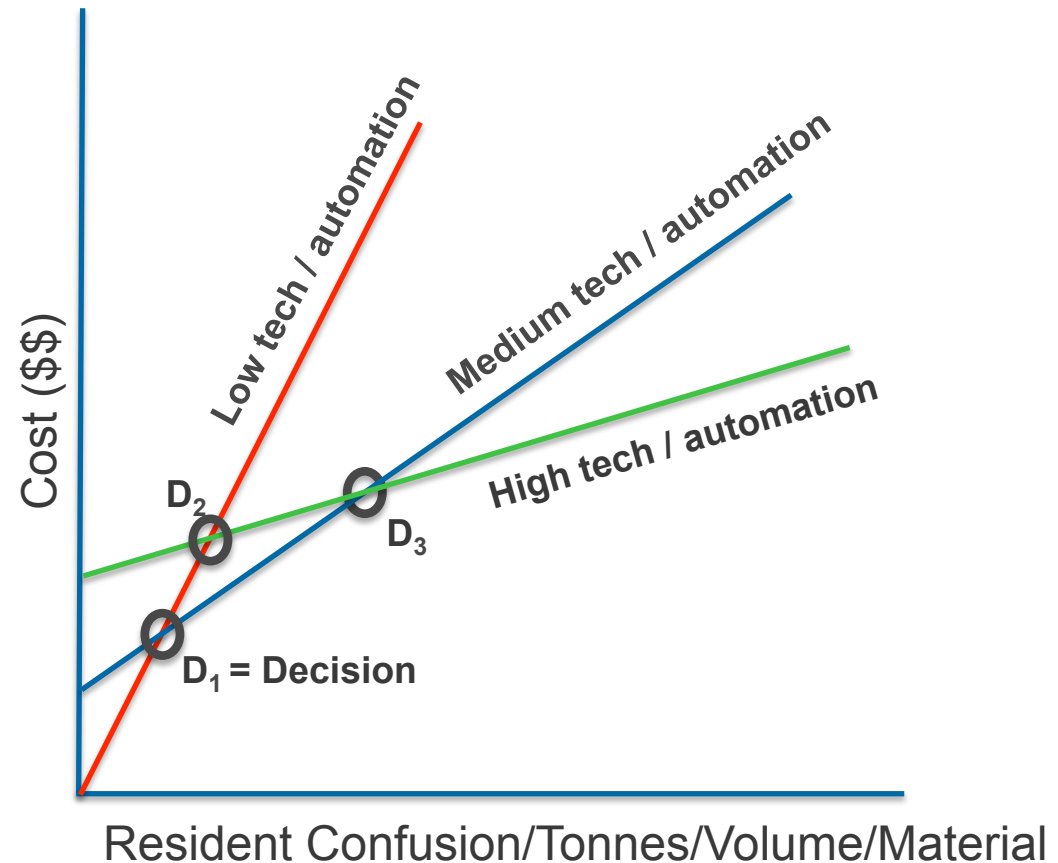
- Communication template development & sharing
 - Templates to target foundational needs
 - Create a hub to image sources & databanks
 - Provide examples, prices, and contact information
- Catered our training addressing this next step
 - New need to focus on how to actually implement
 - Accountability

Insights from the MRF

Carrie Nash, CIF

Current Challenges

- Material composition & volumes
 - Mixed plastic, film plastic, paper laminates
 - Pieces per tonne
- Resident influence
 - Confusion
 - Desire for an all inclusive program
- Available Solutions
 - Expensive
 - Untested



Solutions? We've got a few to share...

- Careful analysis before investment
 - Business case & payback
- Shared risk
 - Municipal & MRF operator partnership
 - Share in the cost & share in the benefits
- Technology
 - Cost savings to be achieved

Obstacle

• INEFFICIENT MRF

- What is lost?
- What would investment provide

Obstacle

• CONTRACT LIMITATIONS

- What is lost?
- What would investment provide

Obstacle

• CAPITAL UPGRADE

- What is lost?
- What would investment provide

Speakers

- Container Line Performance Audit & Development of Improvement Options
 - David Faris Yousif, City of Hamilton
- Expanded Blue Box Program
 - David Miles, Halton Region
- The Evolution of Optical Sort Machinery
 - Matt Risko & Charles-Étienne Simard, Machinex Recycling Services Inc.



