Ontario Recycler Workshop

May 18, 2017

ORW begins at 9:00 a.m. ET

CIF
CONTINUOUS IMPROVEMENT FUND

Ontario Recycler Workshop
May 18, 2017

Mike Birett

CIF

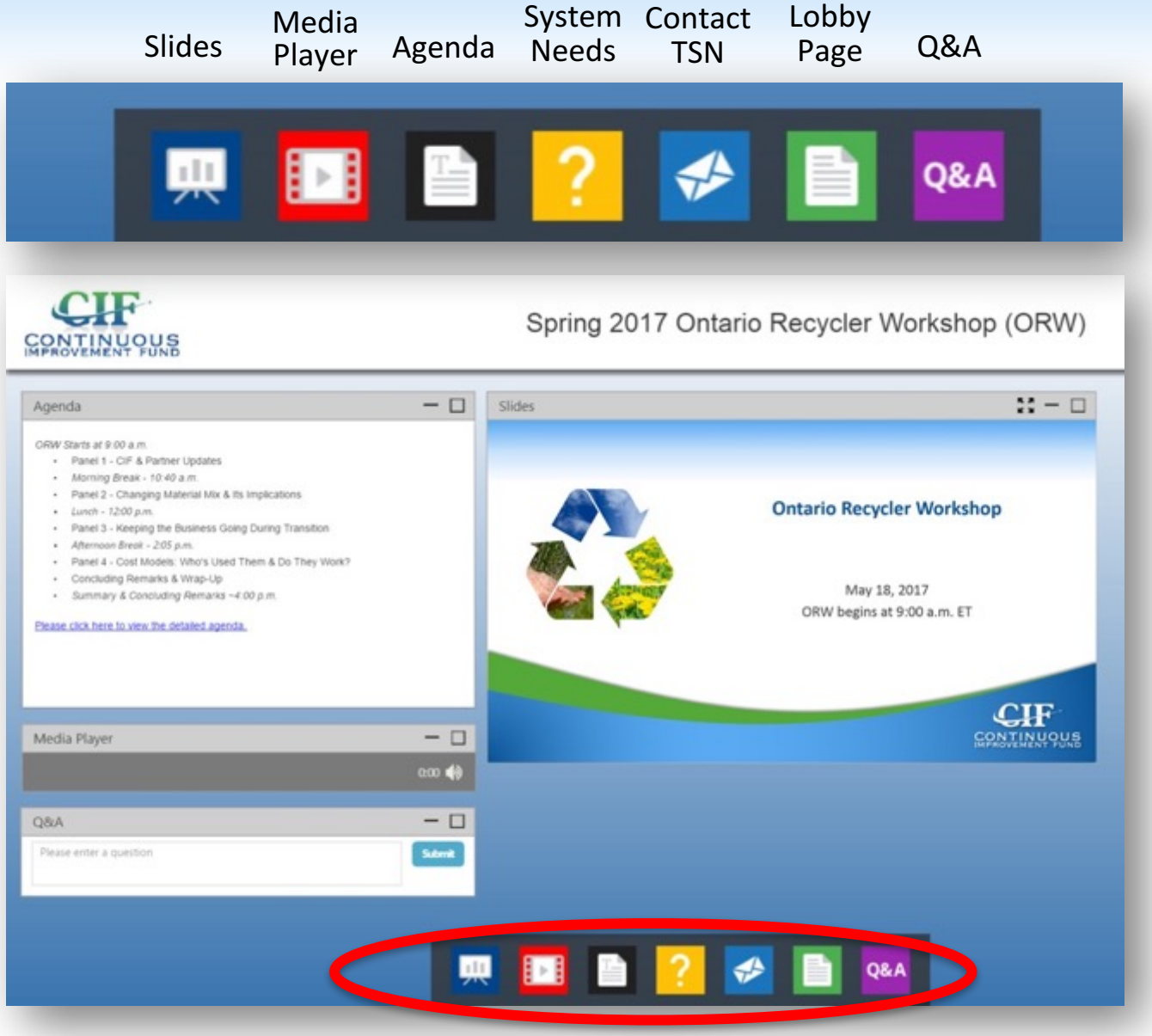
CIF
CONTINUOUS IMPROVEMENT FUND

Intro & Welcome

- Good morning & welcome to the 22nd ORW
- ~200 participants registered online & in person
- Thank you all for taking the time out of your busy schedules to join us today

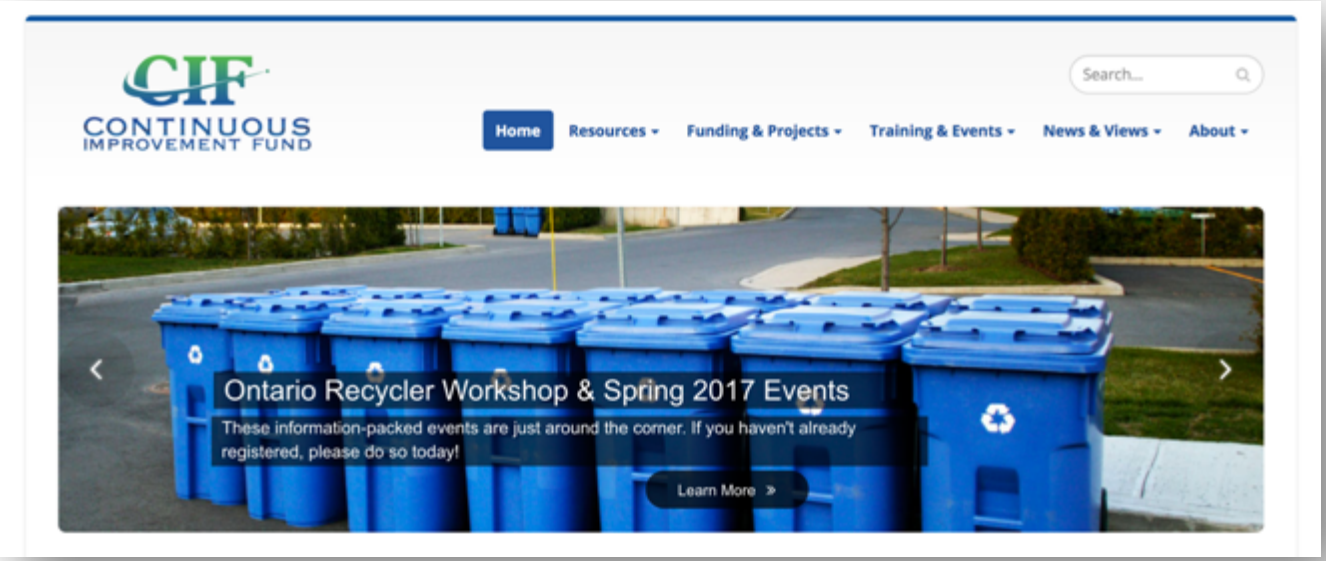
Housekeeping - Webcast

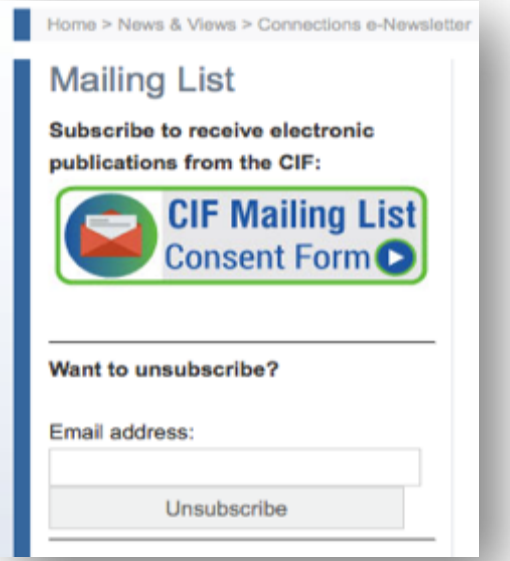
- Full day – to ~4:00 p.m.
- Webcast console
  - Components can be moved, opened/closed by toggling widgets
  - Listen in on mobile device



Housekeeping Items: In-house

- Be sure to sign in at registration desk for Datacall credit
- Confirm interest to stay on CIF mailing list
  - Connections Blog, REOI, Bulletins, etc.
  - Check-off at registration desk or go online





Snapshot…Today's Program

Morning Session

- Stakeholder Updates
- *Morning Break*
- Changing Material Mix & Its Implications
- *Lunch*

Afternoon Session

- Keeping the Business Going During Transition
- *Afternoon Break*
- Cost Models: Who's Used Them & Do They Work?
- *Summary & Concluding Remarks*

A Sincere Thank You to Today's Speakers!

- Alex Piggott, City of Woodstock
- Allen Langdon, Recycle BC
- Bradley Cutler, CIF
- Brad Whitelaw, Regional Municipality of Niagara
- Carrie Nash, CIF
- Catherine McCausland, City Of Guelph
- Dave Gordon, AMO
- Dr. Calvin Lakhan, York University
- Gary Everett, CIF
- Glenda Gies, RPRA
- Heather Roberts, City of Kingston
- Jamie Delaney, District Municipality of Muskoka
- Jen Addison, City of Hamilton
- Kate Dykman, City of Vaughan
- Lindsay Milne, York Region
- Mary Cummins, RPRA
- Neil Menezes, Reclay StewardEdge
- Renée Dello, City of Toronto

CIF Update
2017 ORW

Mike Birett
Managing Director, CIF

CIF
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IMPROVEMENT FUND

Top of Mind Issues

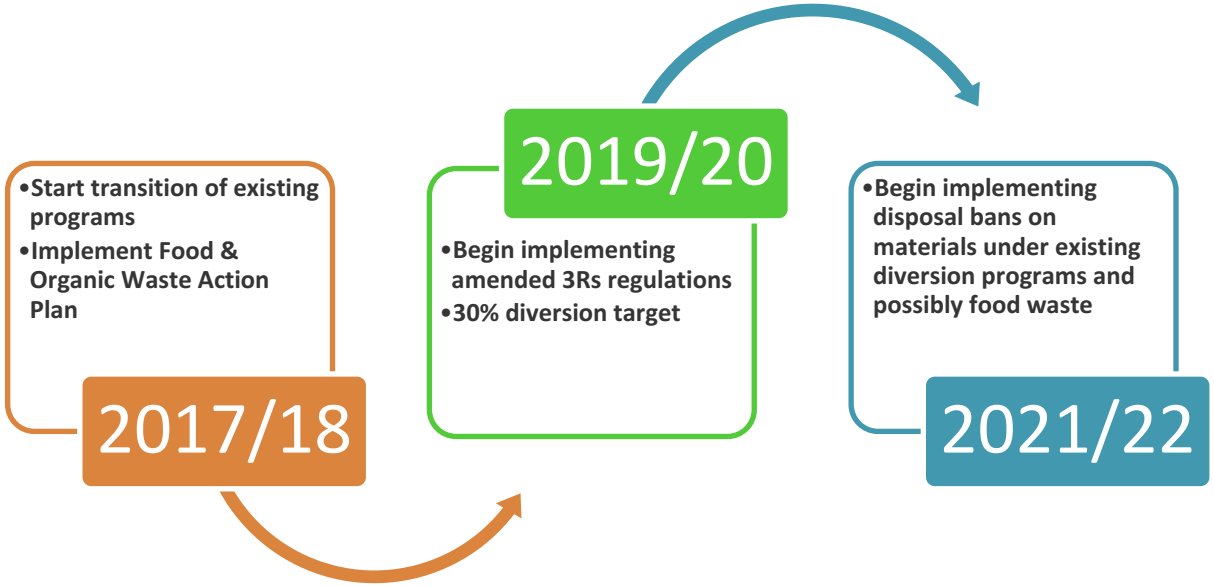
- Transition under the *Waste Free Ontario Act*
- Managing uncertainty
- Market instability

Current Areas of Effort

- Assistance with transition
- 2017 REOI
- Consolidation of resources

Another Successful Spring Consultation

- Six sessions: 140 attendees
- Presentations to & meetings with representatives of 53 municipalities
- Key topics:
  - Legislative overview
  - CIF update
  - Datacall update
  - Managing uncertainty
- Thank you to our partners:
  - London, Peel, Smiths Falls, North Bay, Dryden, Thunder Bay



2017/2018 Planning

- Sufficient funding to operate into 2018 & wind down the CIF
- Currently in year 2 of three year strategic plan
- Timing of transition will require consideration of any future mandate

Website: thecif.ca

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Gary Everett – Project Manager, CIF
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Bradley Cutler – Project Coordinator, CIF
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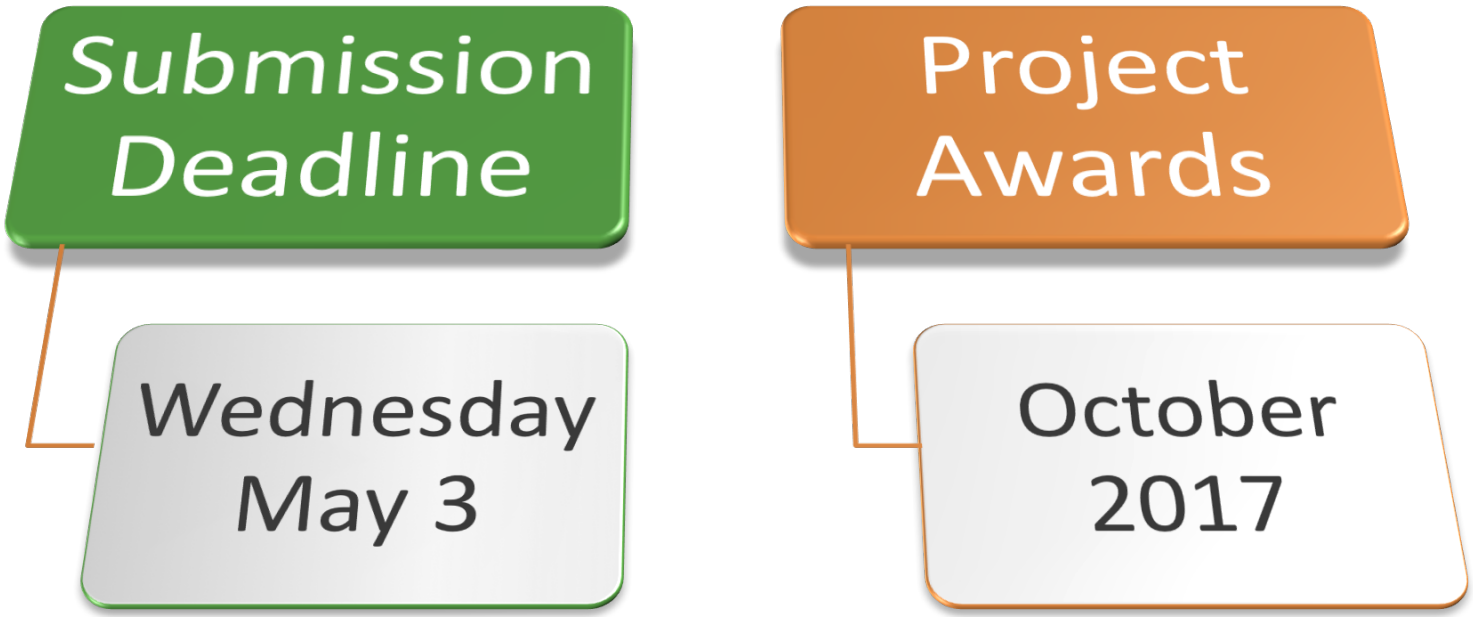
2017 REOI
Preliminary Results

Bradley Cutler
CIF

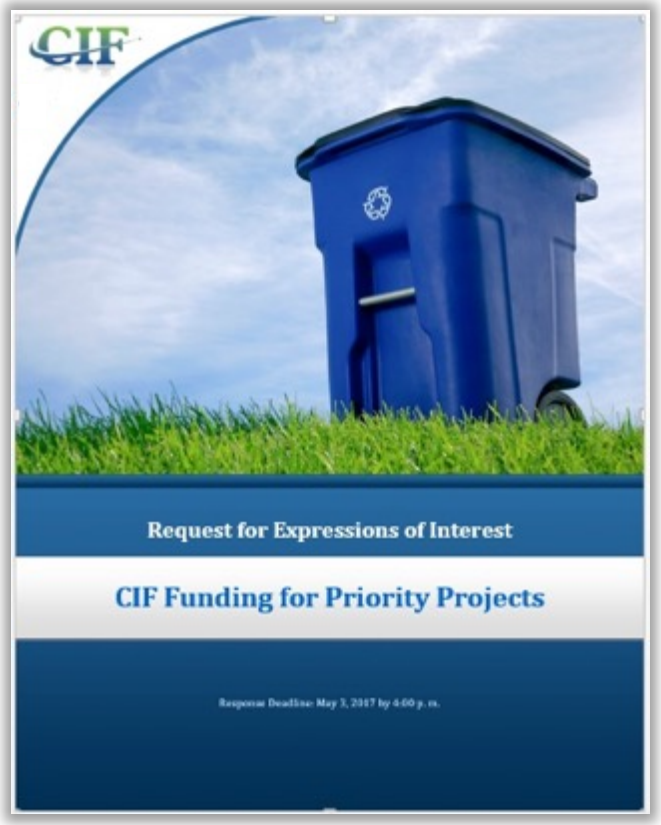
CONTINUOUS IMPROVEMENT FUND

Key Dates


Submission Deadline
Wednesday May 3
Project Awards
October 2017

REOI Overview

- Supporting municipalities with investment in new effectiveness & efficiency projects
- Eighth year of REOI Funding
- 670 projects to date
- $126M in total project value



Budget Recap by Priority Areas

Priority Areas	Available Funding
System Optimization	$500,000
Transitional Support for New Legislation	$1,550,000
Cost Savings & Cost Containment	$1,800,000
Centre of Excellence	$1,330,000
Total	**$5,180,000**

Highlights

$15.4 M
Total Project Value

$8.5 M
Funding Requested

31 Applications Submitted

2017 Trends

1. Cost Savings & Cost Containment still top of priority lists

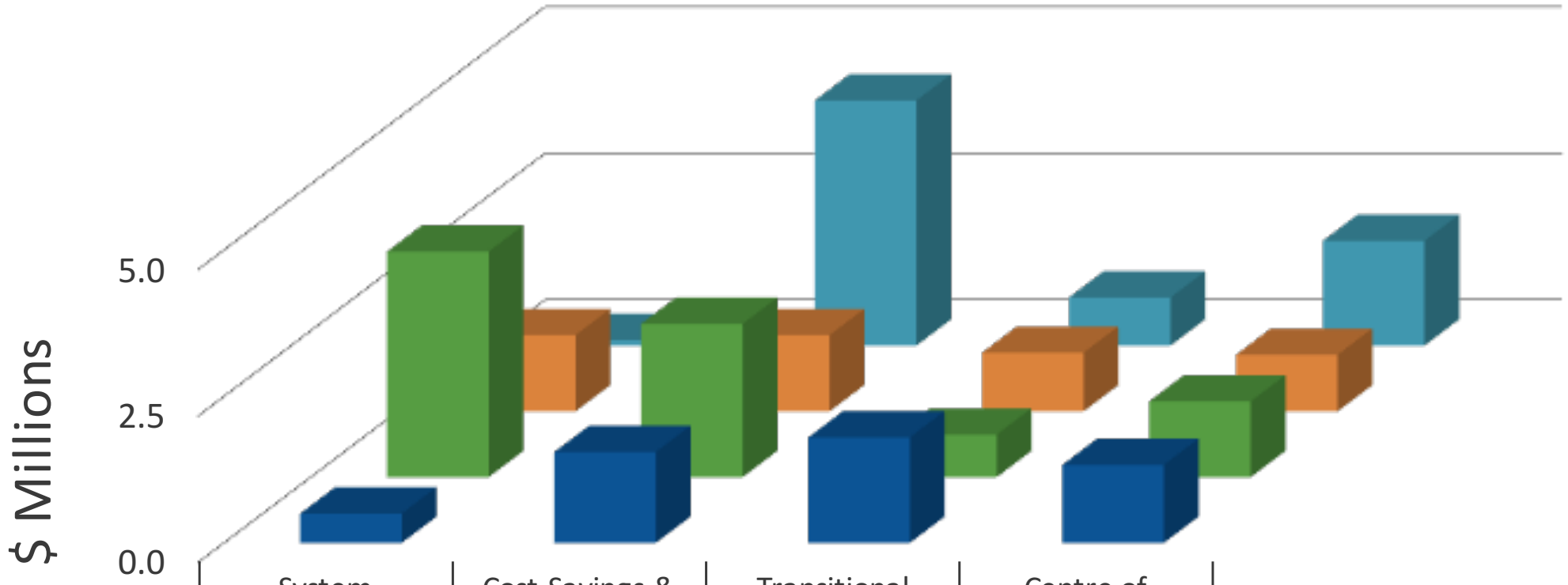
2. Strong need for EPR Transitional Support

3. C of E Interest continues building
   - Best Practice & Tool Kits
   - Research into Materials Management

What Happened: Applications Breakdown

Project Value	Priority Funding Initiatives	Budget	Subscribed	Difference	Apps
$7,700,000	System Optimization	$500,000	$3,850,000	($3,350,000)	**2**
$5,348,555	Cost Savings & Cost Containment	$1,800,000	$2,616,163	($816,163)	**9**
$725,705	Transitional Support in Response to EPR	$1,550,000	$725,705	$824,295	**9**
$1,601,404	Centre of Excellence	$1,330,000	$1,292,154	$37,846	**11**
$15,375,664	**Total**	**$5,180,000**	**$8,484,022**	**($3,304,022)**	**31**

2017 – 2016 Funds Requested vs. Budget



	System Optimization	Cost Savings & Cost Containment	Transitional Support for EPR	Centre of Excellence
2017 Budgeted	0.500	1.550	1.800	1.330
2017 Requested	3.850	2.616	0.726	1.292
2016 Budgeted	1.300	1.300	1.000	0.965
2016 Requested	0.095	4.184	0.820	1.788

Funding Requested - Centre of Excellence

C of E Priorities	Budget	Subscribed	Difference
Development of Better Practices & Tool Kits	$ 250,000	$378,000	($128,000)
Research into Materials Management	$ 200,000	$440,204	($240,204)
Support For RFP & Tender Development	$ 100,000	$ 11,000	$89,000
Training Initiatives	$ 230,000	$162,950	$67,050
Outreach Services	$ 150,000	$150,000	$0
Performance Auditing	$ 100,000	$100,000	$0
Waste Composition Studies	$ 300,000	$ 50,000	$250,000
TOTAL	**$ 1,330,000**	**$1,292,154**	**$37,846**

What's Next?

1. All applications & projects reviewed
2. Applications strengthened, supported, finalized
3. Applications evaluated
4. CIF Committee meeting Sept.
5. Approval/rejection letters sent
6. Agreements signed
7. Get started!