Hamilton

**Container Line Performance Audits &
Development of Improvement Options
CIF Project #816.3**

Dave Faris Yousif
City of Hamilton

Project Highlights

- Project goal: Evaluate performance of container line & assess efficiency of new glass clean up system installed in 2013
- Impacts: Development of improvement options to increase recovery rates & decrease costs
- More information:
 - David.Yousif@Hamilton.ca
 - www.hamilton.ca



Why the Container Line Audit?

- Ensure glass clean-up system is working
- Identify post front-end improvement opportunities
 - Measure current sorting efficiency & effectiveness
 - Provide improvement options
 - Develop cost models to incorporate recommendations



The Glass Clean up System

- Why the glass clean-up system?
 - Contamination in glass stream ~50% (included high-value recyclables)
 - Difficult & costly to market
- Summer 2013 installation
- Comprised of drum feeder, fines screen, ORSE screen, eddy current, & bag breaker
- Results indicate:
 - Contamination reduced to 8-10% NGR
 - Easier access to glass market
 - Capture of recyclables previously lost in glass stream



Old Trommel



New Equipment



Old Glass



New Glass

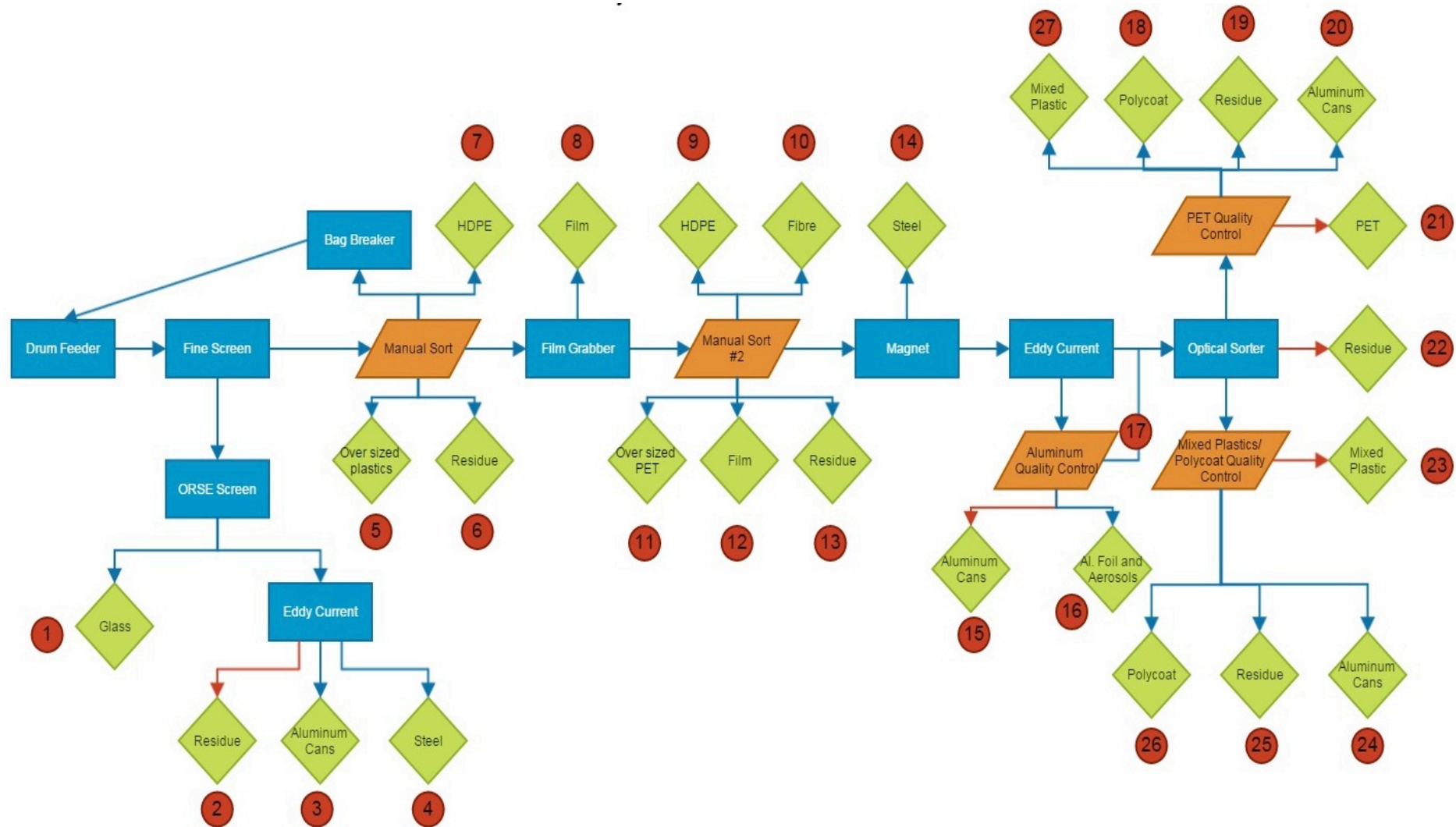
Looking for Next Improvement Opportunities

Step 1: Container Line Audit

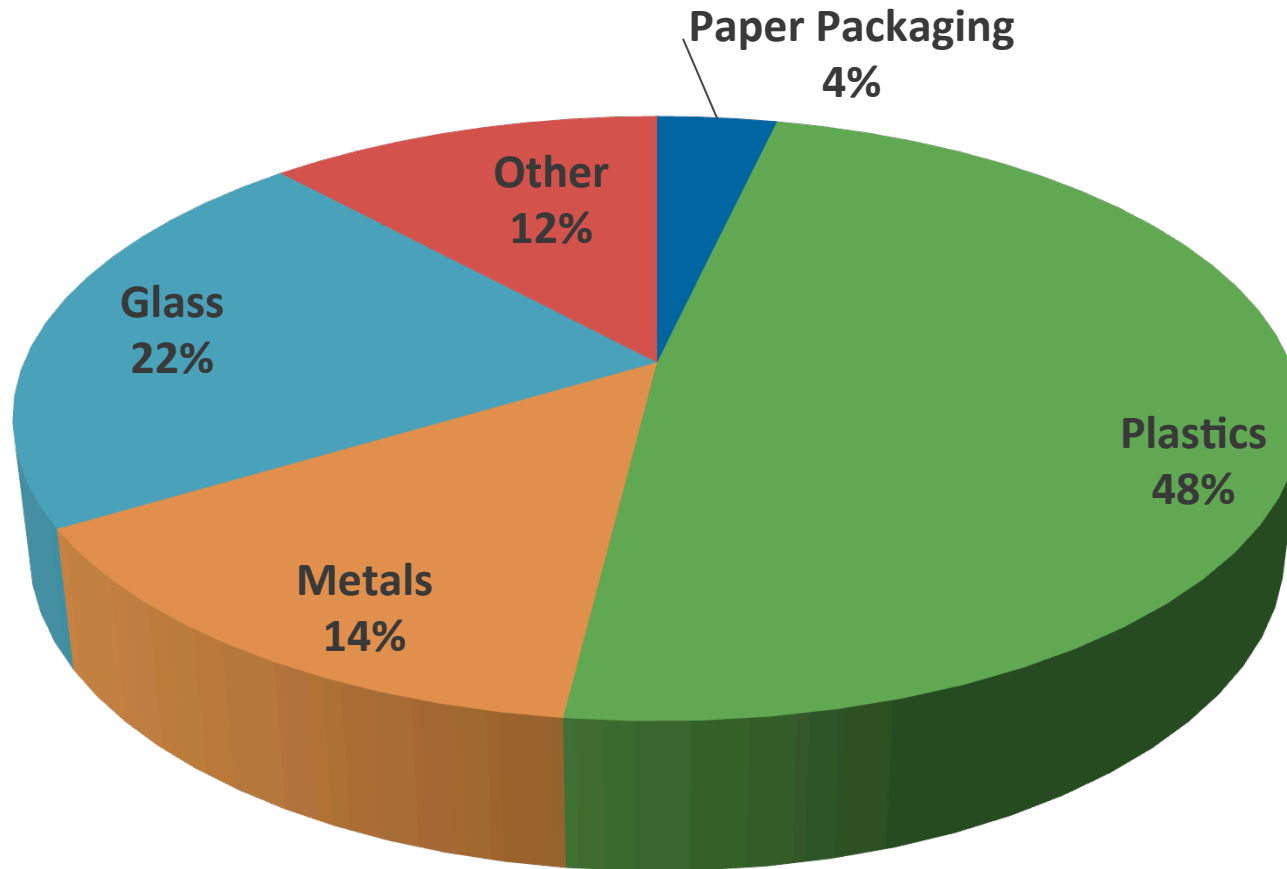
- Objective: Represent regular operations as closely as possible
 - Run full scale tests
 - Empty all lines & bunkers on container side
- Test: Ran ~2 tonnes of material through container line
 - Once clear of lines, collect material from all bunkers/stations
 - Audit bunker/station material to 24 material categories
- Analysis: Process flow & mass balance models
 - Track material through facility & develop recommendations