RPRA – FIRST 170 DAYS

May 18, 2017

Glenda Gies, RPRA Board Chair

Resource Productivity & Recovery Authority | Office de la Productivité et de la Récupération des Ressources

Overview

- Legislative context
- Roles of the Minister and Resource Productivity and Recovery Authority (RPRA) under
  - *Resource Recovery and Circular Economy Act, 2016 (RRCEA)*
  - *Waste Diversion Transition Act, 2016 (WDTA)*
- Summary of the Authority's activities
  - Since November 30
    - Governance
    - Administration
    - RRCEA mandate
    - WDTA mandate
  - Next steps

Legislative Context

- *Waste-Free Ontario Act, 2016*
  - Schedule 1: *Resource Recovery and Circular Economy Act*
  - Schedule 2: *Waste Diversion Transition Act*
- Established Resource Productivity and Recovery Authority
  - Overhauled Waste Diversion Ontario upon proclamation
  - Non-Crown body with new objects, powers, compliance and enforcement tools, enhanced oversight and accountability
- Establishes new regime where producers are
  - Responsible for their products and packaging
  - Accountable for recovering resources and reducing waste per regulations
- Sets out provisions to continue existing diversion programs until the programs are wound up
  - Wind-up as directed by Minister
  - With these producers then obligated under RRCEA

Legislative Context – Minister

- Under the RRCEA, the Minister
  - Develops the *Strategy for a Waste-Free Ontario: Building the Circular Economy*
  - Develops resource recovery/waste reduction policy statements
  - Develops regulations, sets performance outcomes and operating standards
  - Appoints 5 members to form the Initial Board
  - Oversees the Authority
  - May issue policy directions to the Authority
  - May require the Authority to
    - Conduct consultations
    - Advise or report to the Minister on any matter related to resource recovery, waste reduction, circular economy or the Authority's objects
    - Establish advisory councils

Legislative Context – Minister

- Under the WDTA, the Minister
  - Directs wind up of programs and industry funding organizations (IFOs) continued under WDTA
  - May direct changes to a wind-up plan approved by the Authority
  - May change the Blue Box program to determine the total amount to be paid to municipalities
  - May require the Authority and IFO to develop a proposal for a change to a program; may approve the proposed change or make changes to the program
  - Approves material changes to IFO programs

Legislative Context – Authority

- Under the RRCEA, the Authority
  - Operates a registry to receive and store information related to resource recovery and waste reduction activities
  - Manages the information in the registry according to an Access and Privacy Code
  - Provides information to the Minister upon request
  - Conducts compliance and enforcement activities related to the resource recovery and waste reduction requirements
    - To ensure obligated parties comply with the regulations, performance outcomes and operating standards
    - Using graduated compliance tools including inspections, compliance orders, administrative penalties, offence provisions

Legislative Context – Authority

- Under the WDTA, the Authority
  - Is not responsible for jointly operating waste diversion programs with IFOs
    - Change from Waste Diversion Act and WDO
  - Oversees the operation of programs until they are wound up
  - Conducts compliance and enforcement activities related to the requirements for the operation of existing waste diversion programs
  - Approves wind-up plans developed by IFOs and oversees implementation of the approved wind-up plans
  - May appoint an individual as an administrator of an IFO
    - If necessary to facilitate winding up the program or the IFO
    - If there are insufficient members to form quorum
    - If the IFO has dealt with money or another asset other than in a way that is consistent with performing the duties of an IFO under the Act
  - Operates the registry for information related to programs; manages the information according to an Access and Privacy Code; provides information to the Minister upon request

Authority Activities – Governance

- Active and engaged Initial Board
  - Members posted on RPRA website
  - Bring previous experience in industry, governance, administration of delegated administrative authorities
- Transitional Operating Agreement
  - Executed on March 28, 2017
  - Posted on the Environmental Registry
- Call for Applications to elect 6 directors
  - Includes application form and Director Qualifications Guideline
  - Directors will be selected based on skills and qualifications
  - Full 11 member board to be in place by November 30

Authority Activities – Governance

- Revised
  - Bylaw 2017-1 General Bylaw
  - Bylaw 2017-2 Code of Conduct
  - Governance Manual
  - Human Resources Manual
  - Financial Management and Controls Policy
  - Business Expense Policy
- Established Director Remuneration Policy
  - In line with OPS Agencies and Appointments Directive
- Strategic planning meetings in April and May
  - Mission, vision, 2017 to 2020 strategic priorities

Authority Activities – Administration

- 2016 Annual Report
  - Due to Minister by June 1
  - Including 2016 audited financial statements
  - Will be posted following submission
- Annual Meeting on June 22
  - 10:00 am, DoubleTree Hilton, 108 Chestnut St. Toronto
  - Notice with registration information was distributed on May 12
- 2017 Business Plan
  - Due to Minister by June 30
  - Provisional 2017 operating budget approved
  - Will be posted following submission

Authority Activities – Administration

- HR Plan for staff recruitment
  - Director, Communications and Stakeholder Relations - as of May 8
  - Underway: CEO, Registrar, Director of Information and Information Technology, Director of Finance and Administration
- RPRA branding under development
- RFP issued for Registry
  - Portal and platform, associated services to develop content and case management systems and analytics, migrate data from IFOs during wind down
  - Authority utilizing Fairness Monitor and Independent Advisor to support RFP process

Authority Activities – RRCEA Mandate

- Developing registration fee policy
  - Based on provisions in the RRCEA and principles in the Transitional Operating Agreement
  - Consultation with stakeholders later this year
  - Feedback on how public comments are considered
- Developing compliance and enforcement framework, policies, protocols, Code of Conduct, training plan/materials

Authority Activities – WDTA Mandate

- Executed an MOU with MOECC IEB to clarify roles of the parties in compliance and enforcement matters
  - To ensure enforcement of WDTA prior to appointment of Registrar
- Continuing oversight of
  - Blue Box, MHSW, WEEE and Used Tires programs
  - ISPs: paints and coatings; pesticides, solvents and fertilizers; automotive materials; Soda Stream pressurized containers
- Blue Box
  - CIF budget approved at February board meeting
  - Consideration of staff recommendation on 2017 (and possibly 2018) net system cost at May 23 Board meeting

Authority Activities – WDTA Mandate

- Minister issued notice of wind-up of the Used Tires program and Ontario Tire Stewardship (OTS)
  - By letter sent to OTS on February 17, 2017 that sets out principles with which the plan must be consistent and required content
  - Wind-up plan must be
    - Developed in accordance with Minister's direction, WDTA, regulations
    - Submitted to the Authority by October 31, 2017
  - Consultation with stewards, municipalities and other affected stakeholders required during development of wind-up plan
  - Implementation of wind-up plan to begin on date the Authority approves the plan; anticipated to be by March 31, 2018
  - Used Tires program will cease operations on December 31, 2018

Next Steps

- Once Registrar is in position, recruitment of
  - Deputy Registrar, registration support staff, inspectors, investigators
- Access and Privacy Code
  - To ensure protection of private and commercially sensitive data
  - To facilitate public access to other data
- 2018 Business Plan
  - Due to Minister on October 1
  - Posted following submission to Minister
- French Language Services Delivery Plan
  - To be completed by November 30

In Summary

- Authority's first 170 days have been very busy but much remains to be done
- Authority Board and staff are working diligently to establish
  - Capability to register obligated parties
  - Inspection, investigation, compliance and enforcement capacity
  - Related policies procedures, protocols
- In order to
  - Administer wind up of programs and IFOs as directed by Minister
  - Register obligated parties as directed by Minister
  - Ensure compliance by obligated parties
    - Registration, reporting, performance objectives, operating standards

Contacting the Authority

- Chair – Glenda Gies
  - Email: ggies@rpra.ca
- Acting CEO – Geoff Rathbone
  - Email: grathbone@rpra.ca
- Director, Communications and Stakeholder Relations – Wilson Lee
  - Email: wlee@rpra.ca
  - Twitter: @rpra_ont
- Website: www.rpra.ca
- Address: 4711 Yonge Street, # 1102, Toronto, ON M2N 6K8
- Tel: (416) 226-5113 Toll free: (888) 936-5113

Thank you

Glenda Gies, Chair
ggies@rpra.ca
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Resource Productivity & Recovery Authority | Office de la Productivité et de la Récupération des Ressources

TRANSITION TO RESOURCE RECOVERY AND CIRCULAR ECONOMY ACT

ONTARIO RECYCLER WORKSHOP

DAVE GORDON
MAY 18, 2017

AMO Association of Municipalities Ontario

WASTE FREE ONTARIO ACT (WFOA)
- RECAP -

- In November 2015, the Minister of the Environment and Climate Change introduced Bill 151 – a new legislative framework for waste management
- The legislation is comprised of two proposed Acts:
  - Resource Recovery and Circular Economy Act
  - Waste Diversion Transition Act (WDTA)
  - Also contains Strategy for a Waste Free Ontario: Building the Circular Economy to support Ontario in achieving its goals
- The Bill was proclaimed November 30, 2016

WHAT DOES WFOA MEAN FOR US?

- Producers will be directly responsible for their end-of-life management, including all related costs

- Producers can discharge this responsibility by directly operating collection and recycling services for the used materials or by contracting with service providers, potentially including municipalities

- Now in force, the *Waste Diversion Transition Act* (**WDTA**) represents an interim step ensuring the smooth transition of existing Blue Box, WEEE, MHSW, and Used Tires programs to the new *Resource Recovery and Circular Economy Act* **(RRCEA)** avoiding disruptions to recycling services currently provided or financed by Producers

PRINCIPLES FOR REGULATIONS

- Producers should, at a minimum, be required to ensure the transition of the blue box program and the revised role of municipalities will not negatively impact Ontarians experience with and access to blue box services and other diversion programs.

- Targets must be set high enough to achieve the goals of a circular economy, including zero waste and zero GHG, and include mechanisms to ensure collected materials continue to be recovered once targets are met. A process for regular review of targets is required to foster continual improvement.

- Provincial targets for reduction, reuse and recovery should be material specific and adaptable rather than set as a broad “basket of goods” for designated materials.

PRINCIPLES (CONT'D)

- Designated materials should be recovered regardless of where they are generated. While different mechanisms may be required to recover designated materials from Commercial & Industrial waste, recovery targets must ensure that producers are required to take full responsibility for all designated materials managed as municipal waste.

- Where producers do not meet their commitments, municipalities should be fully compensated for any financial impacts associated with the failure to meet these commitments.

- Mechanisms must be put in place to ensure that Producers have viable opportunities to establish multiple approaches for meeting commitments and to ensure full and fair competition among these approaches.

PRINCIPLES (CONT'D)

- Municipalities that continue to provide recovery services for the management of designated materials must be fully compensated by Producers for the net, actual costs for the provision of agreed management services for designated materials.

- Where municipalities no longer provide services on behalf of Producers or their designated recovery agents, a mechanism needs to be agreed to and implemented to compensate for the investments already made by municipalities and transition costs.

- A firm deadline (with intermediate check-in deadlines) should be set for the transition of all existing programs to the RRCEA framework.

PRINCIPLES (CONT'D)

- The Producer's financial obligation for operating the existing Blue Box Program should be increased incrementally during the transition period.

- Processes and target dates should be identified for designating additional materials for Producer responsibility regulations.

TECHNICAL WORKING GROUP

Mac Bain, Monika Turner, Dave Gordon, Amber Crawford

Jim McKay, Vince Sferrazza

RPWCO

Jon Arsenault, Mirka Januszkiewicz, Debbie Korolnek, Norm Lee, Laura McDowell, Jay Stanford

Ben Bennett, Karyn Hogan, Adam McCue, Francis Veilleux

UPCOMING ISSUES

- Blue Box Transition
- Transition of other programs
- Food and Organic Waste Action Plan

TRANSITION OF BLUE BOX

- Blue Box scheduled to transition to RRCEA in 2023 in MOECC Strategy document
- Each year we wait to transition costs municipal taxpayers $130M and rising
- AMO Board of Directors has resolved to move the Blue Box to full producer funding by January 2019
- Work has started on this file by Waste Technical Working Group

TRANSITION OF EXISTING PROGRAMS

- **Tires**
  - Municipalities currently paid a collector fee and transportation and processing is provided by Ontario Tire Stewardship (OTS)
  - Recently have had issues with OTS on data collection
  - Transition is now underway

- **Municipal Hazardous and Special Wastes (MHSW)**
  - MOECC has commissioned study to examine which materials should be included
  - Need to increase amount of designated materials
  - Currently paid for by Producers, however many municipalities not receiving full compensation
  - Municipalities manage a significant amount of this material

- **Waste Electronic and Electrical Equipment (WEEE)**
  - Need to increase amount of designated materials
  - Currently paid for by Producers

ORGANICS ACTION PLAN

- Province is looking for early wins on Organics given GHG impacts
- Calling for a food waste ban in 2022
- Does that mean mandatory food waste collection programs?

AMO Association of Municipalities Ontario

NEXT STEPS

We will continue to provide support to our members including:

- Communications to keep members up to date
- Working with Producers to determine if we can agree on terms to move the Blue Box transition forward
- Providing comments and input to MOECC on multitude of issues:
  - Transition of Tires program
  - Wind up of ISP's
  - Transition timeline and process for existing diversion programs
- Working with Authority on Steward Obligation Blue Box program costs under Waste Diversion Transition Act
- Refining and providing further rationale for the positions and principles we have outlined
- Keeping members updated on further developments throughout this process

THE MUNICIPAL PARTNERSHIP IN BC

ALLEN LANGDON, MANAGING DIRECTOR

RECYCLEBC™

WHO WE ARE

Recycle BC is a non-profit organization responsible for residential packaging and printed paper recycling throughout British Columbia.

Recycle BC ensures household materials are collected, sorted and responsibly recycled.

Our program is funded by over 1,200 businesses that include retailers, manufacturers and restaurants that supply packaging and printed paper to BC residents, shifting costs away from homeowners.

TIMELINE AND REGULATORY CONTEXT

- October 2004 – BC filed *Recycling Regulation*
- May 2011 – BC amended *Recycling Regulation* to include Schedule 5
  - Defines packaging and printed paper (PPP) product category
  - Specifies residential premises as source of PPP
  - Obligates PPP producers (e.g. manufacturers, importers and retailers) to submit stewardship program plan to Ministry by November 19, 2012
- April 2013 – Ministry of Environment approves Recycle BC stewardship plan
- May 2014 – Launch of Recycle BC Program

RECYCLEBC

RECYCLE BC'S STEWARDSHIP PLAN

- Producers of packaging and paper are responsible for:
  - Reasonable access to packaging and paper collection services
  - Management of collected packaging and paper
    - Within the context of the pollution prevention hierarchy
    - To achieve 75% recovery within a reasonable time
  - Establishing relationships with:
    - Collectors - local governments, private sector companies and not-for-profit organizations
    - Post-collection service provider
  - Financing implementation of the Stewardship Plan ($80 million per year)

PROGRAM OVERVIEW

RECYCLE BC COLLECTION SYSTEM

- Curbside recycling
  - Local governments receiving Recycle BC incentives on a per-household basis
  - Direct service by Recycle BC in 12 jurisdictions
- Multi-family recycling
  - Local governments and private companies receiving Recycle BC incentives on a per-household basis
- Depots
  - Local governments, non-profits and private companies receiving Recycle BC incentives on a per-tonne basis

CURBSIDE INCENTIVES

Curbside Collection Financial Incentive	
Single-stream – Categories 1, 2, 3 (a), 3 (b), 6 and 7	$ per Curbside Household per Year
>2 Curbside Households per hectare	$32.00
0.2 to 2 Curbside Households per hectare	$34.00
<0.2 Curbside Households per hectare	$36.00
Multi-stream – Categories 1, 2 and 3 (b) separate from Categories 3 (a), 6 and 7	$ per Curbside Household per Year
>2 Curbside Households per hectare	$35.00
0.2 to 2 Curbside Households per hectare	$37.00
<0.2 Curbside Households per hectare	$39.00
Top Up available to local governments accepting Curbside Collection incentive	$ per Curbside Household per Year
Resident Education Top Up	$0.75
Depot Top Up	$0.25
Service Administration Top Up	$2.50
Curbside Collection Financial Incentive	
Category 8 - Glass Packaging	$ per Tonne
	$80.00

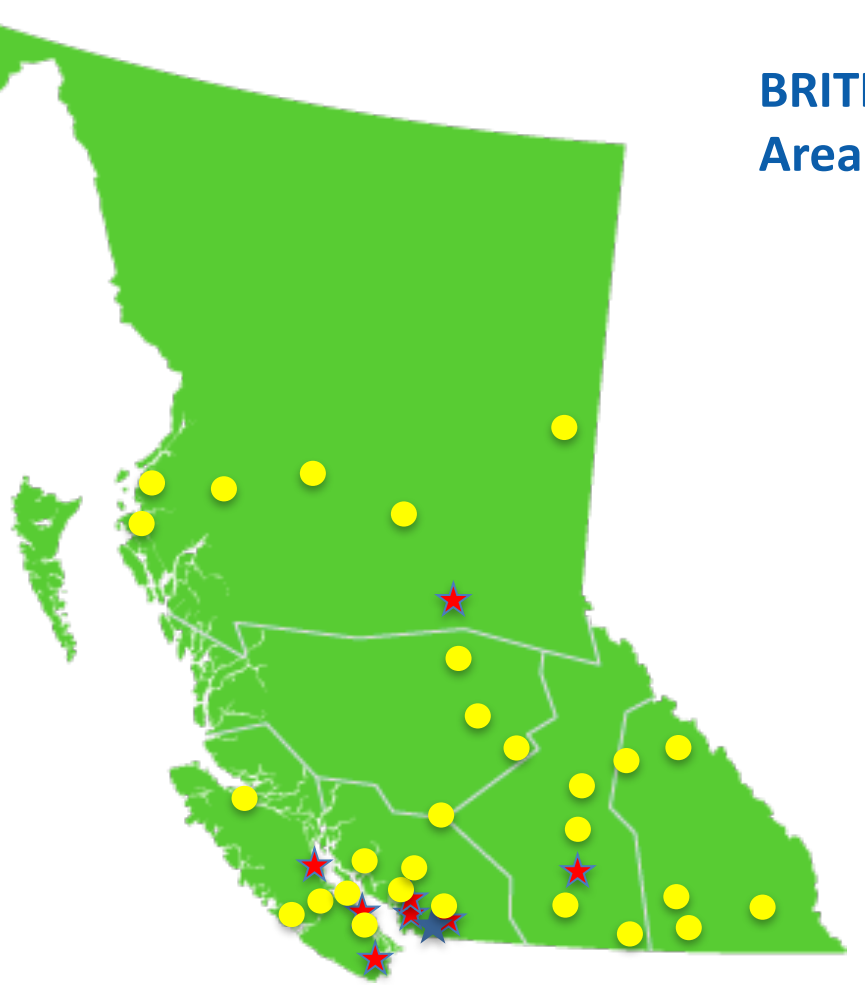
RECYCLEBC

POST-COLLECTION SYSTEM

- Recycle BC is responsible for all post-collection activities by hiring contractors to:
  - Pick up packaging and paper from depots
  - Receive packaging and paper from curbside and multi-family building collectors
  - Transport, process and market packaging and paper
- Green by Nature (GBN) operates the entire province-wide post collection system

POST-COLLECTION NETWORK

- **31** Receiving, Consolidation and Transfer Facilities (RCTs)
- ★ **15** Pre-conditioning Facilities (PCFs)
- ★ **1** Container Recovery Facility (CRF)



BRITISH COLUMBIA
Area: 944,735 km²

RECYCLEBC

COLLECTION AND POST-COLLECTION

RECYCLEBC

RECYCLING END MARKETS

- Recycle BC gives priority to end markets located in countries that are members of the Organization for Economic Co-operation and Development (OECD)
- Recycle BC does permit marketing to packaging and printed paper end markets located in countries that are not members of the OECD only if the end market meets or exceeds environmental, health and safety standards equivalent to OECD standards
- End market locations:
  - **Plastics** - Plastics are sold to end markets in British Columbia
  - **Paper/Fibres** – The majority of fibres are sold to end markets in China, with the rest either remaining in BC or going to end markets in the United States and South Korea
  - **Glass** - Glass is sold to end markets in British Columbia
  - **Metals** - Metals are largely sold to end markets in Ontario, with the rest either remaining in BC or going to end markets in the United States

2015 PROGRAM PERFORMANCE HIGHLIGHTS

- Achieved a **77% recovery rate** for members' materials
  - Continuing to exceed the mandatory 75% target
- In 2015, Recycle BC collected over **186,509 tonnes** of recyclables from households and depots – **43.6kg** recovered per capita
- By end of 2015, **97%** of BC households could recycle their packaging and paper at depots, and **1.255 million** households received curbside and multi-family collection services
- Recycle BC continued to increase access to reliable and convenient recycling services, with **24 new depots** and an additional **15,000** households receiving curbside or multi-family pick-up service

RECYCLEBC

INTERACTING WITH BC RESIDENTS

Over 186,000 tonnes collected annually

Over 1.7 million households serviced by curbside, multi-family & depot collection

97% of households have access to depot services

156 communities participate in Recycle BC's program

Over 3.1 million British Columbian's serviced by curbside & multi-family collection

OUR SYSTEM AT WORK

RECYCLEBC

CITY OF VANCOUVER TRANSITION

CITY OF VANCOUVER TRANSITION

- City of Vancouver (CoV) had been part of the Recycle BC program since May 2014, receiving Recycle BC incentives for:
  - Curbside collection
  - Multi-family collection
- In November 2015, the CoV announced decision to transition responsibility for curbside and multi-family service directly to Recycle BC
- CoV indicated that: “MMBC has demonstrated their ability to implement recycling systems in other municipalities and have achieved high levels of recycling.”
- Recycle BC released an RFP for collection services Dec 2015 and took over service on October 3, 2016

LESSONS LEARNED FROM BC

THE STARTING POINT

- Most local governments were skeptical of Recycle BC when we released our initial contracts back in June 2013
  - Recycle BC did not have a track record as a brand new stewardship agency with one staff person
  - Local governments were uncomfortable in the role of contractor (they were used to procuring services)
  - Penalties in contracts were substantial for some local governments
- Local governments were critical of the contracts we provided despite the fact they were based on the contracts they used with their own service providers (i.e. waste management companies)
- Compressed timeframe of just under three months to agree to our offer (to meet launch date in the regulation) led to increased pressure on local governments

RECYCLEBC

THE NEGOTIATIONS

- Local governments sought an extension to the negotiation window from both Recycle BC and the Ministry of Environment to no avail
- Many municipalities went public with their opposition to our offer and our contract to try and increase the pressure on Recycle BC, an unknown entity at the time
- At their annual convention, local governments passed a motion calling on government to extend timeline for negotiation and appointed a committee to negotiate with Recycle BC

ENGAGEMENT WAS THE KEY

- In response to the backlash, Recycle BC arranged meetings with over 60 individual local governments to clarify our contract and discuss their concerns
- Where possible, we looked at modifications within the contracts to address concerns without changing the basic framework
- We worked to keep a low profile while engaging directly with local governments and keeping Ministry staff apprised of our progress so they would not intervene

THE OUTCOME

- Over 65 local governments signed on to the Recycle BC program for curbside and/or multi-family collection
- Based on feedback from our meetings with local governments, Recycle BC made amendments to our contracts to address legitimate municipal concerns (especially related to penalties)
- Recycle BC was able to secure a critical mass of collectors to launch the program as planned in May 2014

TODAY'S MUNICIPAL PARTNERSHIP

- Recycle BC is no longer an unknown entity and has developed a proven track record for working with local governments (and paying our bills!)
- We have worked to establish a collaborative relationship with our municipal collectors and have a professional team that work with them in a supportive and constructive manner to address issues and develop solutions
- Residents for the most part have not noticed or been impacted by the change, which for many municipalities has been the most important outcome

WHAT DID WE LEARN?