Current Container Line Process Flow



Key Findings – Tip Floor Composition (%)



Key Findings – Equipment Performance

Equipment	Target Material	Expected Efficiency	Measured Efficiency
Fine Screen	Glass	--	98%
ORSE Screen	Glass	98%	100%
Film Grabber	Plastic film	30%	0%
Magnet	Food & beverage	98%	98%
	Aerosols		100%
Eddy Current	Food & beverage	98%	86%
	Foil, trays & aerosols		68%
Optical Sorter	PET bottles, jugs, jars	90-98%	77%
	PET thermoforms		84%
	Gable top cartons		89%
	Aseptic cartons		85%
	Ice cream containers		79%
	Mixed plastics #4-7		63%

Key Findings – Material Capture Rates

Target Material	Capture Rate (%)
Aluminum food & beverage cans	84%
Aluminum foil, trays & aerosols	63%
PET	73%
HDPE	81%
Mixed Plastics	43%
Film	55%
Cartons	74%
Steel	94%
Glass	98%

- Lower than expected capture rates for high value recyclables
- HDPE currently sorted manually at first 2 manual sort stations
- High rates of PET & HDPE in Mixed Plastics



Key Findings – Revenue Potential

Materials	Avail. Tonnes	Capture Rates (%)	Captured (tonnes)	Expected Revenue (\$)	Actual Revenue (\$)	Net Diff. (\$)
Aluminum Prime	626	84%	528	\$1,095,678	\$923,375	(\$172,302)
Aluminum B-Grade	87	63%	54	\$98,489	\$61,683	(\$36,807)
PET	2,842	73%	2,078	\$1,124,653	\$822,126	(\$302,527)
HDPE	993	81%	806	\$606,551	\$492,733	(\$113,819)
Mixed Plastics	1,406	43%	606	\$76,519	\$33,002	(\$43,517)
Film	1,116	55%	615	\$0	\$0	\$0
Cartons	376	74%	277	\$40,478	\$29,806	(\$10,671)
Steel	1,372	94%	1,288	\$423,337	\$397,414	(\$25,924)
Glass	3,100	98%	3,034	(\$85,396)	(\$83,579)	\$1,817
TOTAL	11,917	78%	9,286	\$3,380,309	\$2,676,558	(\$703,751)

Key Findings – Post-Optical Residue

Commodity	Max. Revenue (\$/tonne)	Capture Rates (%)	Reasonable Revenue (\$)
Aluminum	\$77,363	74%	\$61,991
PET	\$88,660	73%	\$64,811
HDPE	\$16,426	81%	\$13,344
Mixed Plastics	\$11,545	43%	\$4,979
Cartons	\$2,366	74%	\$1,742
Steel	\$1,672	94%	\$1,570
Glass	-\$869	98%	-\$850
Residue	-\$13,674	64%	-\$8,758
TOTAL	\$183,489		\$138,829