- **Contracts** – Our contracts were essential in establishing the parameters of the relationship between Recycle BC and local governments
- **Dialogue** - Working with individual local governments was essential both during the negotiations and since the launch of the program
- **Flexibility** – We have worked to address issues in a practical and pragmatic manner wherever possible and so far have been able to avoid using the penalties in our contracts to solve our business issues with collectors

WHAT'S NEXT?

VANCOUVER STREETSCAPE PILOT

- Duration: August 2016 to May 2017; Bins to remain in place for summer months

- Material streams to be collected include:
  - Mixed Paper
  - Mixed Containers
  - Organics (in some locations)
  - Garbage/Landfill

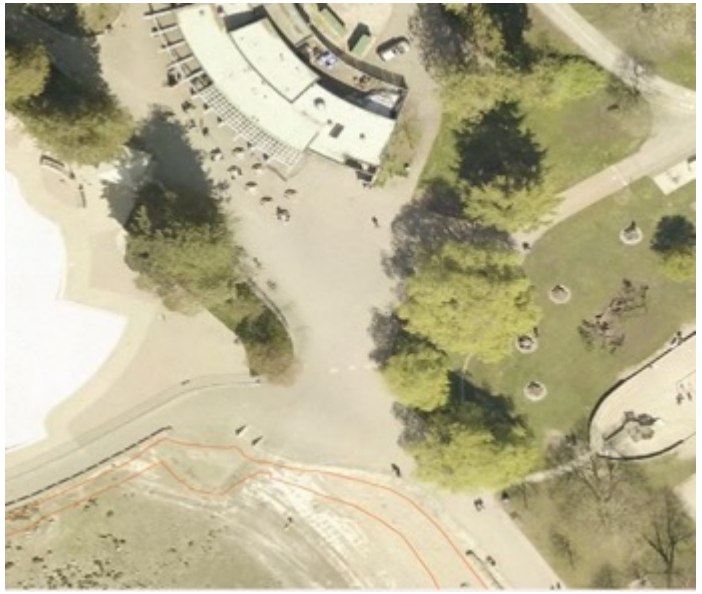
- Waste Audit & Behavioural Study components:
  - 3 x 1 week (7-day) waste audits conducted at start, middle and end of pilot
  - Will measure progress in capture rate, accuracy rate, and resident behaviour over time

STREETSCAPE BIN DESIGN

- Design created through collaboration between Emily Carr University of Art + Design & Metro Vancouver

PILOT STUDY LOCATIONS

- Streetscape Area - “U” shape, section of Davie St, Denman St & Robson St in Vancouver’s West End
- Parkscape Area – Second Beach, near concession stand and playground



RECYCLEBC

PARTNERSHIP WITH LONDON DRUGS

- The program began with on August 1, 2016 with plastic bags, overwrap and foam packaging being accepted at all 11 stores in the City of Vancouver.
    - Plastic bags and overwrap, including grocery bags, bread bags, produce bags, outer bags for diapers etc.
    - White and coloured plastic foam packaging, including foam meat trays, foam egg cartons and foam cushion packaging for electronics etc.
- The program was expanded on April 1, 2017 to include all nine London Drugs stores on Vancouver Island.

PUBLIC CONSULTATION

- Timing: November 15 and 16, 2017
- Nine topics covered over the two days; some running simultaneously
- Topics will include items such as data review, contamination and collection updates
- Up to three representatives from each collector
- Communications and registration
  - Survey (April)
  - Registration (May/June)
  - Pre-consultation focus groups (Summer)
  - Confirmation (September)
  - Pre-read workbook (October)

RECYCLEBC

RECYCLEBC™

Making a difference together.

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RecycleBC.ca

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Questions

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Enjoy Your Break

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Welcome Back!

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The Changing Mix of the Ontario Blue Box: What Does This Mean for Municipalities?

Dr. Calvin Lakhan
York University, Faculty of Environmental Studies
Wastewiki.info.yorku.ca | lakhanc@yorku.ca
416-736-2100 ext: 22612

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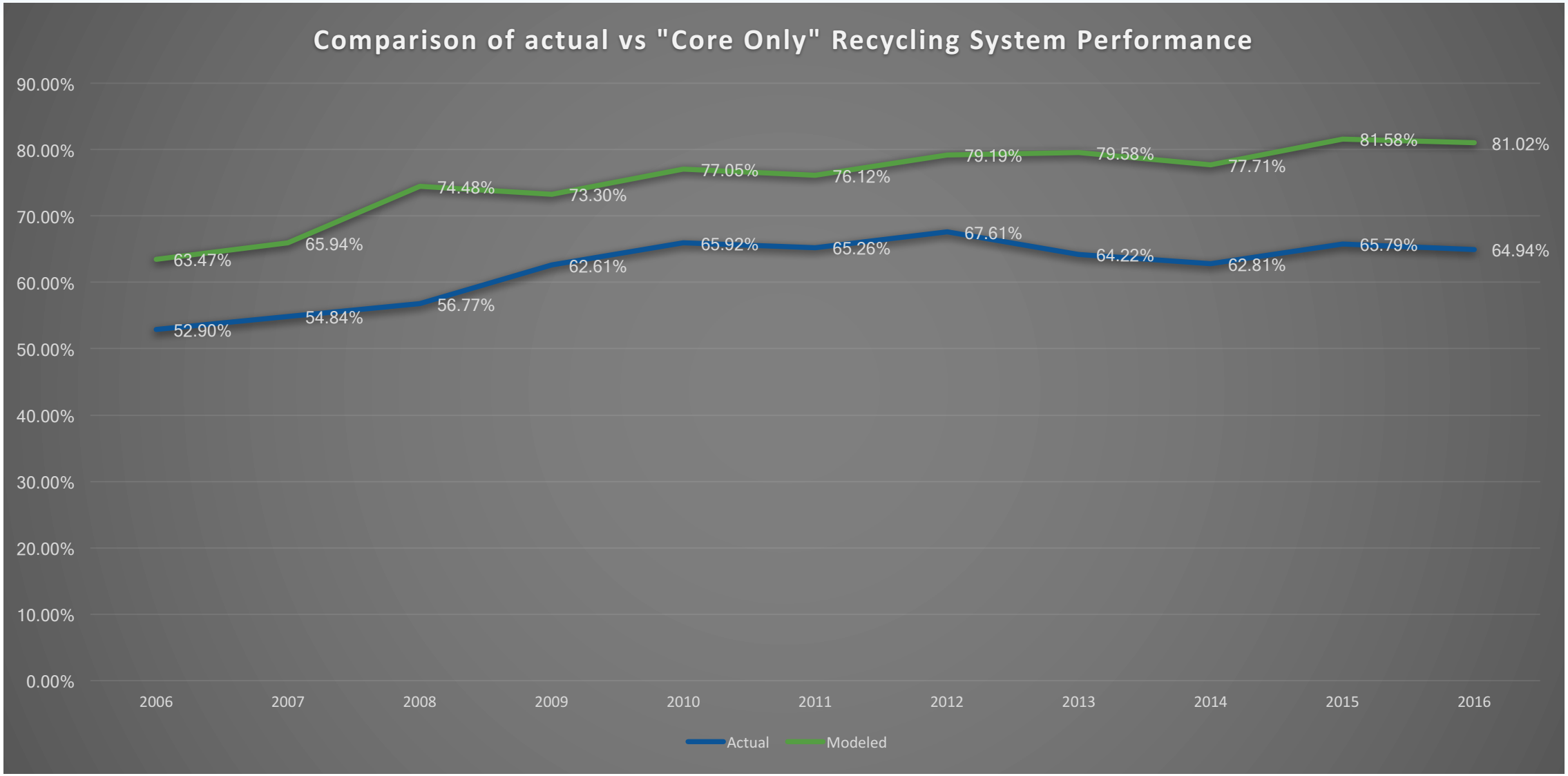
The Packaging Mix is Changing

- Light weight packaging making up an increasingly larger share of the Blue Box program

- Difficult to manage:
  - low recyclability rates
  - low revenues
  - poor end markets

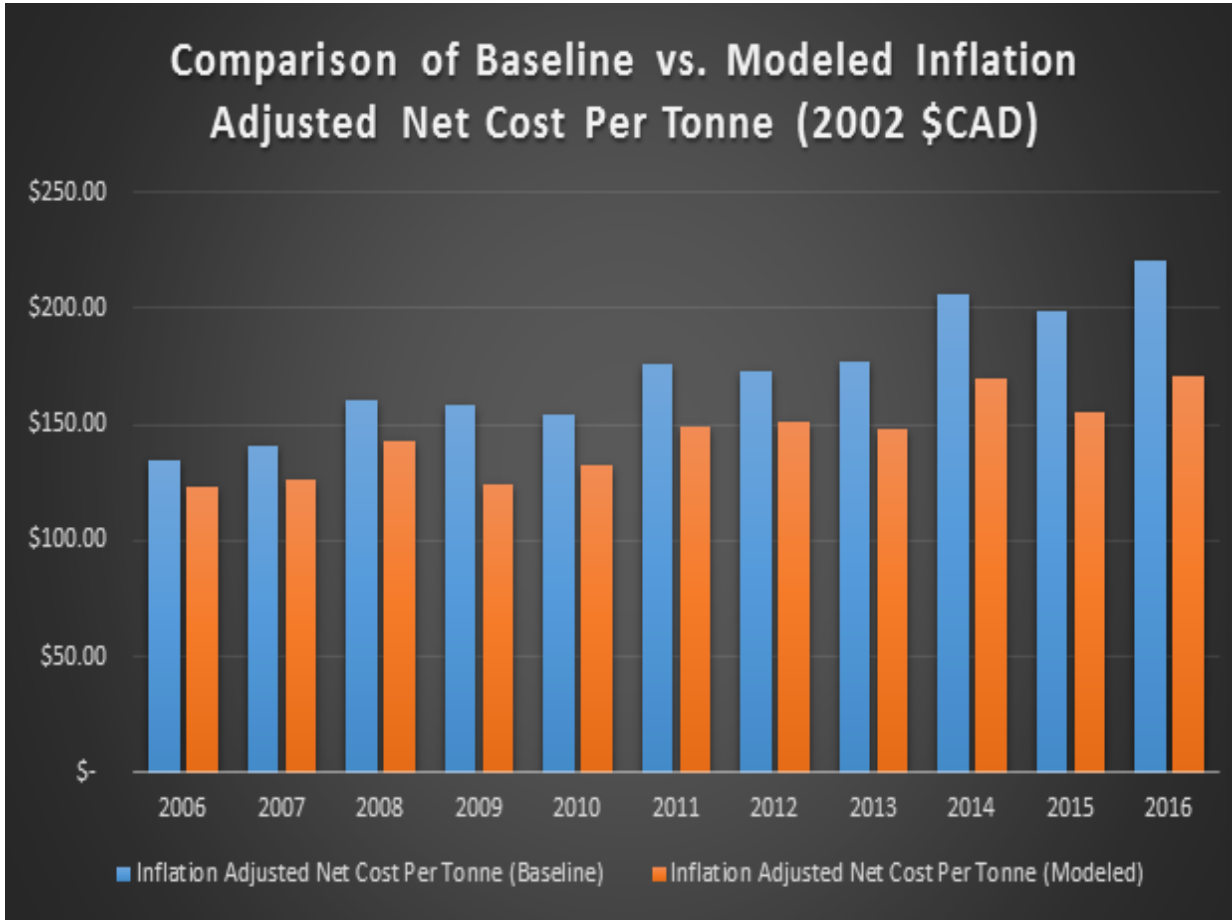
- What is the impact on programs?

A Tale of Two Systems (1)

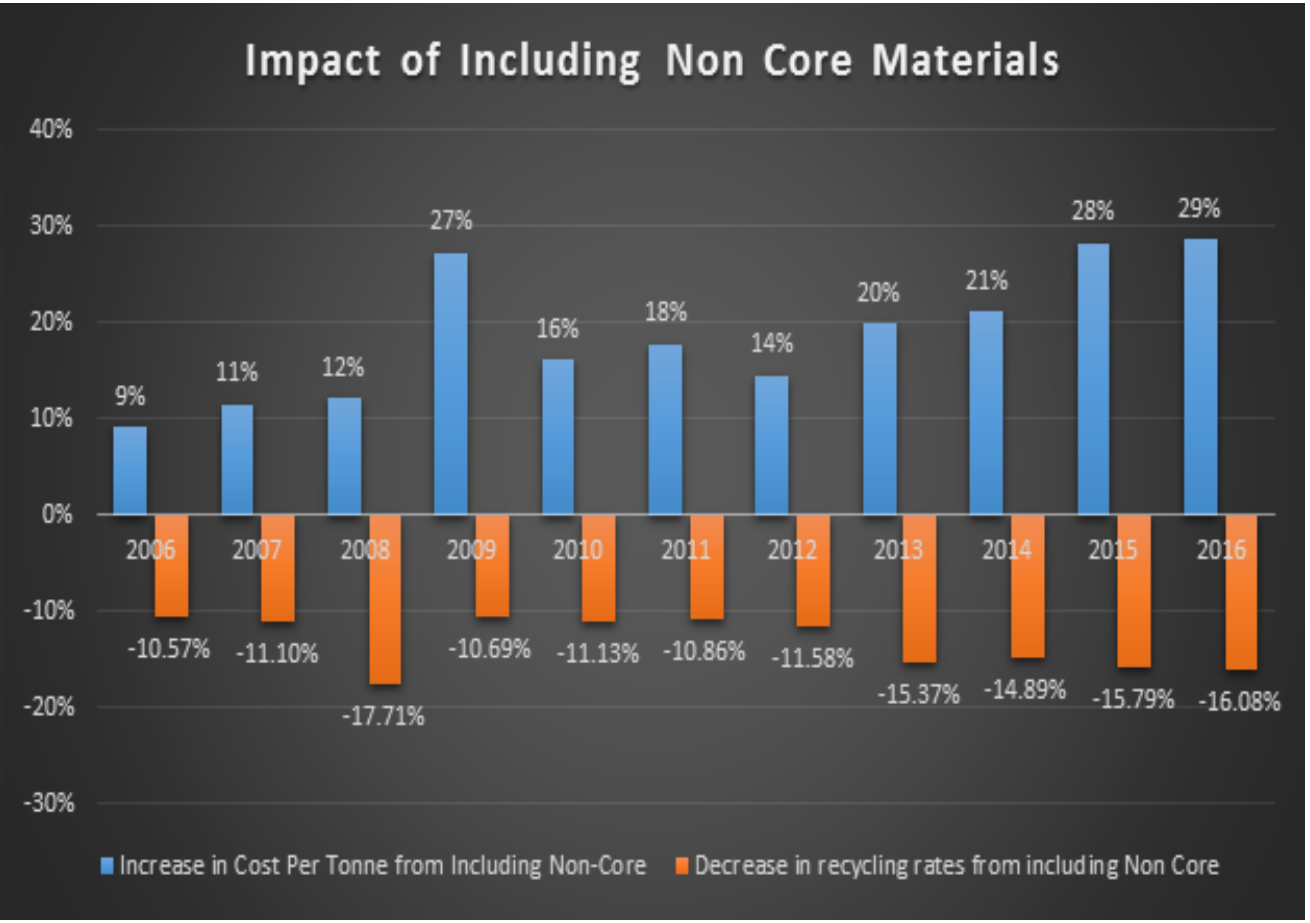


A Tale of Two Systems (2)

Net Cost Per Tonne:



Impact of Light Weight Packaging:



What Does It Mean?

- Light weight packaging creates significant cost increases over time
- Endogeneity Hypothesis: The **presence** of light weight packaging increases the cost of managing other materials within the system
- Toronto Case Study: (95% interval) – More than 70% of increases in Toronto's net costs are explained by increased light weight materials

Considerations for Municipalities when Collecting Audit Data

- Collecting data without consideration of meaning or context, does not tell us very much
- To ensure data collected can be used to facilitate credible data analysis, need to develop sampling strategies that take into account representation & stratification
- Municipalities should collaborate with academic institutions when designing studies to collect waste audit data
  - *a little planning goes a long way!*

Today's Speakers

- Bradley Cutler, CIF
  - Co-Ordinated Waste Composition Studies Update
- Bradley Whitelaw, Niagara Region
  - 5 Year Waste Composition Trends in Niagara Region
- Renée Dello, City of Toronto
  - Toronto Waste Audits Trend Analysis - CIF Project # 944
- Gary Everett, City of Toronto
  - Continuous Improvement at "thecif.ca"

Co-Ordinated Waste Composition Studies Update

Bradley Cutler, Project Coordinator

CIF

CONTINUOUS IMPROVEMENT FUND

CIF & SO Coordinated Waste Composition Studies

- Single Family (SF) and Multi-Residential (MR)
  - Composition
  - Generation rates
  - Typical capture rates
- Accurate, concise and robust data
  - Standardized
  - Comparable

What Results Are Used For

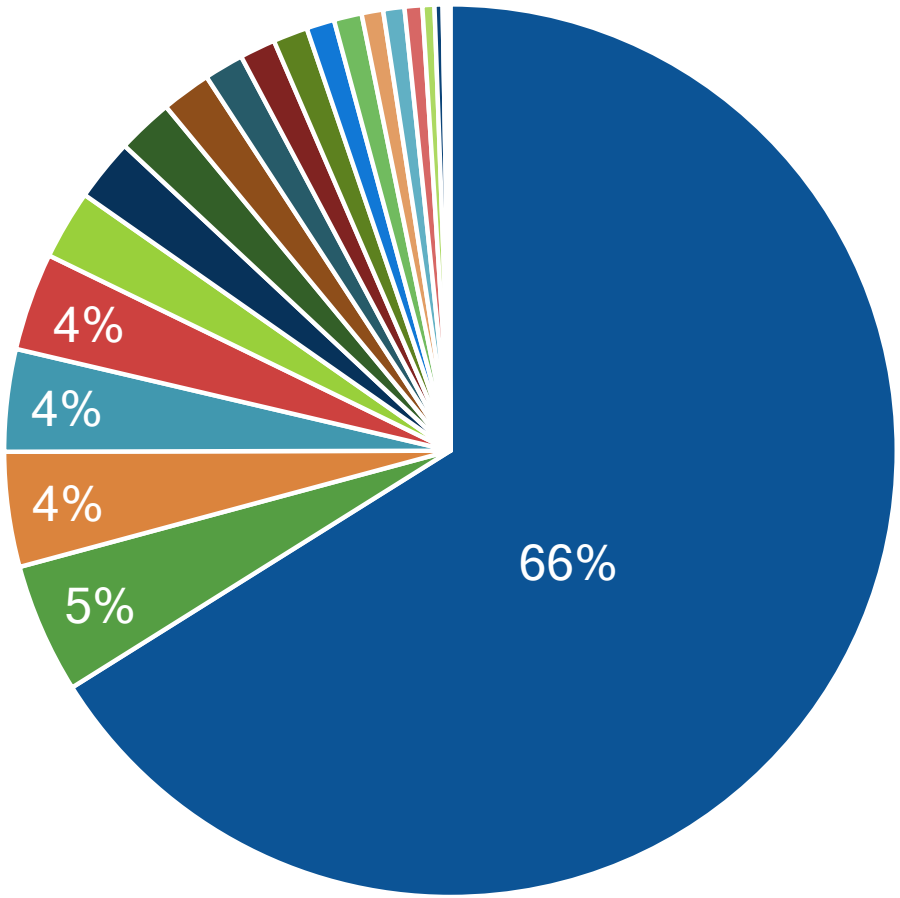
- Assess Blue Box material generation rates
- Development of a public dataset
- Measure performance of existing programs
- Validate best practice assumptions

Photo courtesy of NiagaraRegion.ca

Where Are the Studies at Today

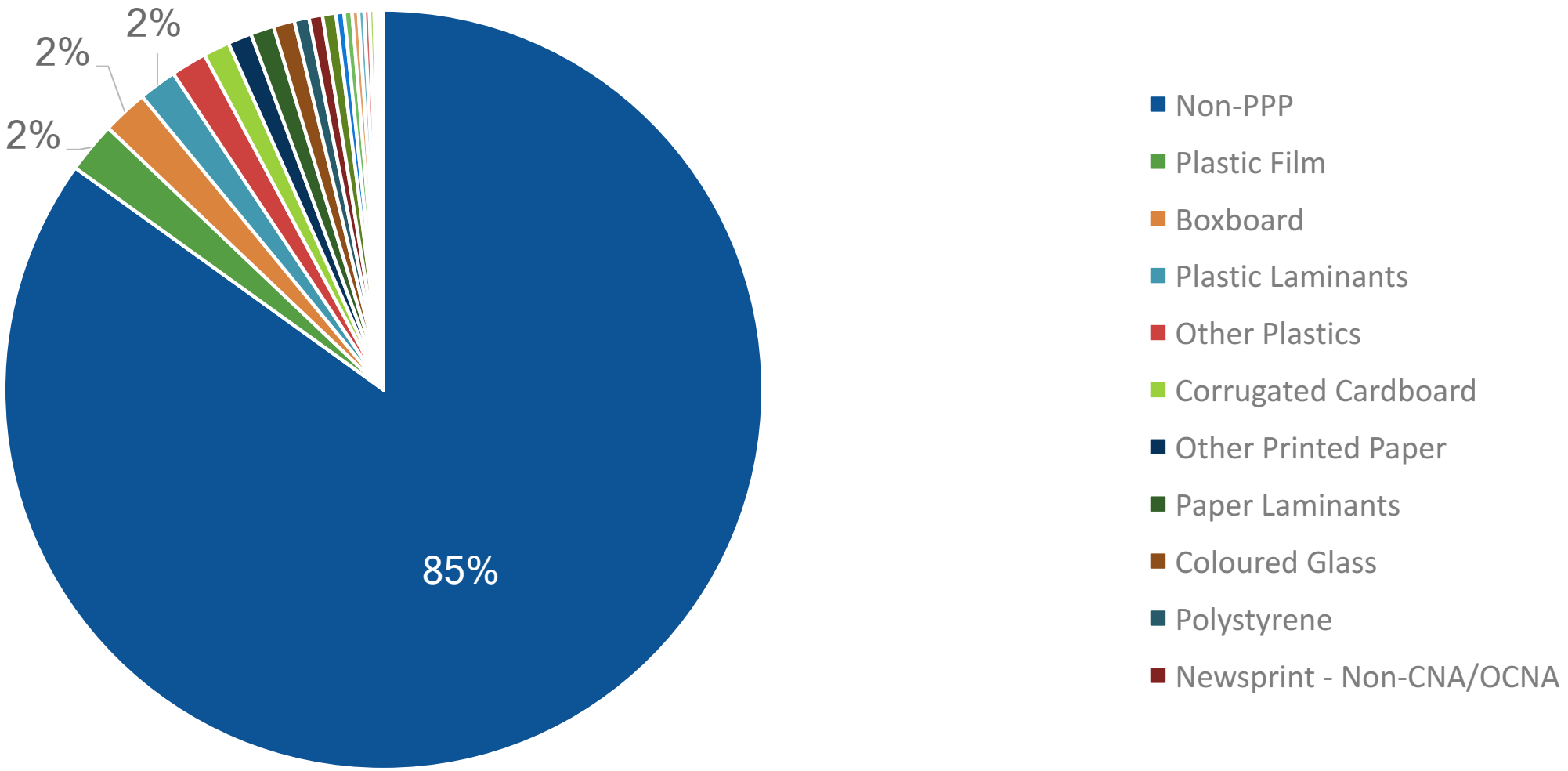
- Year 1 Studies now Complete
- Year 1 Data Analysis – August 2017
- Year 2 Studies to launch – Summer 2017