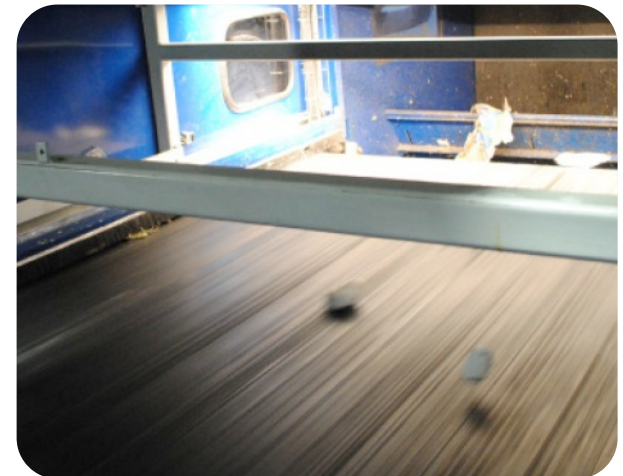
- Modest recapture of high value recyclables in optical sorter residue would yield ~ \$140,000/annually

Main Recommendation

- 1a: Collect film through alternative programs
 - Depots, return-to-retail, etc.
- 1b: Reconfigure film grabber & install second optical sorter
 - Reconfigure film grabber
 - Optically sort HDPE containers
 - Repurpose existing staff to reduce residue through



Optical Sorters



Alternative Recommendations

- Recommendation 2: Install residue return re-process line
 - Reasonable revenue of ~\$140,000 can be generated from reprocessing optical sorter residue
 - Based on conservative capture rates

Next Steps

- Develop price estimate for implementing recommendations
- Estimates will be used to set aside funds for 2015
- RFP/Tender
- After chosen retrofit, carry out a post-mass balance audit



Expanded Blue Box Program

CIF Project Number #631.2

David Miles
Halton Region

Project Highlights: CIF Project # 631.2

- Project goal:
 - Expand BB program to include mixed plastics
- Anticipated impacts:
 - Increase tonnes/volume of BB material
 - Decrease residual material
- More information:
 - david.miles@halton.ca
 - www.halton.ca

Why this Project?

- November 2011 - Halton Regional Council approved the 2012-2016 Solid Waste Management Strategy
- 6 key components to increase waste diversion to 65%
 1. Expand Blue Box Materials & Enhance Blue Box Capacity
 2. Enhance Promotion, Education & Outreach
 3. Enhance Multi-Residential Waste Diversion
 4. Decrease Garbage Bag Limit & Introduce Bag Tags
 5. Enhance Textile Communications
 6. Expand Special Waste Drop-Off Day Events

Focus on First Key Component of SWMS

1. Expand Blue Box Materials & Enhance BB Capacity

- Allows Halton to:
 - Achieve diversion goal sooner
 - Implement changes at the same time
 - Create effective P&E campaign
 - Address confusion around what is & is not acceptable in BB (e.g. Plant Pots & Trays)
 - Decrease amount of residual material

Steps to Implementation

1. Negotiate with MRF Contractor
 - Change to unit price & contract term
 - Addition of new materials
 - Purchase, install & commission Optical Sort Line
2. Operations
 - Establish plan to continue processing during installation
3. Receive Council approval
4. Develop & execute communication strategy

Negotiate with Contractor

- Situation

- Halton has an agreement to receive, market & process BB material at privately owned & operated MRF
- Desire to expand; add new BB materials

- Options

1. Negotiate contract amendment OR
2. Wait till next contract

Action Selected

- Solution – amend current contract
 - Contract extension to 2018; 8 → 10 years
 - Infrastructure upgrades for mixed plastics
 - Addition of paint cans & spiral wound containers
- What made this possible?
 1. Council support – Approval 2012 – 2016 SWMS
 2. Strong business case – Reasonable payback period & increased potential for revenue
 3. Willingness of MRF Contractor to incorporate new opportunities, market material, & negotiate fairly

Infrastructure upgrade Options

- 2 options for upgrades
 1. Contractor purchase & install
 - New processing rate for municipality
 2. Cost sharing between Halton & contractor
 - Discounted processing rate for municipality relative to option 1
- Select option 2 – Key benefits
 1. Cheaper processing rate – \$175,000 / yr
 2. Funding from CIF for infrastructure & P&E

Cost Share Between Halton & Contractor

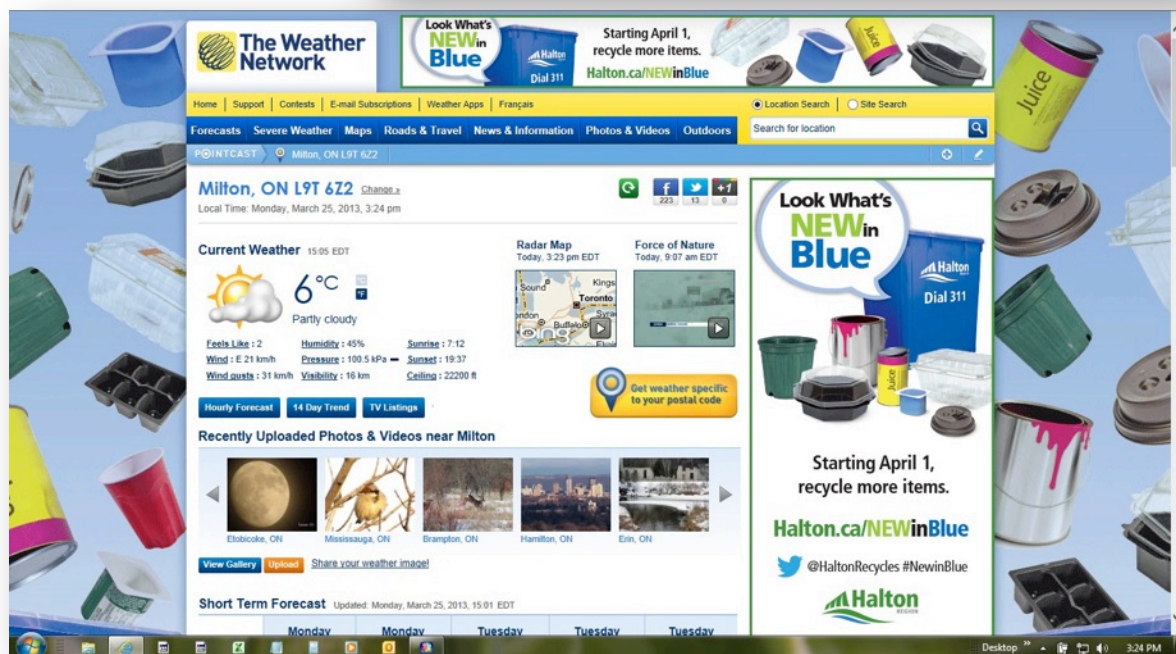
- Titech Optical Sort System
 - Effective capture of mixed plastics
 - Efficient sorting for markets
- Costs for equipment purchase & install
 - Budget – \$1,060,000
 - Actual – \$925,000
- CIF funding
 - Equipment – \$500,000
 - P&E – \$80,000





Communications Strategy

P&E Communication Tool	Cost
Billboards & transit ads	\$80,994
Blue Box giveaway events	\$38,814
Information Kits	\$54,287
Public Service Announcements	\$0.00
Total	\$174,095



P&E – Look What's NEW in Blue



Cineplex



Results

BB material (tonnes)	2012	Anticipated	Actual	2013
Mixed Plastics	283	100%	223%	915
Polycoat	186	0%	56%	290
Curbside BB	41,943	3%	3.6%	43,451
Multi-Res BB	4,793	2%	2.7%	4,922
Curbside GreenCart	26,388	5%	6.5%	28,116
Curbside Garbage	64,323	-3%	-3.9%	61,791

Summary

- Compliance with best practice – expansion of BB acceptable materials & provision larger BBs
- Continuous Improvement achieved by optimizing MRF & how material is collected curbside
- Performance on Contract
 - Increased service
 - Increased revenue
 - No Net change in operating costs

M MACHINEX

Optical Sort Equipment for MRFs of Today and Tomorrow

Matt Risko & Charles-Étienne Simard
Machinex

Overview

- The Business Case
- Evolution of Optical Sorting – Hyperspectral Imaging
- 5 Key Things to Understand About Optical Sorters
- Conclusion: The Future of Optical Sorting

The Business Case (1)

- Does it promote cost savings?
- Is it less expensive than manual labour?
- Does it increase diversion?