What's At the Curb

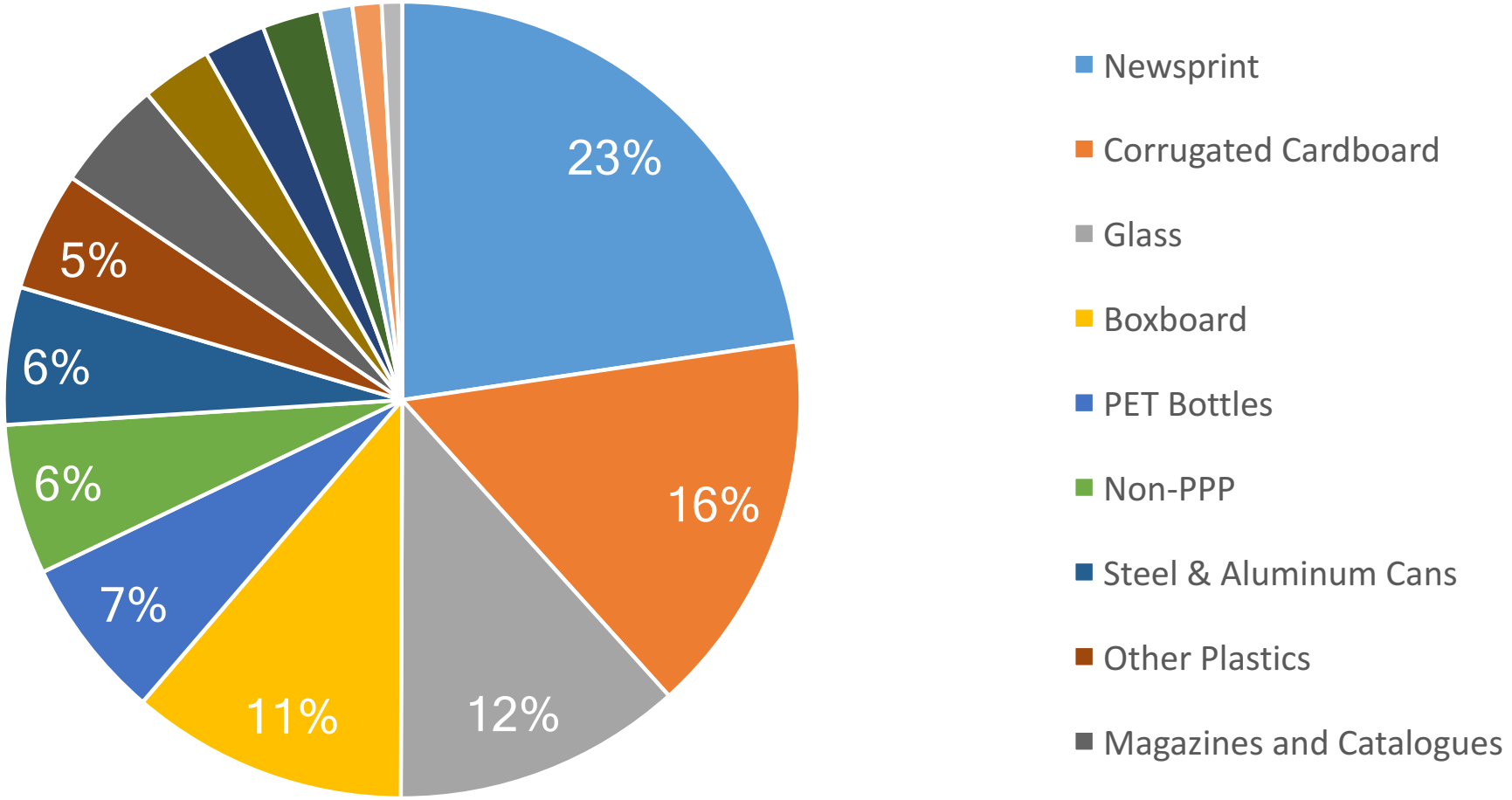


- Non-PPP
- Corrugated Cardboard
- Boxboard
- Newsprint - Non-CNA/OCNA
- Glass
- Newsprint - CNA/OCNA
- Other Plastics
- PET Bottles
- Plastic Film
- Other Printed Paper
- Magazines and Catalogues
- Plastic Laminants
- Paper Laminants
- Steel Food & Beverage Cans
- HDPE Bottles
- Aluminum Food & Beverage Cans
- Polystyrene

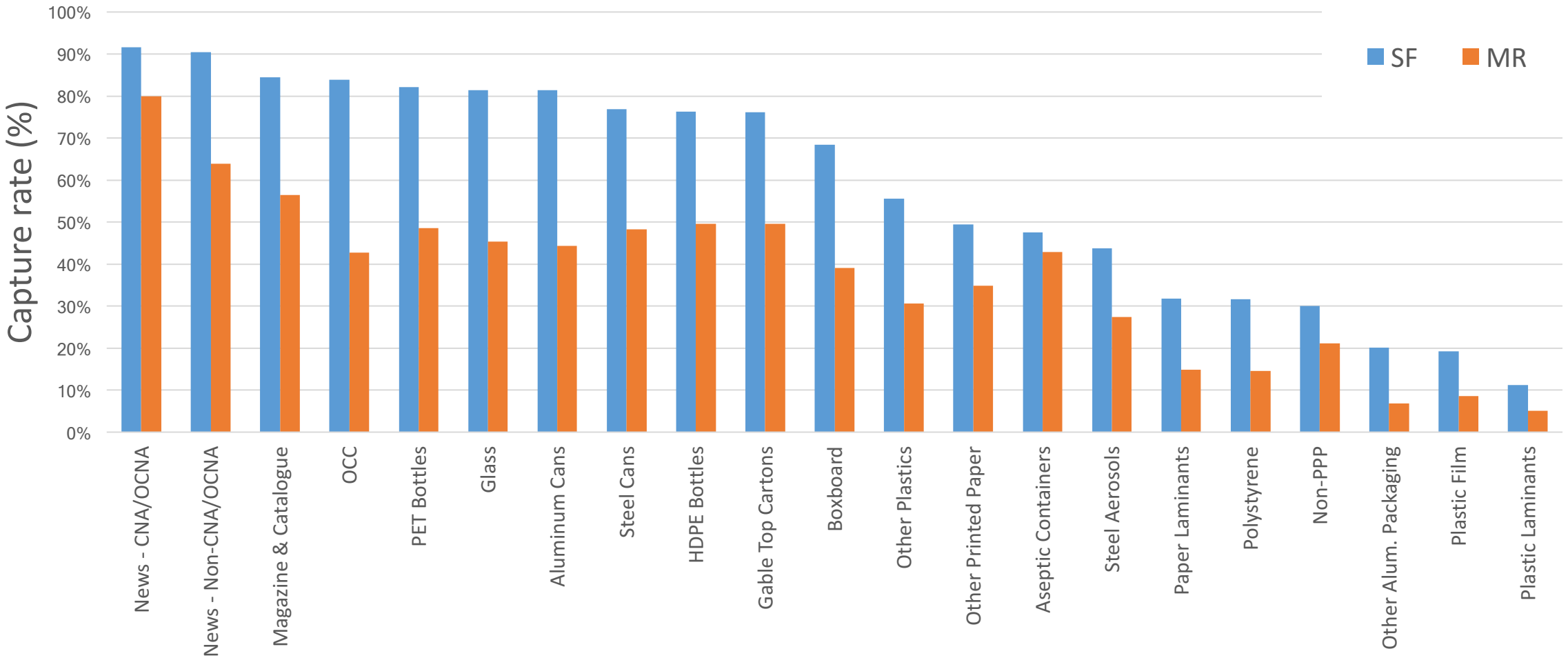
What's In the Garbage



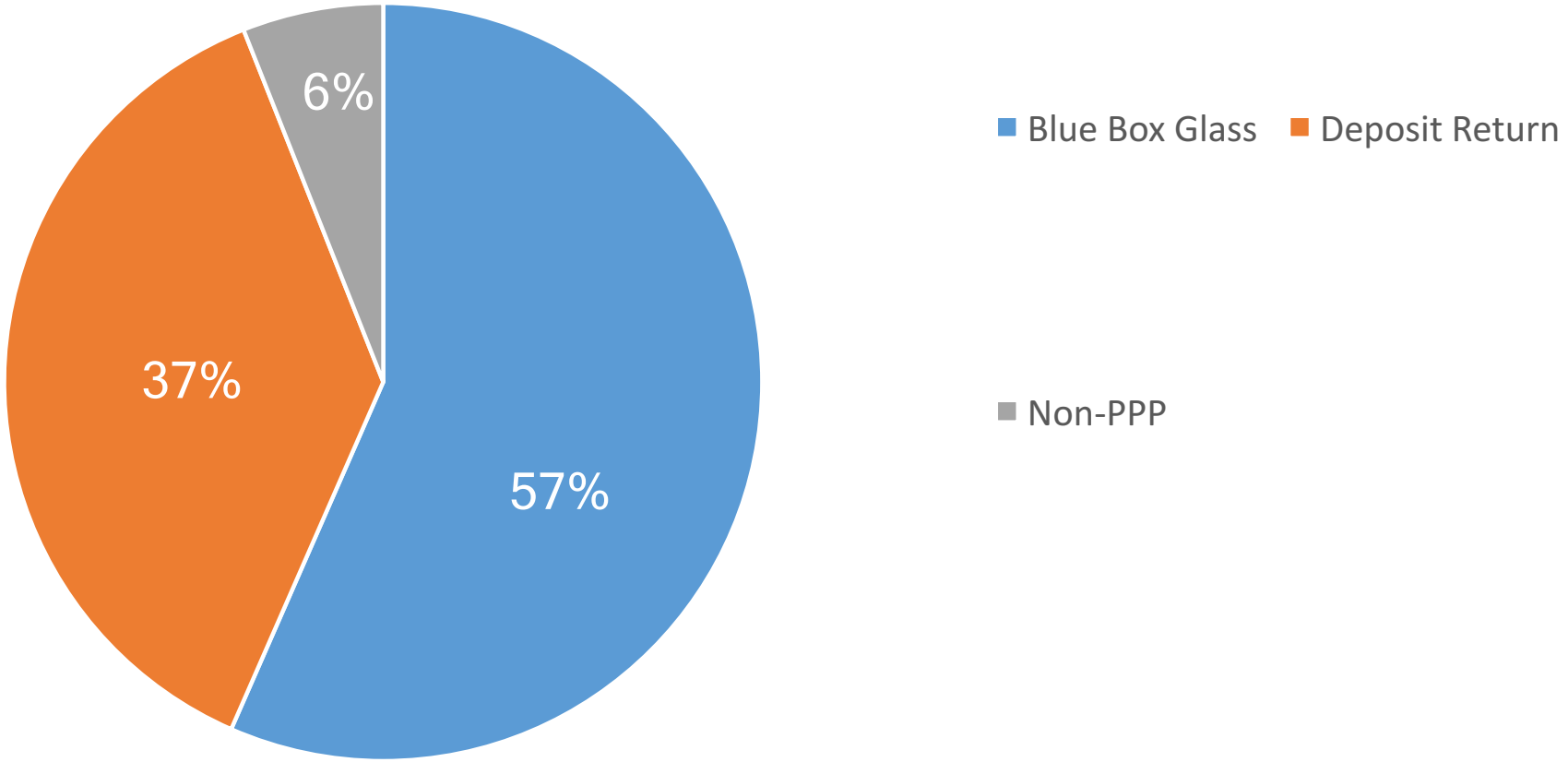
What's In the Blue Box



Capture Rates



Blue Box vs. Deposit Return vs. Other



What Are the Next Steps

Photo courtesy of StewardshipOntario.ca

- Interim → Final results
  - Analysis
  - Reports to partners
  - Published summary dataset
- Determine Year 3 Partner Municipalities
  - REOI applications
  - Other interested parties

5 Year Waste Composition Trends in Niagara Region

Brad Whitelaw

Program Manager, Niagara Region

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CIF Project 859 Highlights

- **Project Goal:** Assess current recycling trends and service level improvements from Niagara's 2010-15 Blue Box Program Plan (BBPP)

- **Impact:** Identify critical information for development of 2016-21 BBPP

- **More Information:**
  - brad.whitelaw@niagararegion.ca
  - (905) 980-6000 ext. 3316
  - www.niagararegion.ca

Background

- **Baseline - 2010-11 Waste Composition Study**
  - 170 Single-Family Households (SFH)
  - 12 Niagara municipalities

- **Collection Service Level Improvements**
  - Weekly co-collection of Grey & Blue Boxes
  - One garbage container limit with partial user pay
  - 37% increased capacity of recycling containers
  - Additional recyclable materials accepted (e.g. Mixed Rigid Plastics)
  - Targeted Promotion & Education (e.g. “Odd Couple” Plastic Bag Campaign)

CIF Project 859

- **Comparison with 2010/11 Waste Composition Study Results**
  - Consistent study periods, households, & material categories
  - Focuses (i.e. program performance measures)
    - Waste generation rates
    - Participation & set-out rates
    - Capture & contamination rates
  - Identify trends and forecast future changes

Waste Generation Rates

Performance Measures	2010-11	2015-16	% Change
Overall Waste Generation (kg/hh/yr):	701.68	619.16	11.73% ▼
- Garbage Stream	341.88	319.29	6.54% ▼
- Green Bin Organics Stream	127.49	104.15	18.25% ▼
- Recycling Stream (combined)	232.32	195.72	15.80% ▼
- Grey Box	152.38	119.63	21.49% ▼
- Blue Box	79.93	76.09	4.80% ▼

Recycling Participation & Set-out Rates

Performance Measures	2010-11	2015-16	% Change
Recycling Participation Rate (% of households)	**72.76%**	**82.15%**	**12.90% ▲**
- Grey Box	64.13%	72.80%	13.52% ▲
- Blue Box	69.17%	78.40%	13.34% ▲
Set-Out Rate (# recycling items/household/week):	**1.30**	**1.45**	**11.48% ▲**
- Grey Box	0.80	0.71	11.25% ▼
- Blue Box	0.89	0.73	17.98% ▼
Set-Out Rate (# full container equivalents/set-out):	**1.67**	**1.82**	**9.08% ▲**
- Grey Box	1.17	1.02	12.82% ▼
- Blue Box	1.21	1.02	15.70% ▼

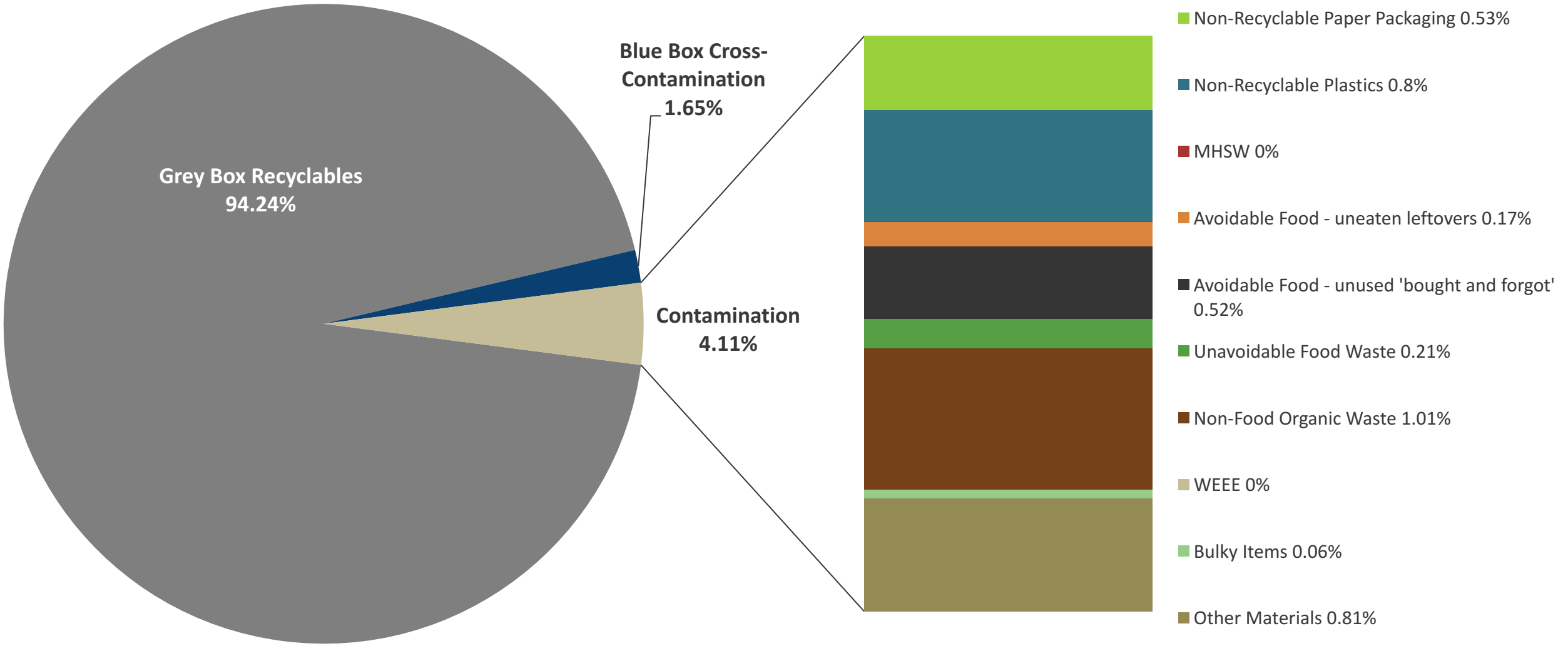
Recycling Capture and Contamination Rates

Performance Measures	2010-11	2015-16	% Change
Capture Rate (%): Recycling Stream (combined Grey & Blue Box)	81.22%	80.18%	1.28% ▼
Contamination Rate (%): Recycling Stream (combined Grey & Blue Box)	10.57%	7.69%	27.23% ▼

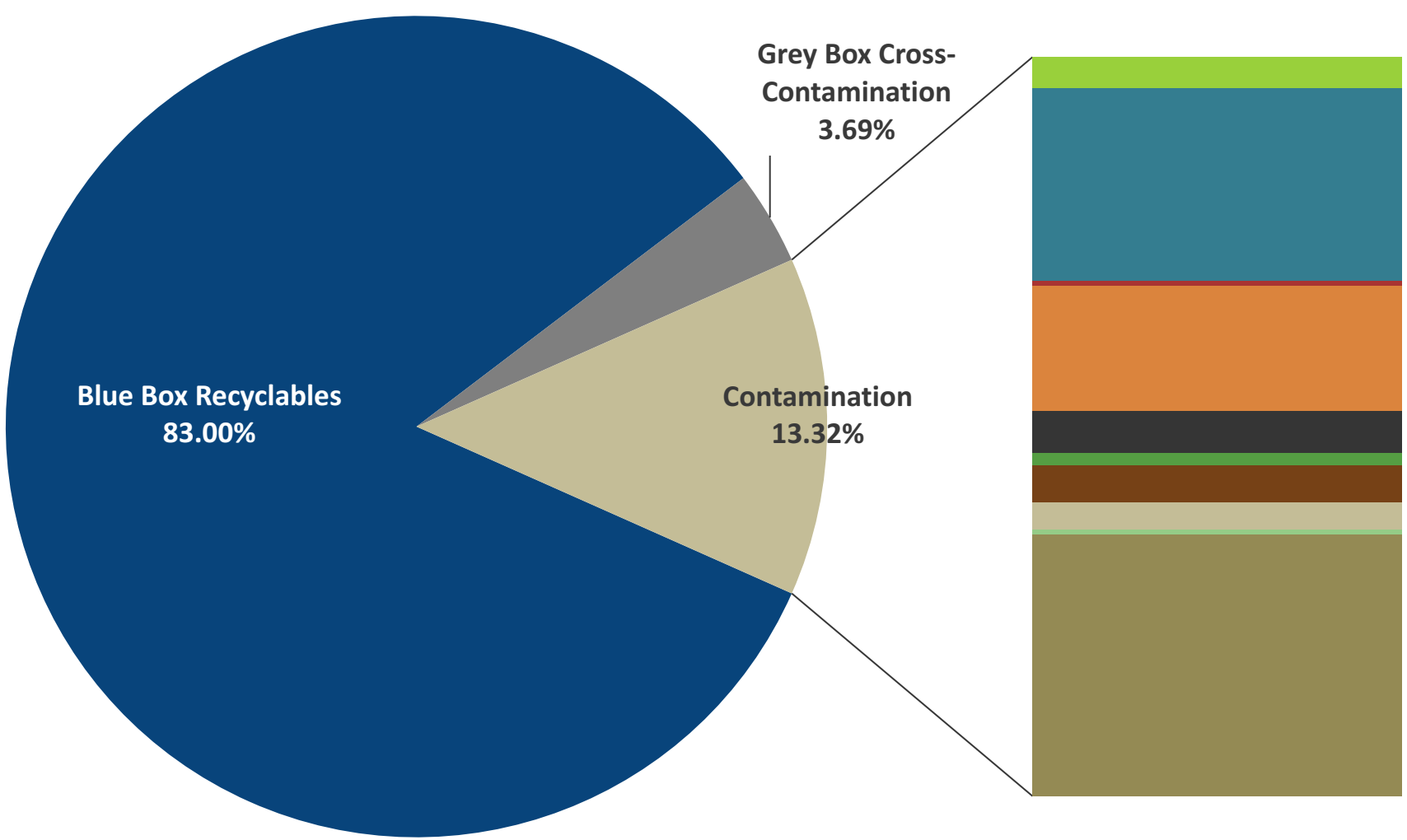
2015-16 Cross-Contamination of Recycling Streams

Material	Accepted Recycling Stream	% In Correct Stream	% in Incorrect Stream
Flexible Film Plastic – LDPE & HDPE	Grey	63.91% ✓	36.09% ✗
Gable Top Containers	Blue	69.82% ✓	30.18% ✗
Spiral Wound Containers	Blue	83.76% ✓	16.24% ✗
Aseptic Containers (excluding alcoholic beverages)	Blue	84.94% ✓	15.06% ✗
#6 PS - Expanded Polystyrene	Blue	88.44% ✓	11.56% ✗

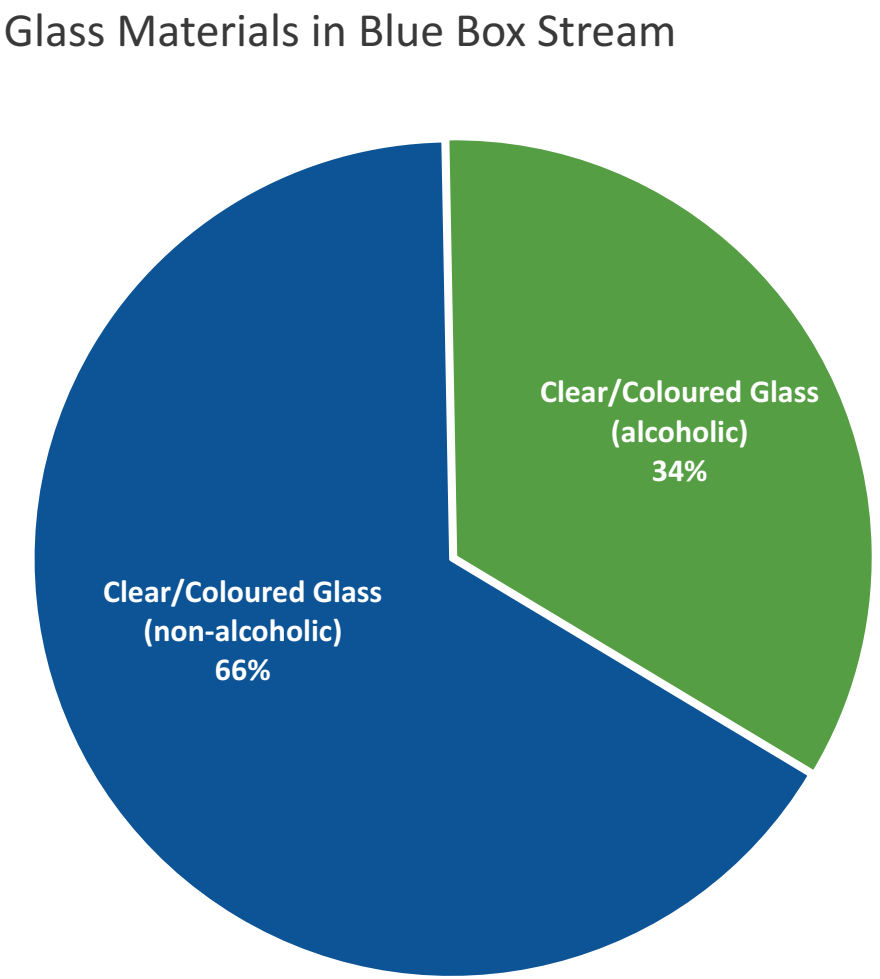
2015-16 Grey Box Composition (119.63 kg/hh/yr)



2015-16 Blue Box Composition (76.09 kg/hh/yr)



2015-16 Glass Audit Results



Summary of Study Comparisons

- Generation rates are declining:
  - Capture rates remain constant, due to packaging shifts:
  - Daily and weekly newspapers (↓ 42%)
  - Laminated/other plastic bags (↑ 96%)

- Recycling program participation is improving:
  - Set-out rates are increasing
  - Contamination declining

General Market Trends

- Light-weighting trends are expected to continue
- Producers are catering to the “on-the-go” lifestyle:
  - Opting for smaller packaging sizes
  - Greater use of flexible, light-weight packaging
  - This packaging is not readily recyclable
- “Brown” is said to be the new “green”:
  - These products create confusion for residents
  - PLAs do not recycle well
  - Bioplastics do not compost well

Next Steps

- **Key learnings**
  - Studies represent a “snapshot” in time
  - Study data provides the necessary basis for informed collection planning, P&E
  - Study results confirmed trends in material set-out

- **Considerations for Niagara’s 2016-21 BBPP**
  - Develop P&E to achieve optimal paper product/packaging recovery
  - Develop targeted P&E by municipal area (i.e. demographics)
  - Consider policy changes (e.g. bi-weekly garbage collection)

Toronto Waste Audits Trend Analysis
CIF Project # 944

Renée Dello

City of Toronto

Project Highlights

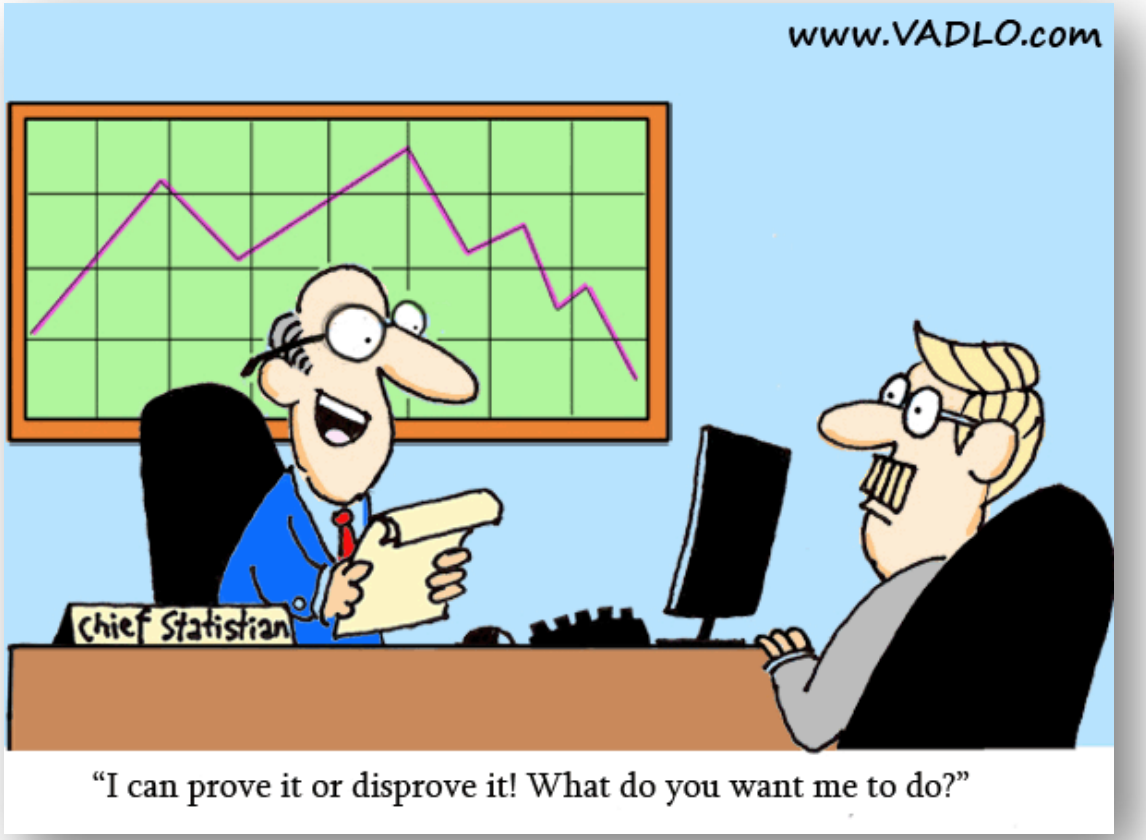
- Project Goal: Statistical examination to determine how mix of materials has changed over time

- Impacts:
  - Changes in the composition of Toronto's collected waste are statistically significant
  - Lightweight materials are increasing

- More information:
  - renee.dello@toronto.ca

Why This Project?

- Use audit data to statistically verify impact of lightweighting
- Targets require updating to better reflect the changing nature of waste
- Open discussions on different ways of looking at data & measuring performance



Source: Vadlo.com (157)

Project Steps

- Review available audit/datacall data from 2002 to 2016
- Categorical transformation to ensure consistency with SO material categories
- Statistical analysis involved standardizing existing curbside audit data followed by data comparison using acceptable statistical techniques to identify trends

It started out as a simple analysis, but piled up to information overload.

Development of New Lightweight Trend Analysis Approach

- Audit data review, certain materials grouped using allocation matrix
  - Toronto audits sorted 69 to 100 items compared to SO 23 categories
- Methodology allowed standardized results for better comparison
- Method allows for clearer analysis of municipal performance
- No consistent method previously existed, suggest this approach as new Best Practice for Lightweight Trend Analysis.

Challenges/Unexpected Issues

- Deficiencies in dataset (audit samples too small)
- Lack of data consistency (same households (HH) over duration, different seasons, different auditors, different focus)
- Lightweighting can occur in 1 of 3 ways







Findings/Observations

General Findings

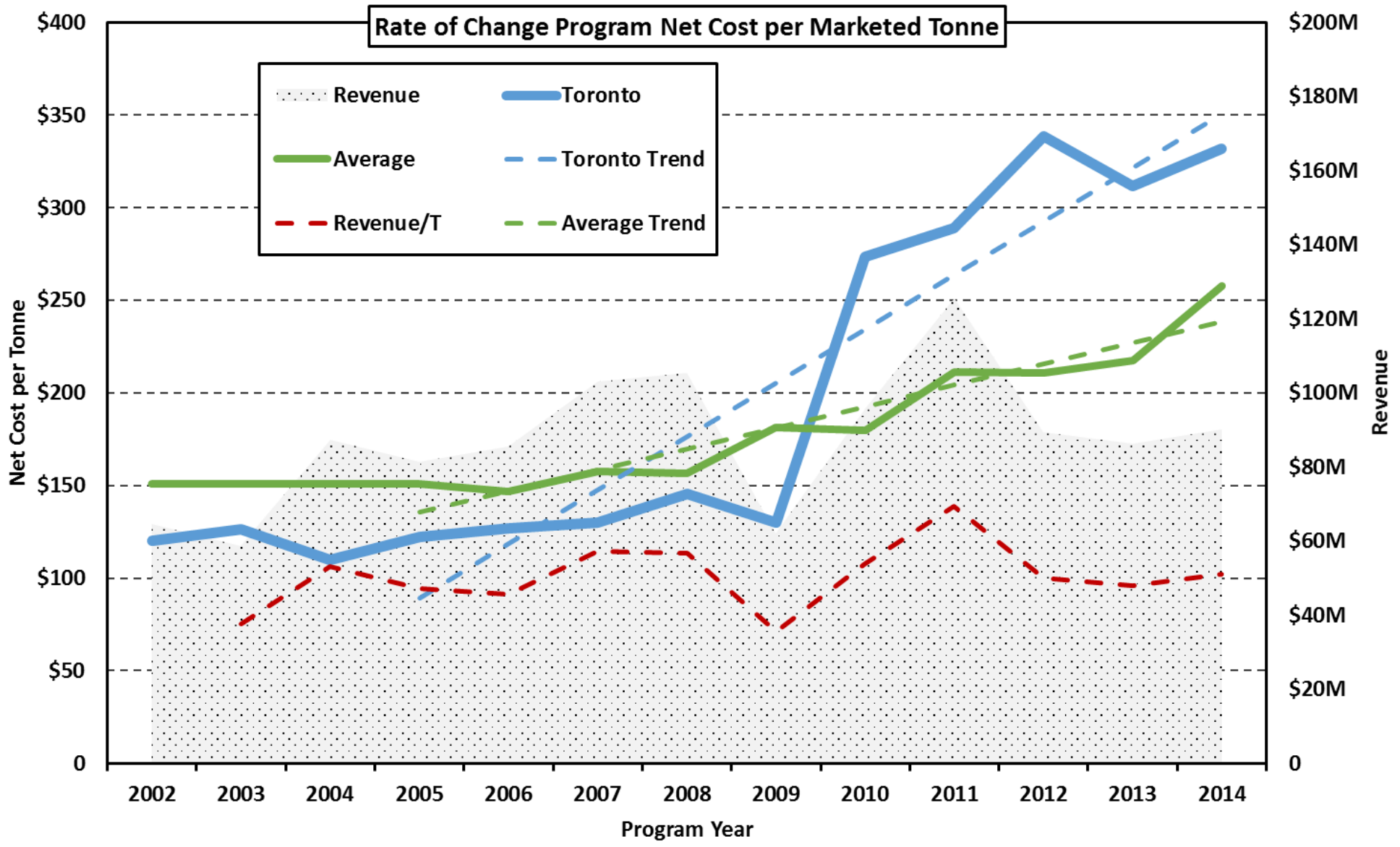
- Composition changes **statistically significant**
- Lightweight plastics, laminated paper materials = **increasing volume of Blue Bin**
- Observable trend towards **higher costs & greater effort** to recover recyclables
- Further study needed on drivers for packaging & consumption choices

Findings/Observations

Large Municipal Datacall Comparison

- Relative to other municipalities HHs in Toronto generate more lightweight materials
- Toronto generates significantly less newsprint
- Toronto generates less aluminum (due to scavenging?)

Data


Rate of Change Program Net Cost per Marketed Tonne
Revenue
Toronto
Average
Toronto Trend
Revenue/T
Average Trend
Net Cost per Tonne
$400
$350
$300
$250
$200
$150
$100
$50
0
$200M
$180M
$160M
$140M
$120M
$100M
$80M
$60M
$40M
$20M
0
Revenue
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Program Year

Key Messages & Take Away

- There is an observable trend in lightweighting & cost increases
- Changes in Toronto's collected materials mix are statistically significant
- Toronto's HH generate more lightweight materials than other large urban municipalities
- Toronto generates less newsprint relative to other comparable municipalities (no readily apparent cause)
- Toronto generates less aluminum relative to other municipalities
- Targets require updating to better reflect the changing nature of waste
- Municipalities need different ways to measure diversion performance

Advice

- Proposed Audit Sampling Strategy to improve data comparability
  - Allocate samples to account for different types of housing
  - Sample HH (based on population density) from different geographic regions
  - Compare samples from previous audits using “like with like” rule – same housing types, same geographic region, same season, etc.
- Using allocation matrix to standardize data permits better comparison

Next Steps

- Open discussions on different ways of looking at data & measuring performance
- Further study needed on drivers for packaging & consumption choices

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Continuous Improvement at “thecif.ca”

Gary Everett

CIF

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Background

- **thecif.ca** is the new and improved home of the CIF online
- WDO previously hosted CIF online
- Transition to RPRA closed the WDO website
- CIF needed a new online home and some Continuous Improvement

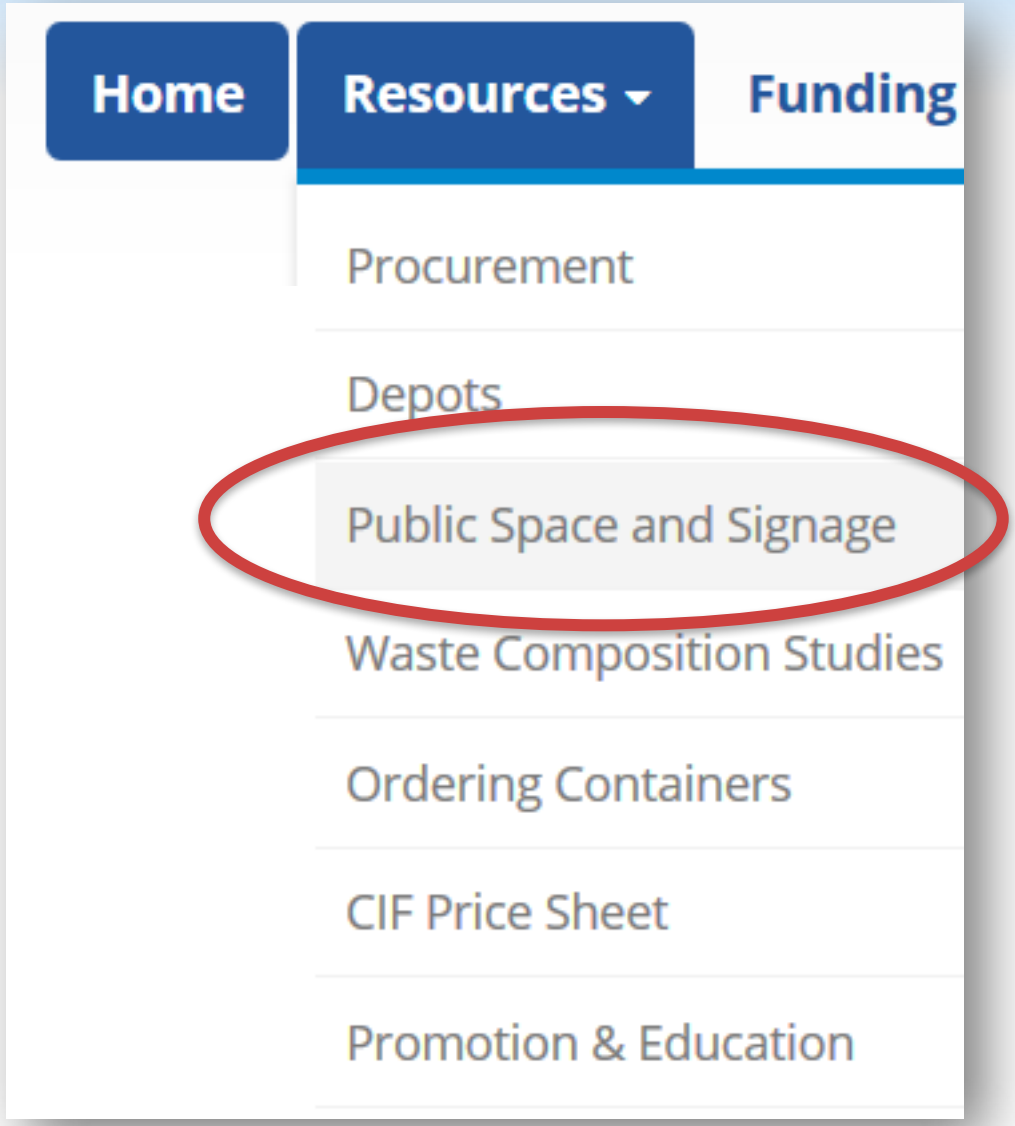
Why We Needed Continuous Improvement

- We listened when you said CIF has over 680 projects - BUT
- Hard to find what you need
- Not organized where you need it
- What does it all mean?

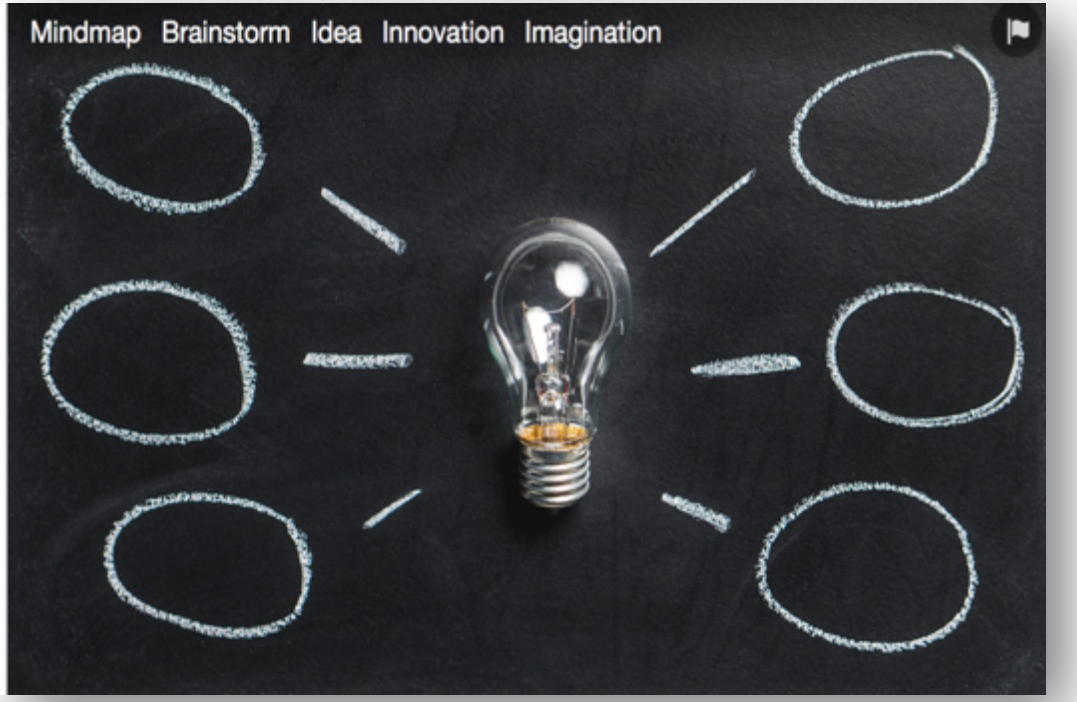
Center of Excellence

Launched 2016 to help you get:

- Distilled value from completed projects
- Learnings – what works & what doesn't
- Tools, tips & tricks

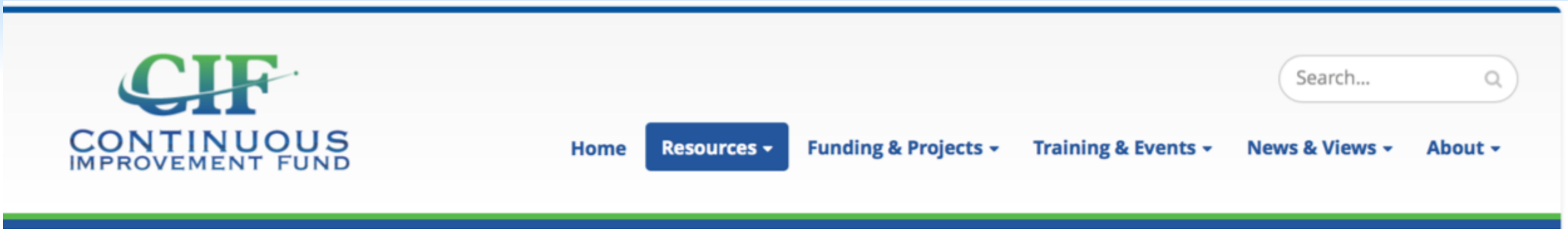


Distilling Essential Information



- You need:
  - Reliable numbers
  - Verifiable information
  - “Nuggets”/Insights
  - Models/timelines
  - Traps & pitfalls

  - **More “How To”**



- Key components of each topic
- Policy & technical info
- Resources
- Projects that exemplify components
- Examples of better & best practices

CoE Pages

- **Depots**
- **Procurement**
- **Public Space & Signage**
- More to come…

Center of Excellence – Public Space & Signage (1)

Start on the CIF home page…

Center of Excellence – Public Space & Signage (2)

CIF CONTINUOUS IMPROVEMENT FUND

Home | Resources | Funding & Projects | Training & Events | News & Views | About

Home / Public Space and Signage

Public Space and Signage

Better Practices

Signage

Good signage is key to participation and low contamination. Keep messages clear and simple, use recognized colours, pair graphics with text and make it visible.

Read More

Twinning

Place recycling, garbage (and organics) bins side-by-side to avoid making users travel to sort materials.

Read More

Location

Place bins in high traffic locations and ensure they are visible with convenient access.