Proven 

- Increases efficiency
- Increases diversion rates
- Increases quality of end product
- Reduces labour costs
- Reduces residue rates

The Business Case (2)

- A person, over an 8 hour shift, can average between 100 to 200 kg/hour
- 3% PET @ 25 tonnes/hour means 750 kg/hour, therefore 5 sorters are required.
- An optical sorting unit can process 7000 kg/hour of plastic and eject an average of 3500 kg/hour
- An optical sorting unit can process 750 kg/hour & be >90% efficient



Evolution of Optical Sorting



Hyperspectral Imaging

- Conventional Vis/NIR spectroscopy only provides point or area measurements, and therefore cannot quantify the spatial variation or distribution of properties and attributes in the product item.
- Moreover, the technique is largely empirical, relying on the development of calibration models relating spectral information to reference measurements that are often destructive (Lu, 2007).
- Hyperspectral imaging is used to overcome these limitations

Hyperspectral Imaging



Conventional
Spectroscopy

Hyperspectral
Imaging

The HD (high-definition) version of Spectroscopy

5 Key Things To Understand About Optical Sorters



Your Input Affects Your Output

- Mass feed systems require the waste stream to be spread out in a single-layer over the width of a wide belt
- 2D is better than 3D – Perforator/Flattener
- Constant and Regular Input Stream
- Remove bulky objects & glass before Optics
- The cleaner the material going in, the higher the purity coming out

Efficiency VS Purity

Efficiency is how many pieces of a certain material visible on the belt, are ejected by the optical sorter.

Most manufacturers will guarantee anywhere from 90-95% efficiency, because the optical sorter is very good at seeing something if it is visible on the belt.

Purity is what the actual material stream looks like when it comes out of the other side.

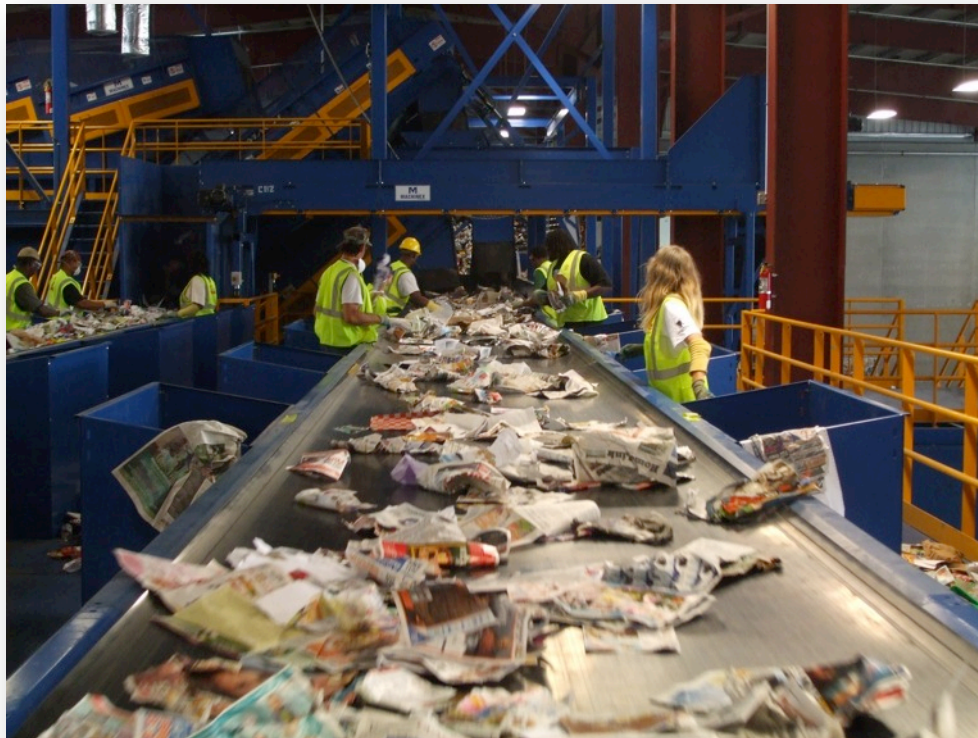
The actual purity of the output is harder to guarantee as there are a lot of variables in play that determines the final output (ex: bi-products).