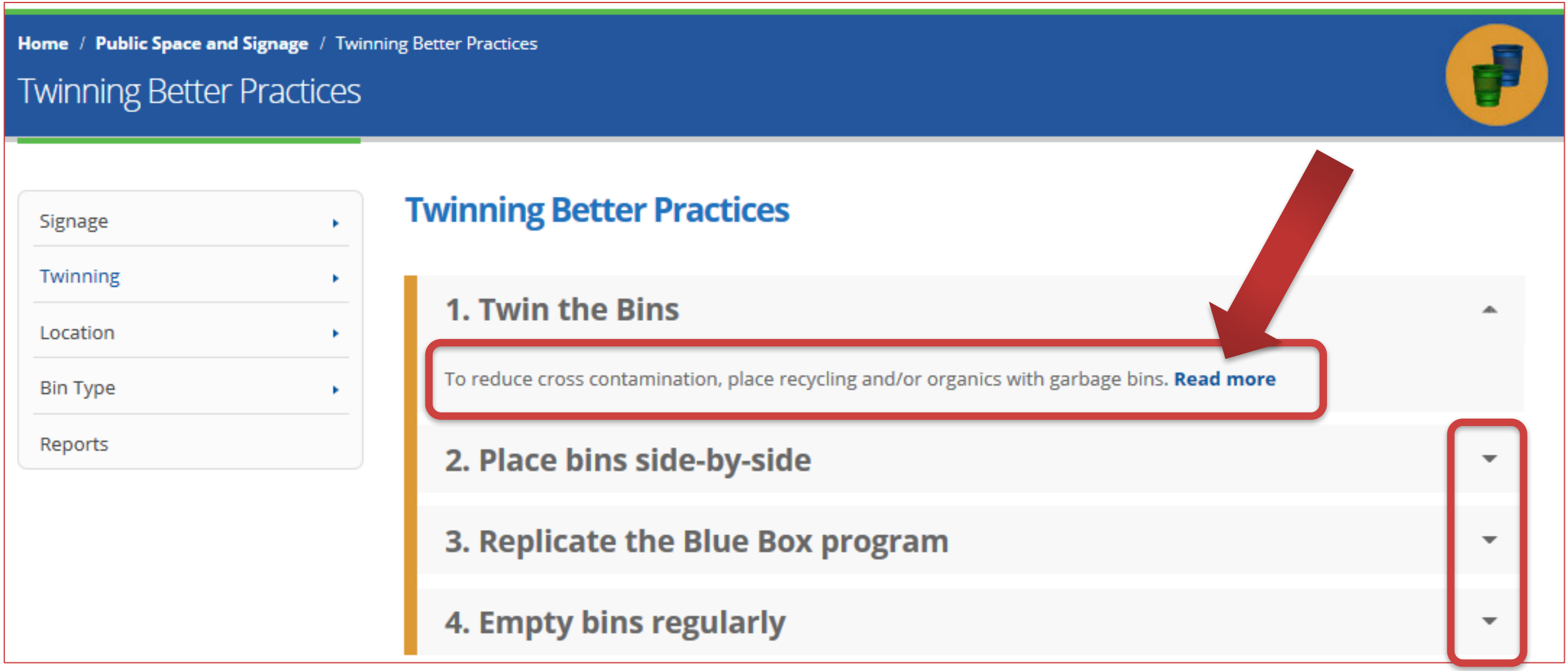
Read More

Bin Type

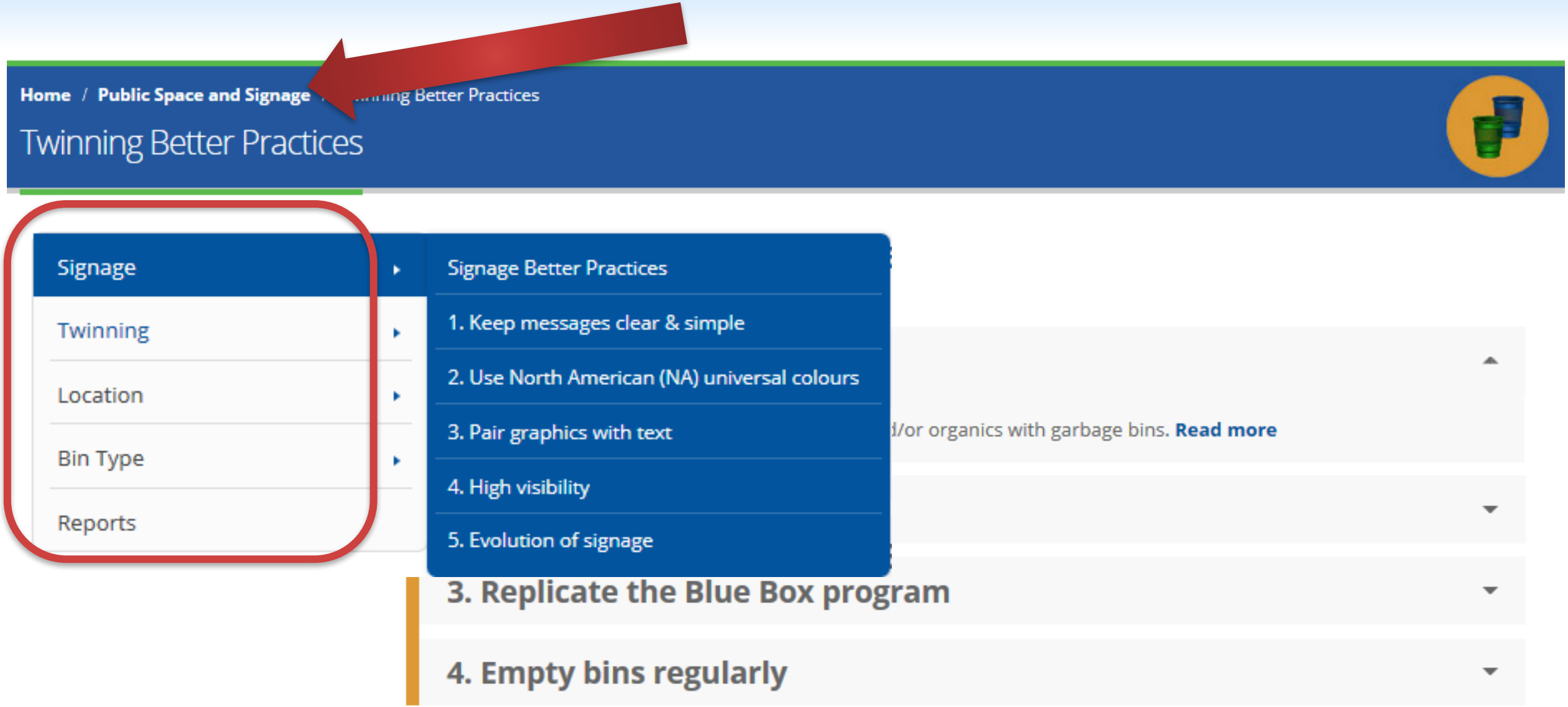
Choose the type and size of bins best suited to local conditions to increase use and reduce weather and vandalism damage. Both function and aesthetics are important.

Read More

Center of Excellence – Public Space & Signage (3)



Center of Excellence – Public Space & Signage (4)



Center of Excellence – Depots

Home / Depots / Siting

Siting

- Siting
- Depot Design
- Depot Operations
- Depot Resources
- Depot Report Summaries

Siting Better Practices

Siting a new depot involves three key tasks:

1. Location

Convenience and accessibility is critical. The location needs to address available infrastructure, future growth, community impacts and many more requirements. **Read more**

2. Public Consultation

3. Economic Assessment

Center of Excellence – Resources (1)

Home / Public Space and Signage / Signage Gallery

Signage Gallery

- Signage
- Twinning
- Location
- Bin Type
- Reports

Center of Excellence – Resources (2)

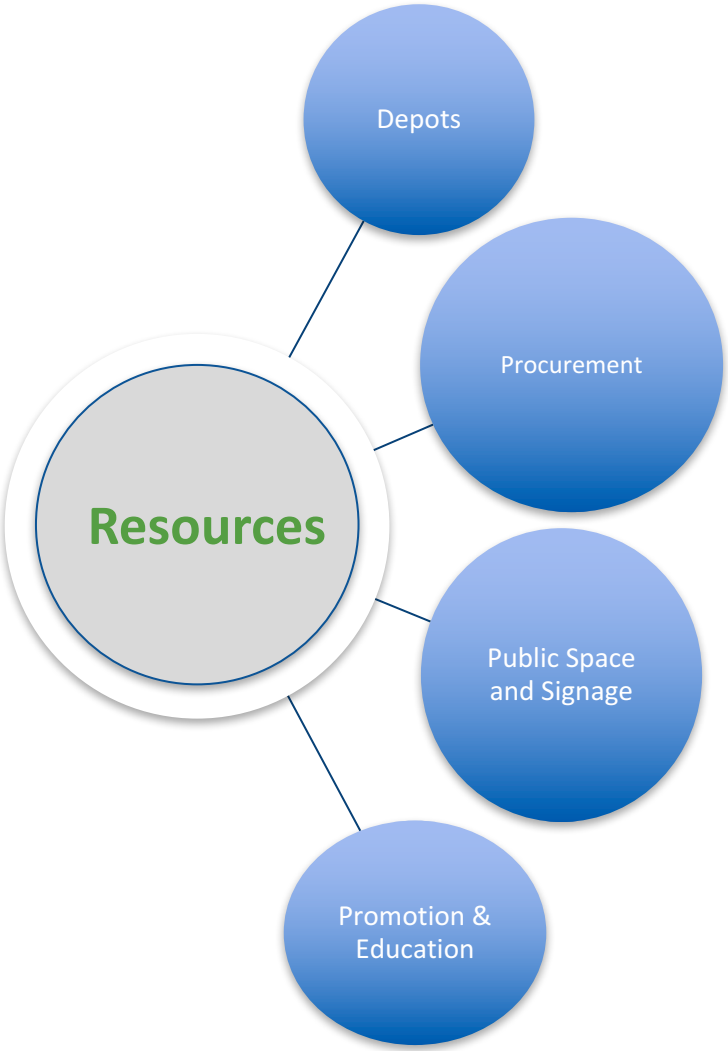
Depots

1. Small Municipal Depot Guidebook (with intro to the Depot Costing Model) (June 2016)
2. Depot Costing Model
3. Signage
4. Depot Pre Screening Survey

Procurement

- Procurement Process Frequently Asked Questions
- Annotated RFP
- RFP Templates
- Proposal Evaluation Spreadsheet Template
- Procurement Process Timeline Template
- Relevant Blog Posts

CIF Centre of Excellence Begins with Resources



A Work in Progress

Legend

Available today

Coming soon

Continuous Improvement Is Ongoing

- We welcome your feedback
  - what information do you need more of?
  - less of?
  - can you find what you need?
  - are we providing the right resources?

  - Email geverett@thecif.ca

Questions

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Morning Wrap-Up

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Enjoy your lunch

We’ll resume at 1:00 p.m.

Starting Up Soon…

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Welcome Back

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This Afternoon's Agenda

- Keeping the Business Going During Transition
- *Afternoon Break*
- Cost Models: Who's Used Them & Do They Work?
- *Summary & Concluding Remarks*

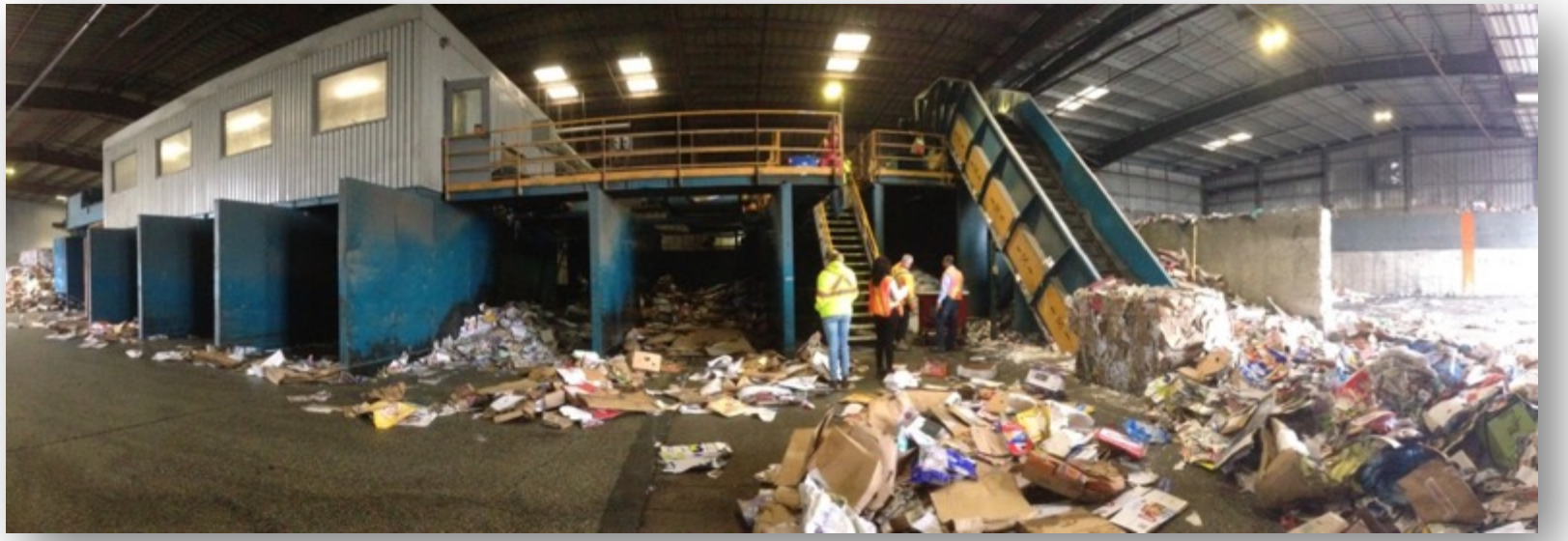
Keeping the Business Going During Transition

Carrie Nash, CIF

CIF
CONTINUOUS IMPROVEMENT FUND

How Do We Prepare?

- There's work to be done at the curb & in our MRFs, we need:
  - Smart approaches to manage difficult materials
  - To optimize overall MRF performance
  - To know stop counts
  - To share lessons learned from our municipal colleagues



Panelists

- Carrie Nash, CIF
  - Continuous Improvement in Action: CIF Training Updates & New Opportunities
- Catherine McCausland, City of Guelph
  - New Glass Clean Up System Hits the Mark
- Jen Addison, City of Hamilton
  - Maximizing Revenues at the MRF
- Jamie Delaney, Muskoka
  - GIS Collection Point & Service Level Mapping
- Carrie Nash, CIF
  - Trends from 5 MRF Mass Balance Studies: how the findings can help you

Continuous Improvement in Action:
CIF Training Updates & New Opportunities

Carrie Nash

CIF Project Manager

CONTINUOUS IMPROVEMENT FUND

Communications 2.0

- Delivered yesterday
- 20 participants
- Developing messaging that supports & encourages behaviour change through:
  - Use of stories
  - Connecting with ‘identity’ of your target audience
- Second delivery to be made available upon demand

Strategic RFPs for Recycling

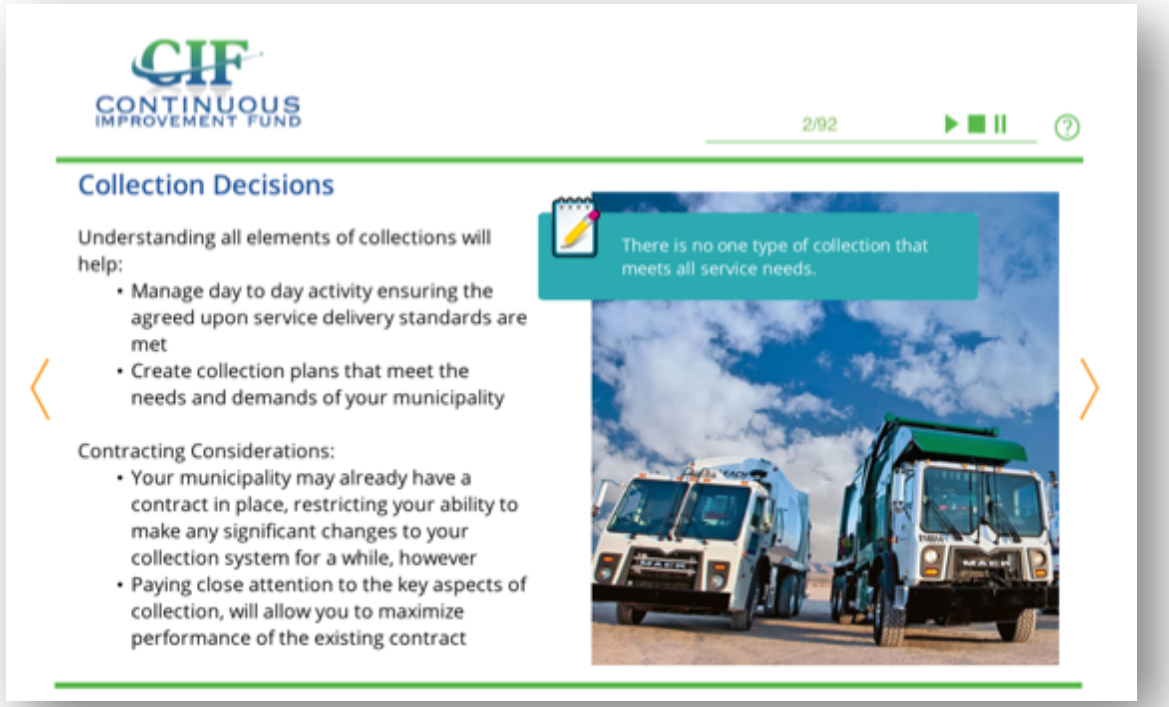
- Delivered yesterday
- 20 participants
- Fundamentals of RFP/tender drafting in plain language to help you understand the “why” behind the clause
  - Force Majeure
  - Change of Laws

Upcoming …. Online Fundamentals

9-module course covering:

- Introduction to Blue Box Program
- Planning, CSA & FSA
- Markets
- Processing
- Collections
- P&E
- Policies
- Measuring & Monitoring
- Presenting a Plan

Online Fundamentals



- Completely online, & can be accessed from your smart phone or tablet
- Fully narrated, 21 hours in total
- Requires learners to complete quizzes & case study exercises
- A 2-hour, 100 question exam is required for completion

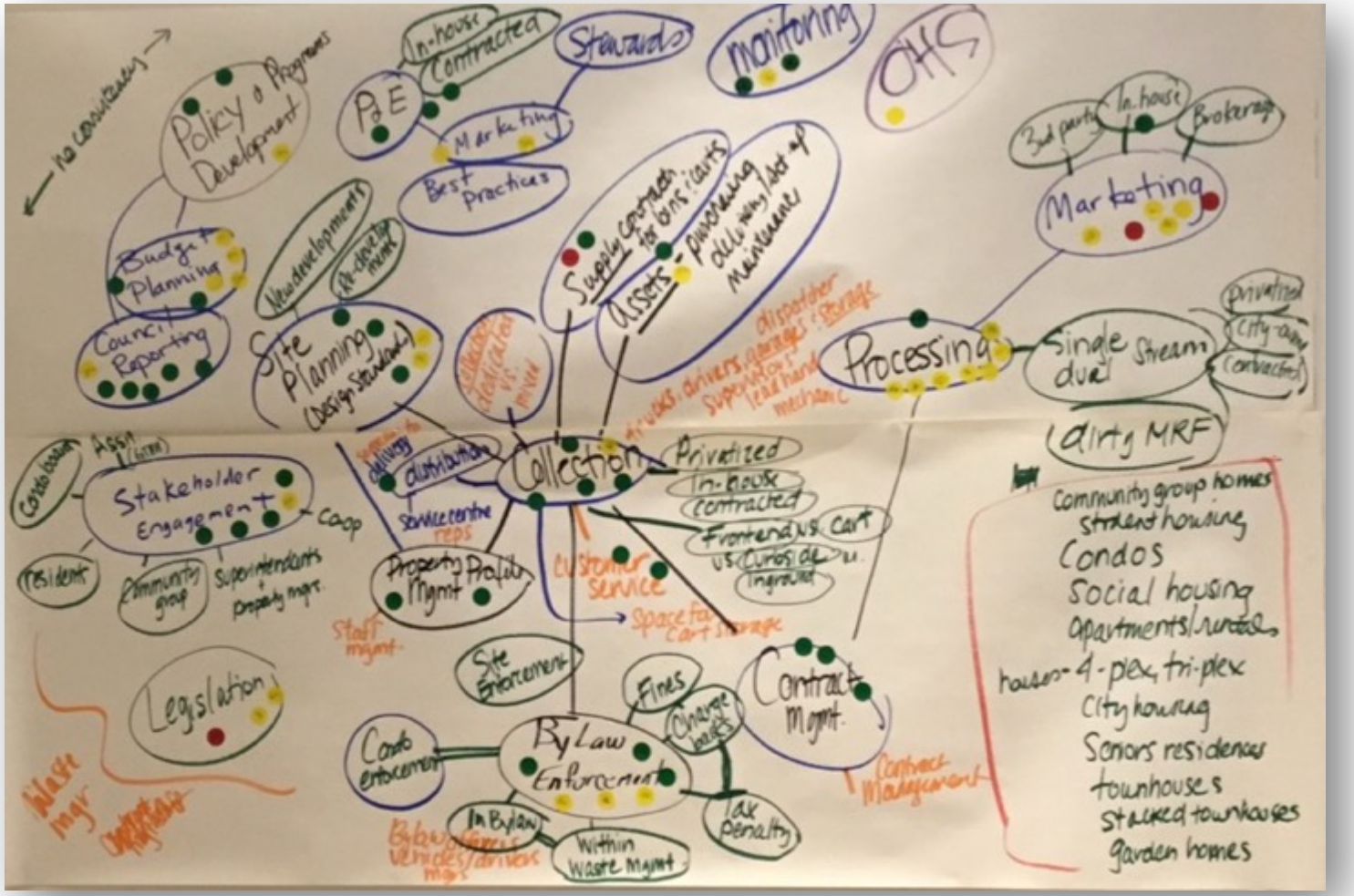
Watch for a CIF bulletin next week to enroll for May 29 start date!

CIF Working Groups

- Collections
  - Cost model initiated
- Depots
  - Cost model, web resources
- MRF
  - Cost model, better practice development

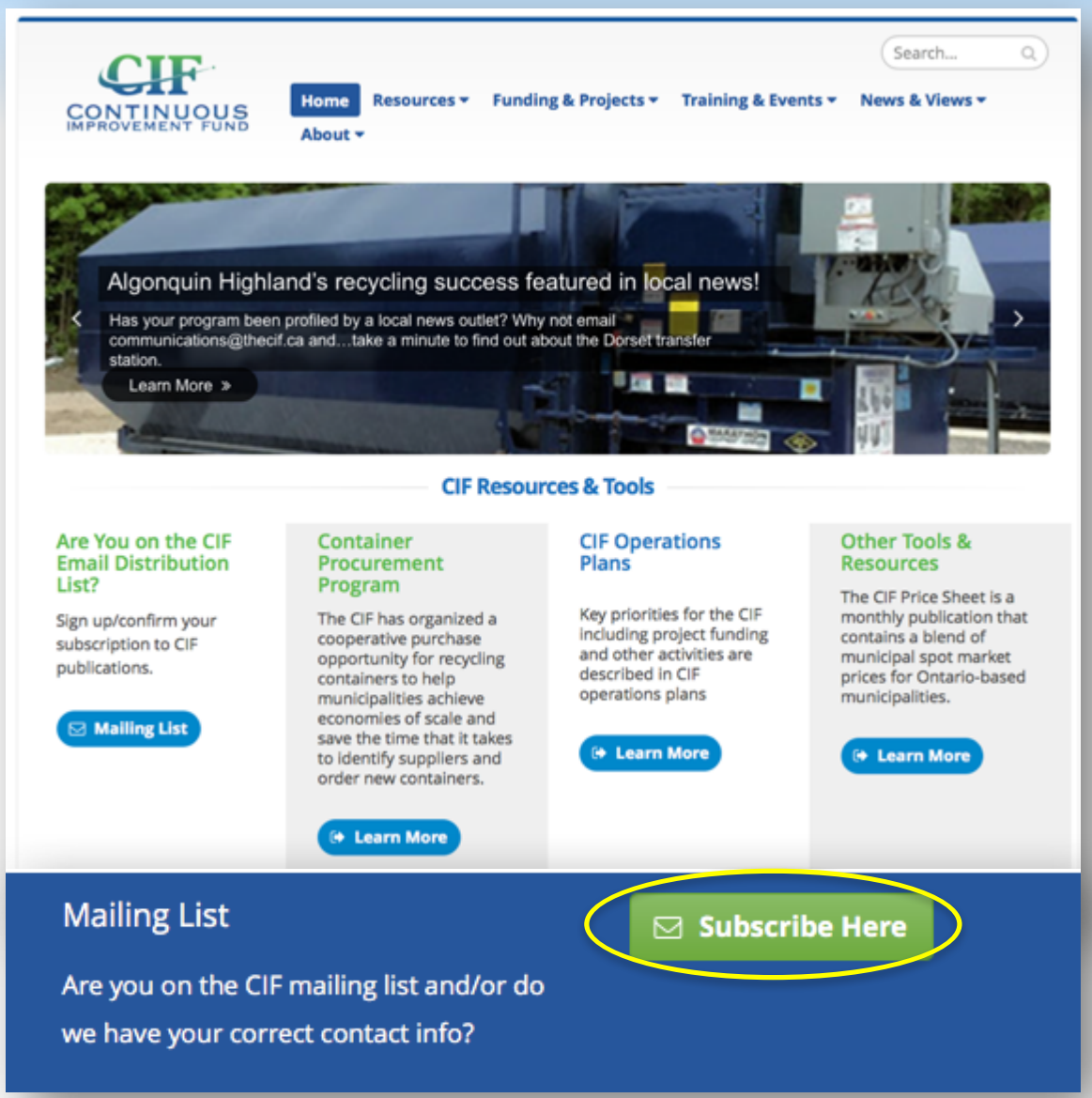
Multi-Residential Program Working Group

- Meets monthly
- Addressing:
  - P&E, common challenges & solutions, benchmarking KPIs
- Developing recommendations report for transition under WFOA



Get Involved!

- Mike Birett
  - Collections
- Gary Everett
  - Depot & website updates
- Carrie Nash
  - MRes, MRF & Training
- Bradley Cutler
  - Waste audits



Glass Sorter
CIF Project # 876

Catherine McCausland

Corporation of the City of Guelph

Project Highlights

- Project goal: Remove contaminants from our mixed broken glass stream
- Impacts: We were able to consistently remove over 15% of the contaminants in our glass & market this material
- More information:
  - catherine.mccausland@guelph.ca
  - www.guelph.ca

Overview (1)

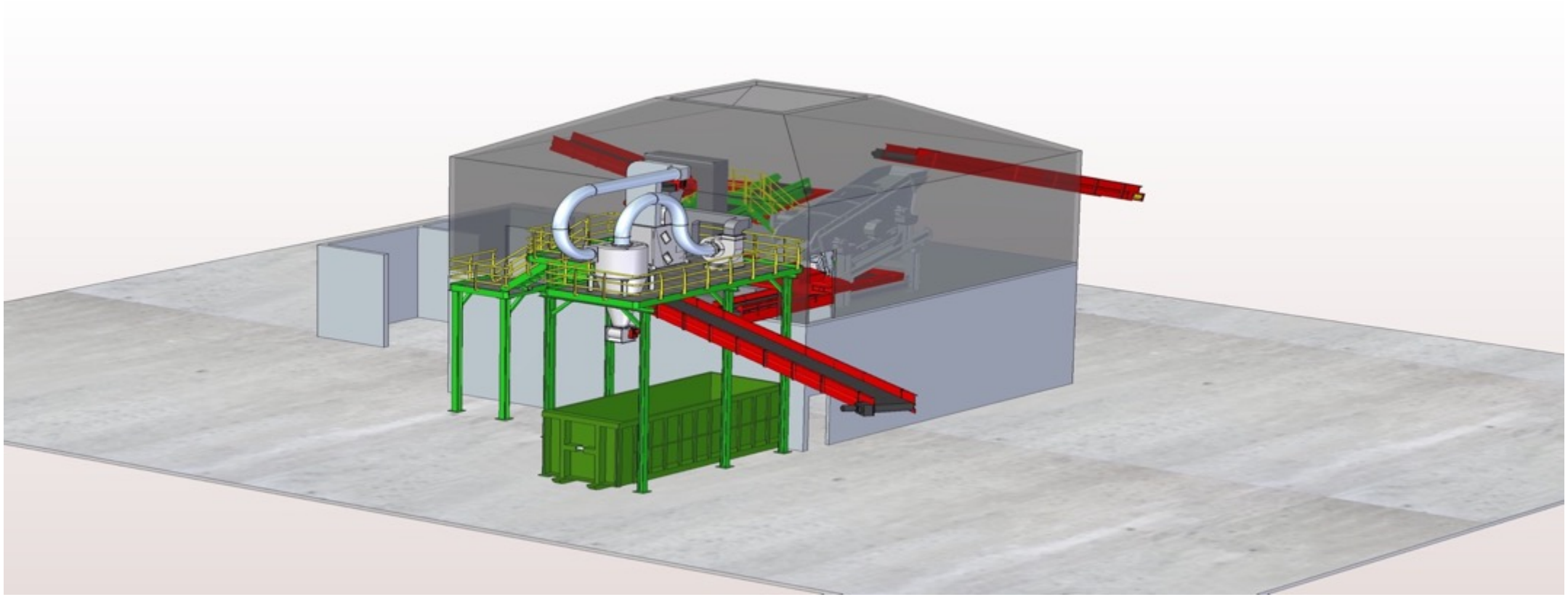
- PURPOSE
  - Purchase a system that could remove contaminants from the mixed broken glass stream produced in a single stream MRF

- CHALLENGES
  - How do you remove shredded paper & smaller contaminants from mixed broken glass
  - How do you do this consistently during changing Canadian climatic conditions

Overview (2)

- STRATEGY
  - Test the equipment while running our exact material mix
  - Verify that the test would produce accurate results
  - Duplicate some of the harshest conditions that this equipment would be operating under
- EXPECTING THE UNEXPECTED
  - Vibrations while screen was operating
  - Structural issues

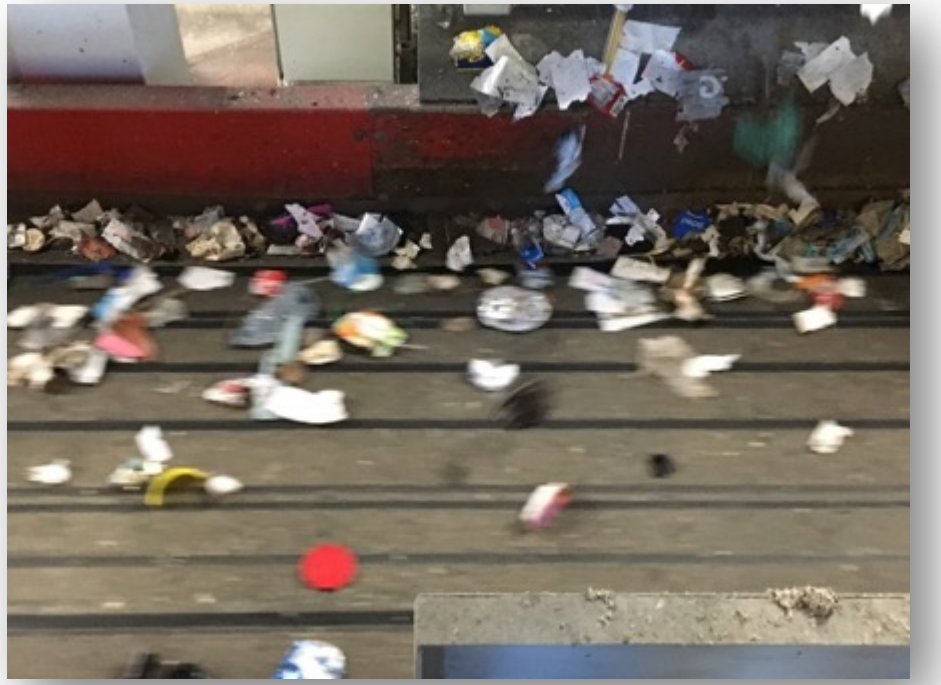
- PROCESS



Separation

- Spalek Screen

- Large Fraction (12%)



Small Fraction & Fines Combine for 26% of the Incoming Materials (residue)

- Small Fraction

- Fines

Pre and Post Installation Audits

Summary of Pre Project Audits Conducted by Nexcycle	
DATE	%NGR
5-Jan-16	20%
7-Jan-16	19%
14-Jan-16	22%
3-Mar-16	16%
4-Mar-16	21%
17-Mar-16	23%
24-Mar-16	27%
7-Apr-16	29%
14-Apr-16	22%
21-Apr-16	22%

Summary of Post Project Audits Conducted by Nexcycle (Winter)	
DATE	%NGR
23-Jan-17	7%
24-Jan-17	7%
25-Jan-17	7%
26-Jan-17	5%
27-Jan-17	9%

Summary of Post Project Audits Conducted by Nexcycle (Fall)	
DATE	%NGR
18-Oct-16	4%
18-Oct-16	6%
19-Oct-16	4%
20-Oct-16	4%
21-Oct-16	4%

Summary of Post Project Audits Conducted by Nexcycle (Spring)	
11-Apr-17	4%
12-Apr-17	6%
13-Apr-17	5%
19-Apr-17	7%
20-Apr-17	6%
21-Apr-17	7%

Financials

Project Costs	
Process Equipment	$ 650,000.00
Domestically Sourced Materials, In House Labour and Additional Structural	$ 130,000.00
Engineering Services and Permitting	$ 20,000.00
	$ 800,000.00

Project Summary of Annual Costs, Savings & Diversion for the Glass Cleanup System	Annual	Total	Total
	Tonnage	Expense	Revenue
Total Incoming contaminated glass stream 2016	3900	$ 223,665.00	
Residue from incoming glass	1180	$ 67,673.00	
Remaining other recyclables in the glass	240		
Net glass tonnage directed to Market	2480	$ 27,280.00	
Savings in landfill cost			$ 128,712.00
Gain from aluminum removed from glass	100		$ 166,600.00
Annual revenue gain from new glass system			**$ 295,312.00**

Payback	2.71 Years

In Summary

- LESSONS LEARNED
  - Equipment exceeded our expectations
  - Stand alone system vs integrated into the process

- NEXT STEPS
  - Continue to audit materials being processed to gain more consistent information
  - Partner with other Municipalities to assist them in cleaning up this problematic material so it can be marketed

Maximizing Revenues at the City of Hamilton
CIF Project #849

Jen Addison

City of Hamilton

Overview

- Background:
  - mass balance audit, implementation of recommendations, measurement & monitoring
- Impacts
  - increased capture, decreased residue, improved film management
- For more information:
  - Jen Addison, MRF Project Manager
  - Jennifer.Addison@hamilton.ca

Residue Recovery Line

Container Line Upgrades

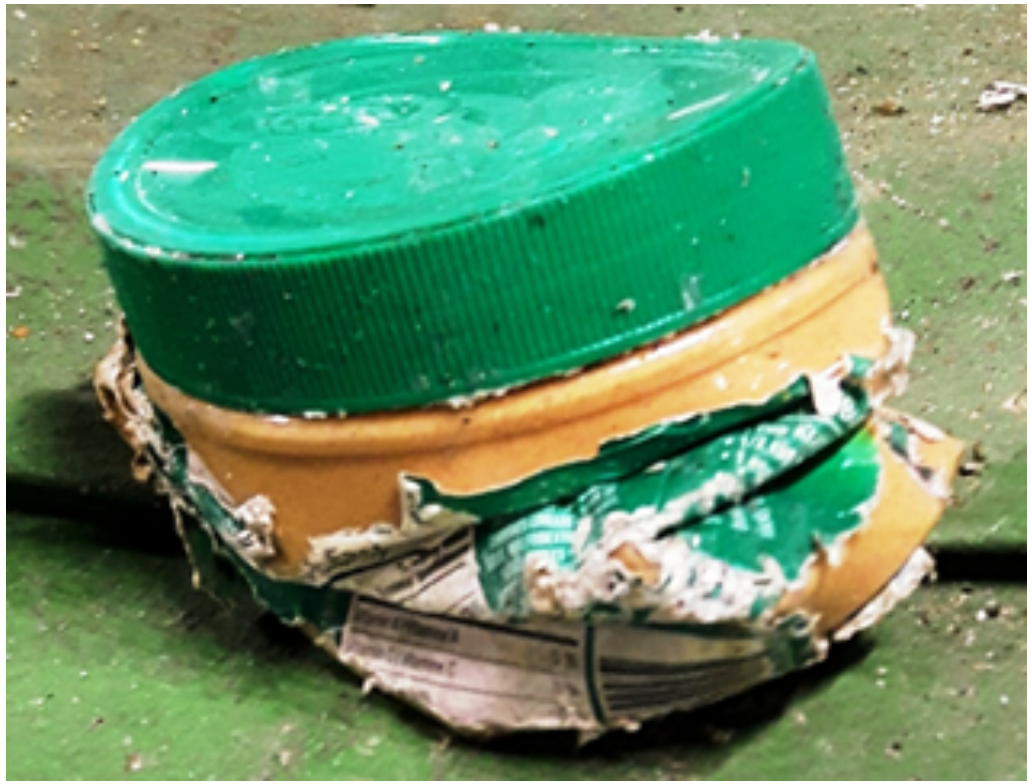
Audit Findings (816.2)	Improvements Implemented (849)
Misconfigured film grabber	Repaired
Overburdened optical sorter	Installed second optical
Loss of high value commodities to residue	Installed residue recovery line
Film plastic impeding material flow	Repurposed Titech optical to capture film

Design Challenges

- Limited space
- PET transport to baler
- Budget escalation
- Changes to the Canadian Dollar

Material Challenges

- 2D materials
- Film Plastic
- Undetectable / Un-capturable Material
- Moisture



Container Line Upgrade Evaluation

Machinex PET Optical Sorter - MACH Hyspec

- Post-installation mass balance audit
- Comparison of pre and post – installation audit findings
- On going, 12 month, internal measuring & monitoring effort

Pre & Post Capture Rates

Material Recovery Rates 2014 VS 2017

Targeted Material	Pre- Recovery Rate (%)	Post- Recovery Rate (%)	Absolute Difference
PET	73.1%	87.2%	**14.1%**
Aluminum UBC	84.3%	88.2%	**3.9%**
HDPE	81.2%	77.4%	-3.8%
Polycoat (cartons)	73.6%	66.0%	-7.6%
Film	55.1%	78.5%	**23.4%**

Residue Recovery Line

Targeted Material	Material Available for Capture (%)	Material Recovered (%)
PET	6%	3%
Aluminum UBC	9%	6%
Polycoat (cartons)	44%	27%
HDPE	11%	6%

Landfill Residue Reduction

12 month internal study

- Compares MT residue sent to landfill 2016 VS 2017
- Recovery of “missed commodities”
- Increase capture of film = reduction in film sent to landfill
- Cost savings

Material	Q1 2016 Landfill (MT)	Q1 2017 Landfill (MT)	Difference (MT)	Difference (%)
Residue	1,592	1,326	267	-17

Project Costs

Upgrade/Improvement	Cost
Capital Investment	$1,752,000
Measuring & Monitoring Program	$18,000
CIF Contribution	-$705,000
TOTAL NET COST (approximate)	**$1,065,000**

Next Steps

- Post installation audit results
  - 5.5% overall capture increase
  - >$160,000 revenue increase
  - Decrease in landfilling fees
- Further tweaks to the system need to be considered:
  - 2017 Optimization Audit

Why Auditing Pays Off

- Determine material capture rates
- Measure & monitor equipment performance
- Quantify “missed” recyclables
- Identify opportunities to increase revenue
- Identify opportunities for **Continuous Improvement**

“A Healthy Line is a Wealthy Line”

GIS Collection Point & Service Level Mapping System
CIF #820

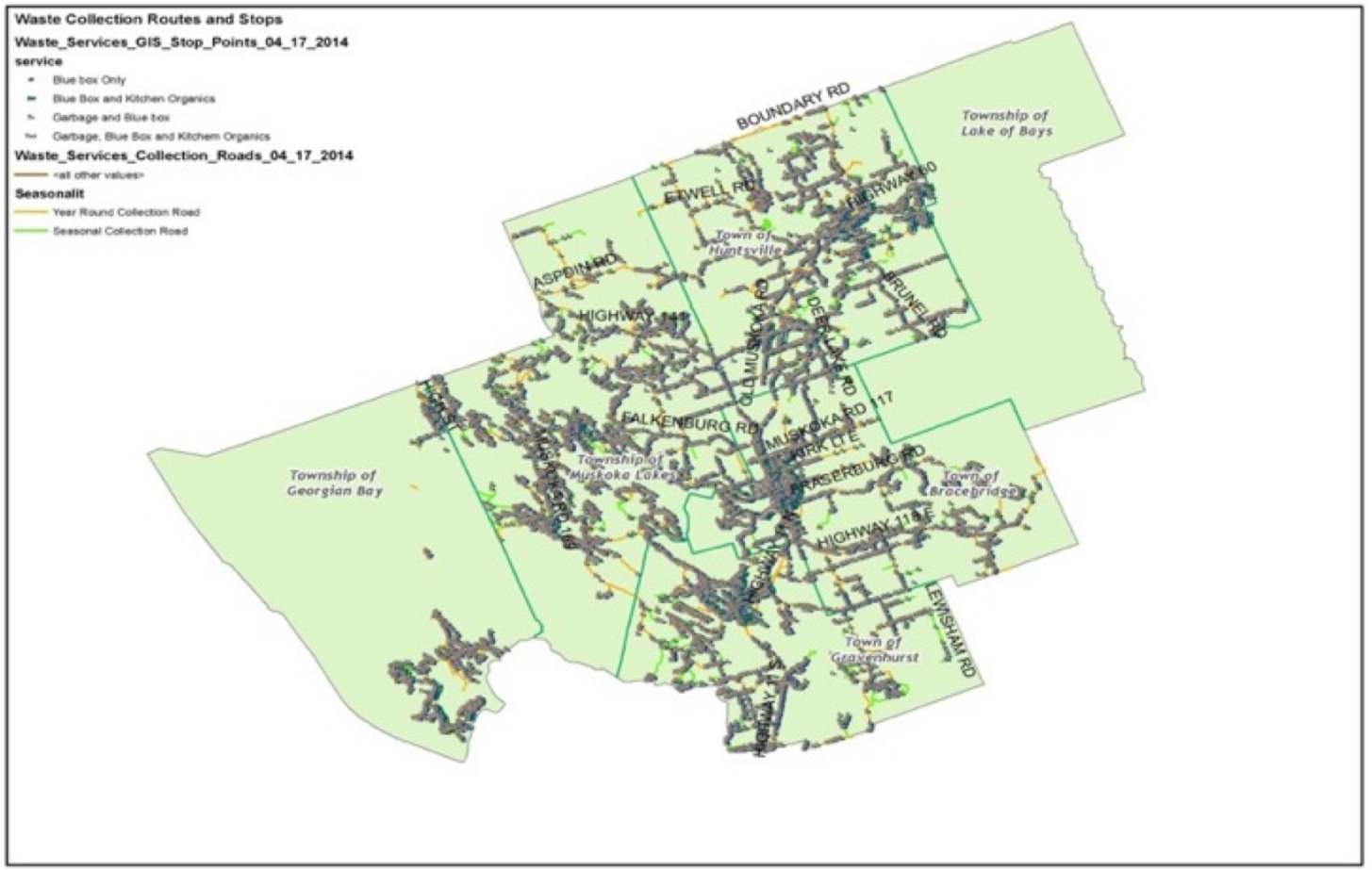
Jamie Delaney

District Municipality of Muskoka

Project Highlights

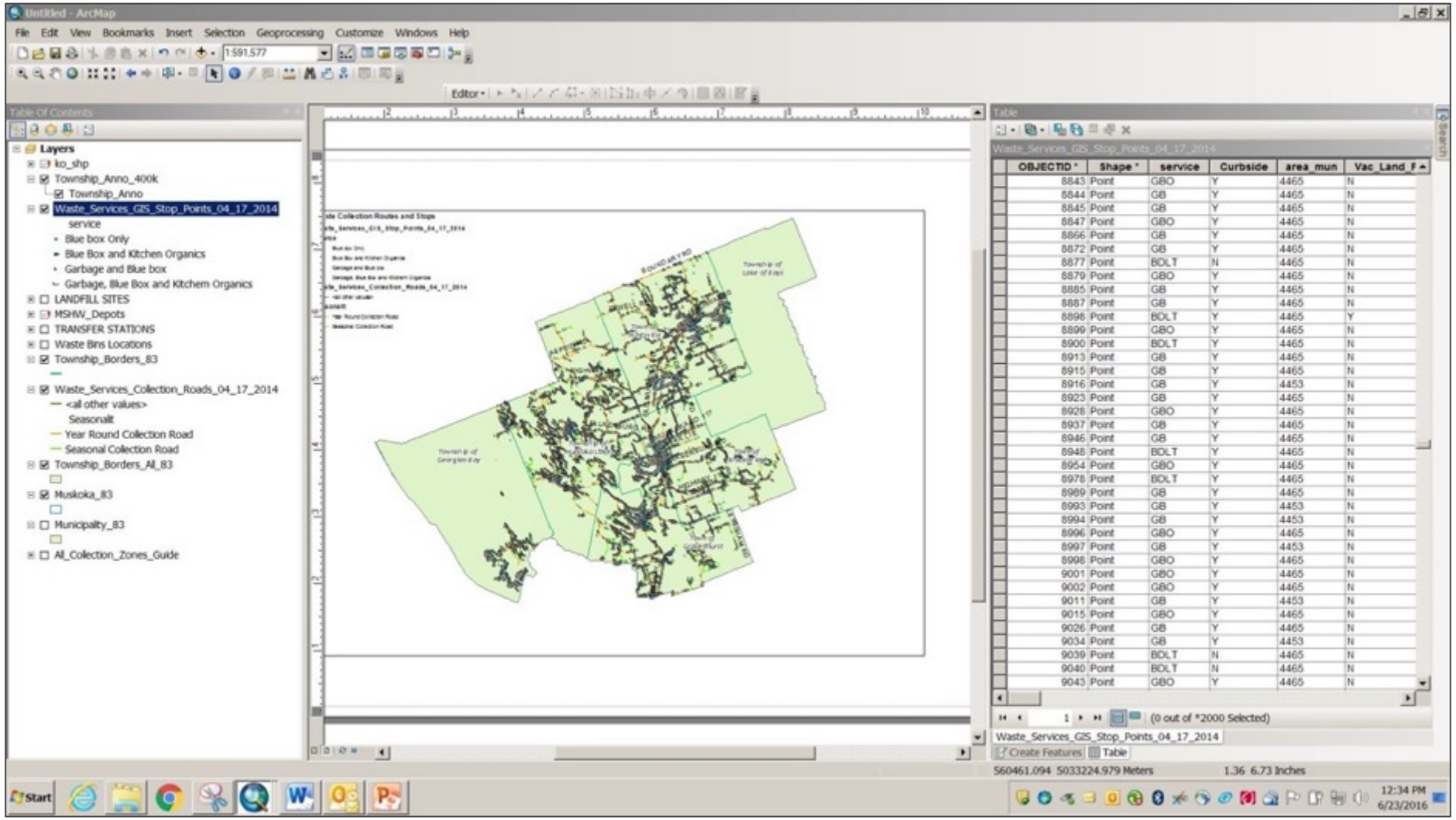
- Project goal:
  - To improve the effectiveness &efficiency of Muskoka's collection system through enhanced data management
- More information:
  - jdelaney@muskoka.on.ca
  - muskoka.on.ca