What You See is What You Get

- The Optical will only eject what it can see
- At least 25% of the object surface to be ejected must be visible
- Black or dark objects on black belt
- Product with liquid/ice inside

We Still Need Manual Labour


- Humans are safe for now!
- QC stations are required (ex: thermoform PET)



It's a Million Dollar Investment

- Optical Unit
- Speed Belt
- Compressor
- Transfer Conveyors
- Structure, platforms, maintenance access
- Civil work, building permits, enclosures
- Delivery & installation

Future of Optical Sorting

- Hyperspectral imaging equals:
 - Wood classification (C&D, MSW,...)
 - Boxboard classification from paper stream.
 - Much more to come...but it is a secret 

Thank You!

More information:
mrisko@machinexrt.ca
www.machinextechnologies.com

Enjoy Your Break





CIF
CONTINUOUS
IMPROVEMENT FUND

Procurement, Contracting & Management: Working Toward Better Practices

Mike Birett, CIF (Moderator)

Wesley Abbott, City of London

Rob Cook, Ontario Waste Management Association

Gary Everett, CIF

Working Towards Better Practices

Why are procurement & contract management important?

- It's where we spend the most \$ for contracted services
 - ~44% curbside & depot collection
 - ~22% processing

Municipal Considerations

- Cost=competitive rates
- Predictability in pricing
- Consistent service delivery standard
- Contingency



Contractor Considerations

- Capital allocation
- Flexibility to package up service cost-effectively
- Balance of risk
- Fair competition



Steward Considerations

- Optimization
- Capture rates
- Expansion of targeted material lists
- Program harmonization



Where Are We at Odds? – Performance Securities

- **Purpose:** Provide insurance for the municipality should a service contract be breached or terminated
- **Problem:**
 - So many different options – which one do you choose?
 - What is the correct \$ amount to set?
- **Solution:**
 - Bond minimum carrying amount to reflect replacement contract until new RFP issued & awarded

Where are we at Odds? – Statement of Work (SOW)

- **Purpose:** Defines performance standards & shapes service delivery model
- **Problem:**
 - Prescriptive statements limit innovation
 - Insufficient detail inflates contractor risk
- **Solution:** Provide information re: historical composition & volume incl. residuals

Where Are We at Odds? – RFP Circulation Timeline

- **Purpose:** Provide adequate time for bidder to develop business case
- **Problem:**
 - Contract requires significant capital investment (e.g. trucks)
 - Insufficient time for contractors to allocate capital for best business case
- **Solution:**
 - Extend timelines or change capital requirements for service contract
 - Allow older vehicles, cheaper alternatives

Where Are We at Odds? – Evaluation

- **Purpose:** Provide for fair assessment of technical (nonfinancial) & financial components of prospective bids
- **Problem:** Competition skewed when compliance with technical components misrepresented & pricing set unrealistically low
- **Solution:** Increased accountability to demonstrate past successful performance
 - Must verify contractor was not assessed liquidated damages & did not seek contract amendment because they underbid & couldn't cover costs

Where Are We at Odds? – Shared Risks

- **Purpose:** Provide for balance of risk between Municipality & Contractor in face of changing economic circumstances over contract
- **Problem:** Without mechanism to share escalating operating costs, expense falls on 1 party
 - usually the municipality
- **Solution:** Establish operating reserve fund

Where Are We at Odds? – Performance

- **Purpose:**

- Provide recourse for breach of service delivery standard
- Incentivize action that exceeds established standards

- **Problem:**

- Adherence to established service delivery standards
- Focus on negative i.e., managing breach vs. incentivizing performance

- **Solution:** Establish incentives

Where Do We Go From Here?

- Establish Better Practices
 - What's to be gained from Better Practices?
- How to establish them
 - Should CIF facilitate process to review the model RFPs with OWMA, Municipalities, & Stewards?
- Municipal 'Buy –In'
 - Are there concerns?
 - What are the obstacles to compliance?

Closing Remarks



Thank you to our speakers & all attendees!

Slides & Archive at ORW webpage
Please complete next week's ORW Survey

Don't forget to sign up for P&E Training
Waiting List



See You in the Spring!