District of Municipality of Muskoka

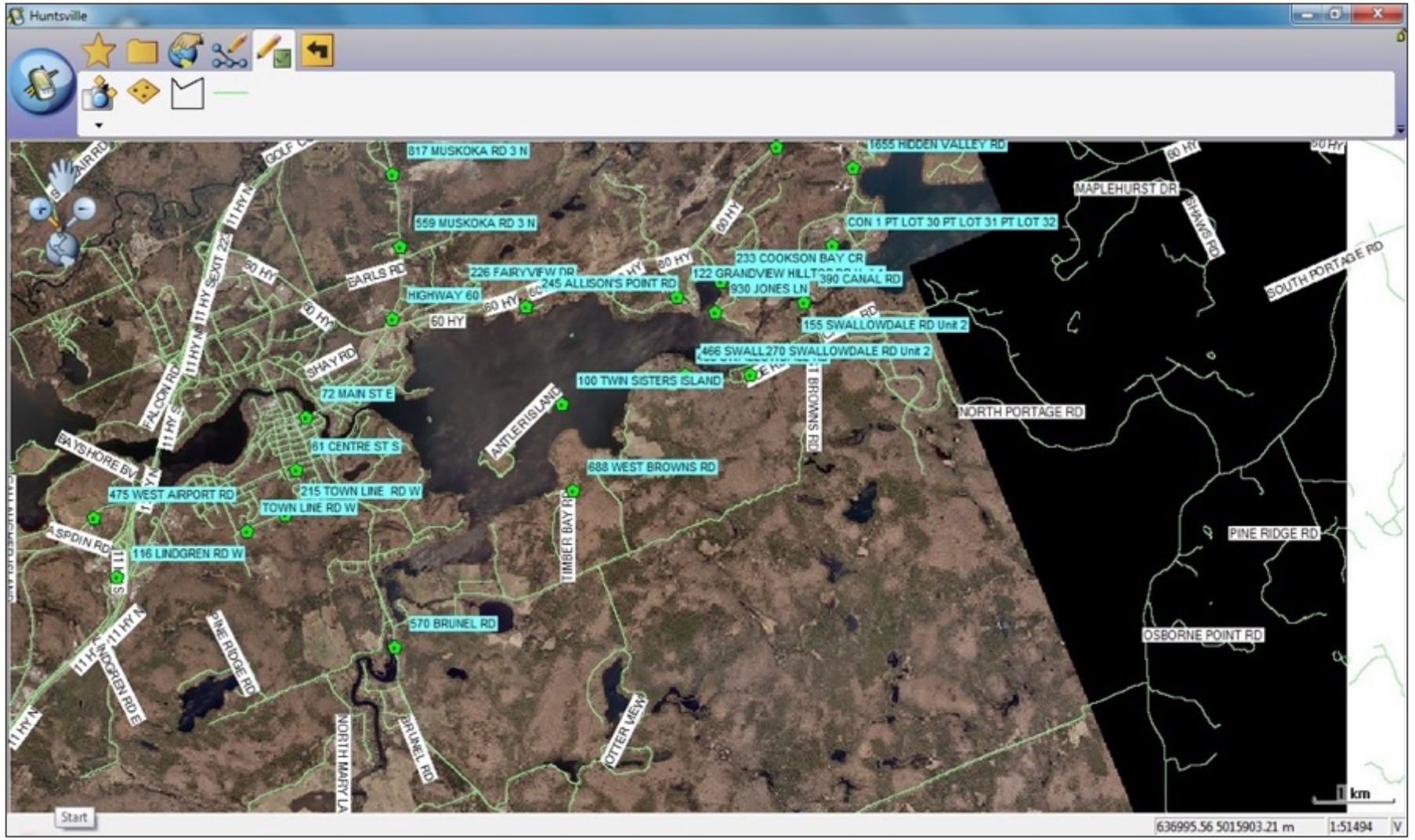


Do You Know Where The Waste Is?

Desktop GIS ArcMap (ESRI)



Field GIS ArcPad (ESRI)

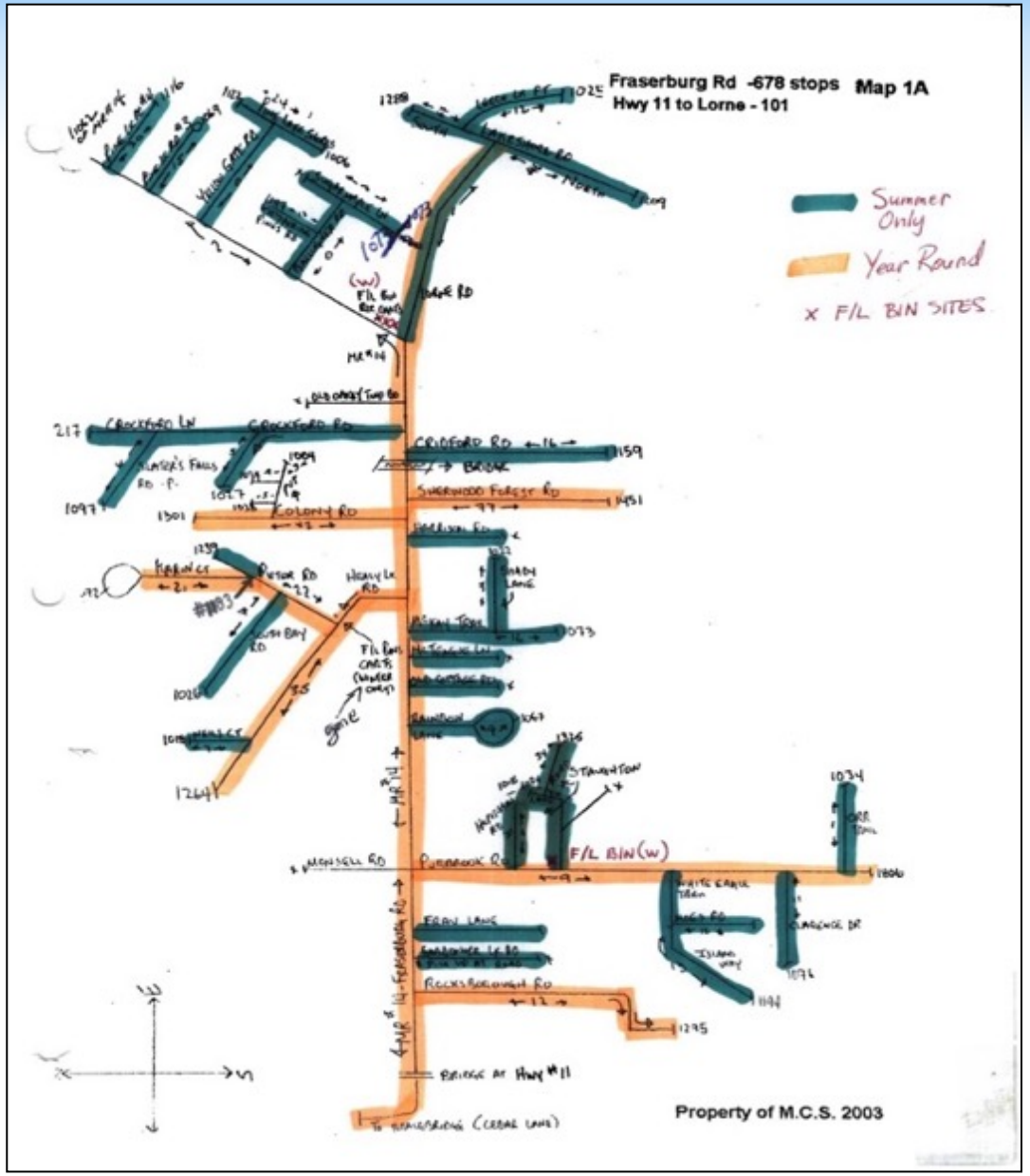


The Road Map to Success

- Hard copy maps & collection street lists
- Using existing GIS databases (Road network, MPAC, & 911) create representation of Curbside Collections & stop locations & type (residential vs. ICI)
- Using field & workstation GIS editing, locate the stops along the routes spatially

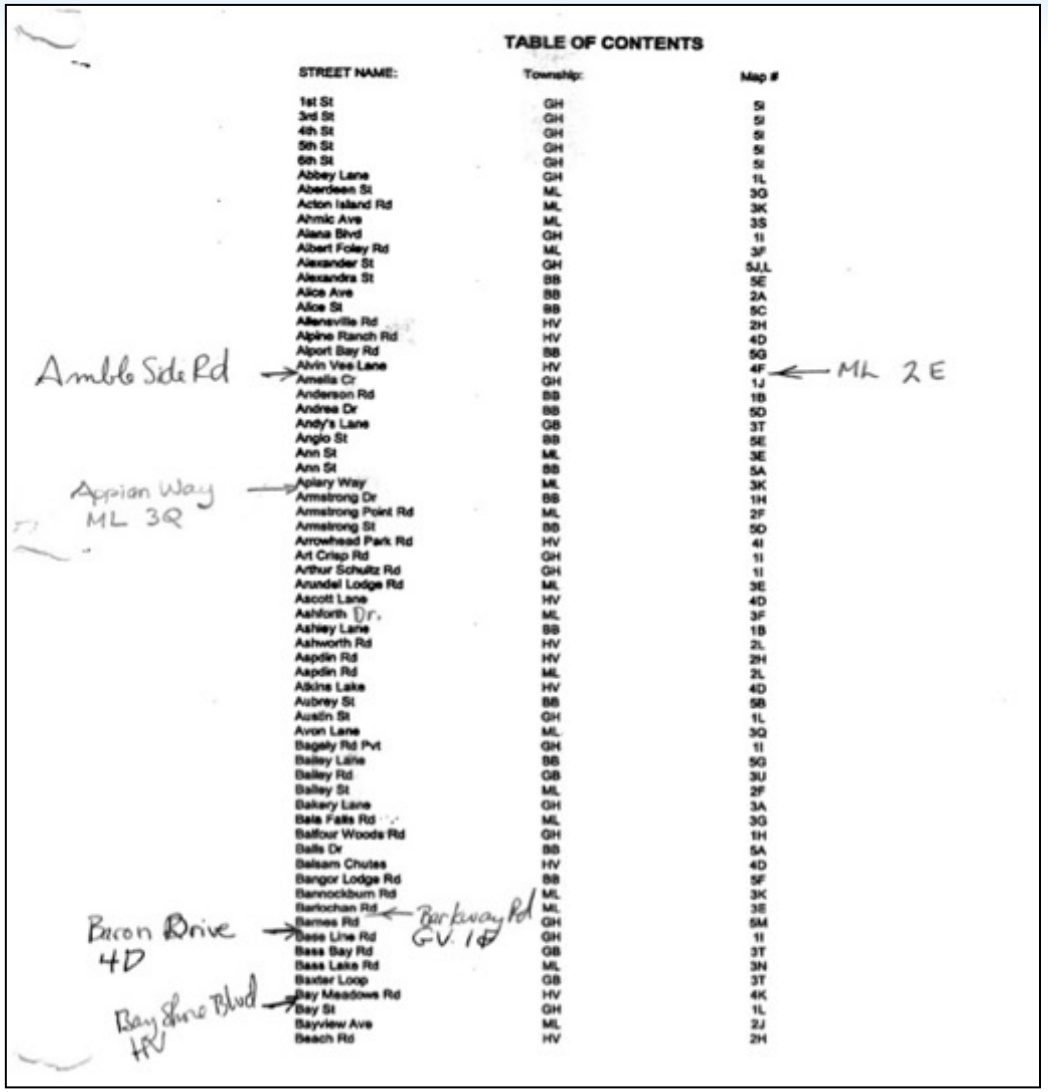
Improvement

- Cost & time to update maps by hand
- Hand drawn route maps



Updates

- Revising existing documents to include new information



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STREET NAME:	Township:	Map #
1st St	GH	5I
3rd St	GH	5I
4th St	GH	5I
5th St	GH	5I
6th St	GH	5I
Abbey Lane	GH	1L
Aberdeen St	ML	3G
Acton Island Rd	ML	3K
Ahmic Ave	ML	3S
Alana Blvd	GH	1I
Albert Foley Rd	ML	3F
Alexander St	GH	5J,L
Alexandra St	BB	5E
Alice Ave	BB	2A
Alice St	BB	5C
Allenville Rd	HV	2H
Alpine Ranch Rd	HV	4D
Alport Bay Rd	BB	5G
Alvin Vee Lane	HV	4F
Amelia Cr	GH	1J
Anderson Rd	BB	1B
Andrea Dr	BB	5D
Andy's Lane	GB	3T
Anglo St	BB	5E
Ann St	ML	3E
Ann St	BB	5A
Apiary Way	ML	3K
Armstrong Dr	BB	1H
Armstrong Point Rd	ML	2F
Armstrong St	BB	5D
Arrowhead Park Rd	HV	4I
Art Crisp Rd	GH	1I
Arthur Schultz Rd	GH	1I
Arundel Lodge Rd	ML	3E
Ascott Lane	HV	4D
Ashforth Dr.	ML	3F
Ashley Lane	BB	1B
Ashworth Rd	HV	2L
Aspdin Rd	HV	2H
Aspdin Rd	ML	2L
Atkins Lake	HV	4D
Aubrey St	BB	5B
Austin St	GH	1L
Avon Lane	ML	3Q
Bagely Rd Pvt	GH	1I
Bailey Lake	BB	5G
Bailey Rd	GB	3U
Bailey St	ML	2F
Bakery Lane	GH	3A
Bala Falls Rd	ML	3G
Balfour Woods Rd	GH	1H
Balls Dr	BB	5A
Balsam Chutes	HV	4D
Bangor Lodge Rd	BB	5F
Bannockburn Rd	ML	3K
Barlochan Rd	ML	3E
Barnes Rd	GH	5M
Base Line Rd	GH	1I
Bass Bay Rd	GB	3T
Bass Lake Rd	ML	3N
Baxter Loop	GB	3T
Bay Meadows Rd	HV	4K
Bay St	GH	1L
Bayview Ave	ML	2J
Beach Rd	HV	2H

Amb Side Rd → Alvin Vee Lane

← ML 2E

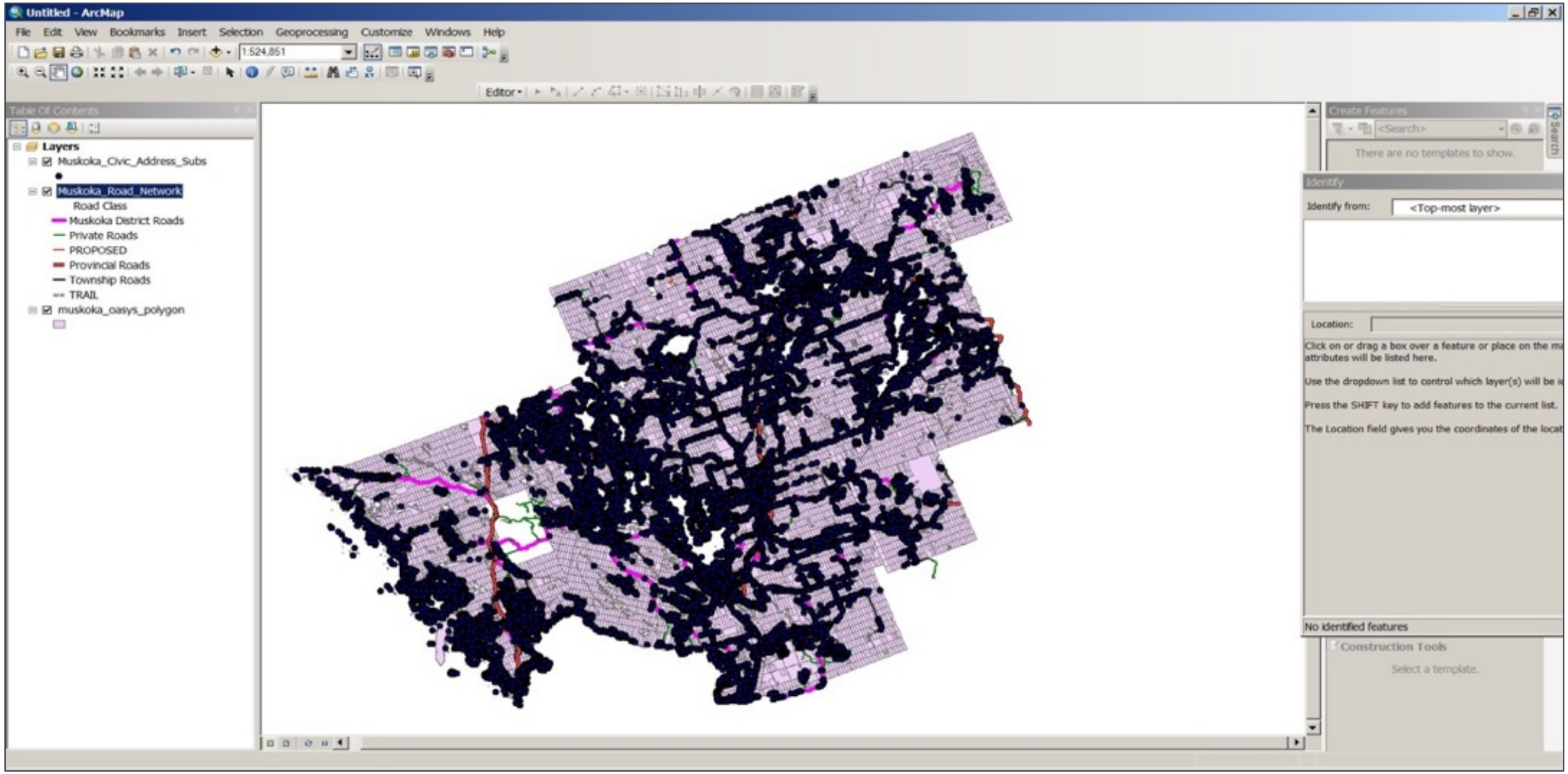
Appian Way → Apiary Way
ML 3R

Bacon Drive → Barnes Rd
4D

← Parkway Rd
GV 1D

Bay Shore Blvd → Bay St
HV

Baseline Databases



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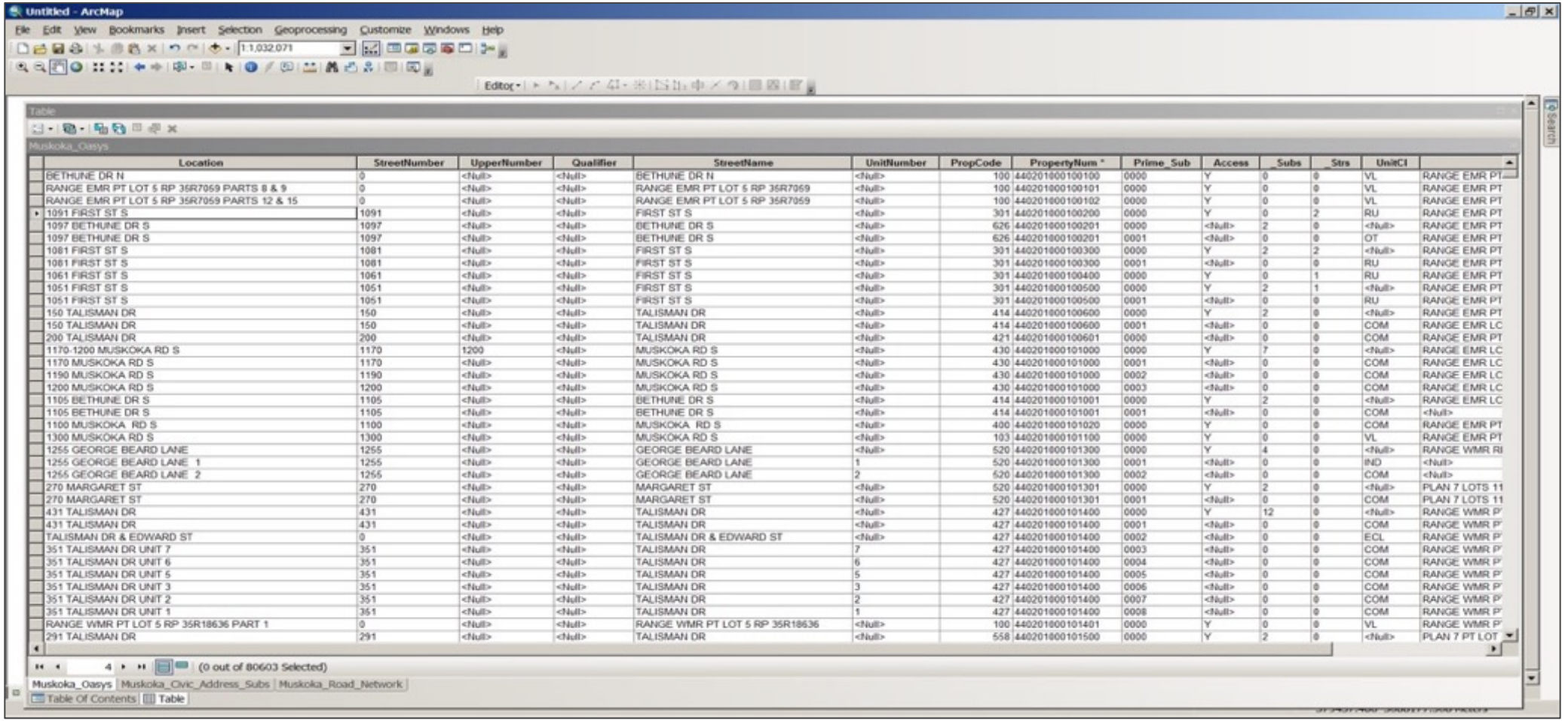
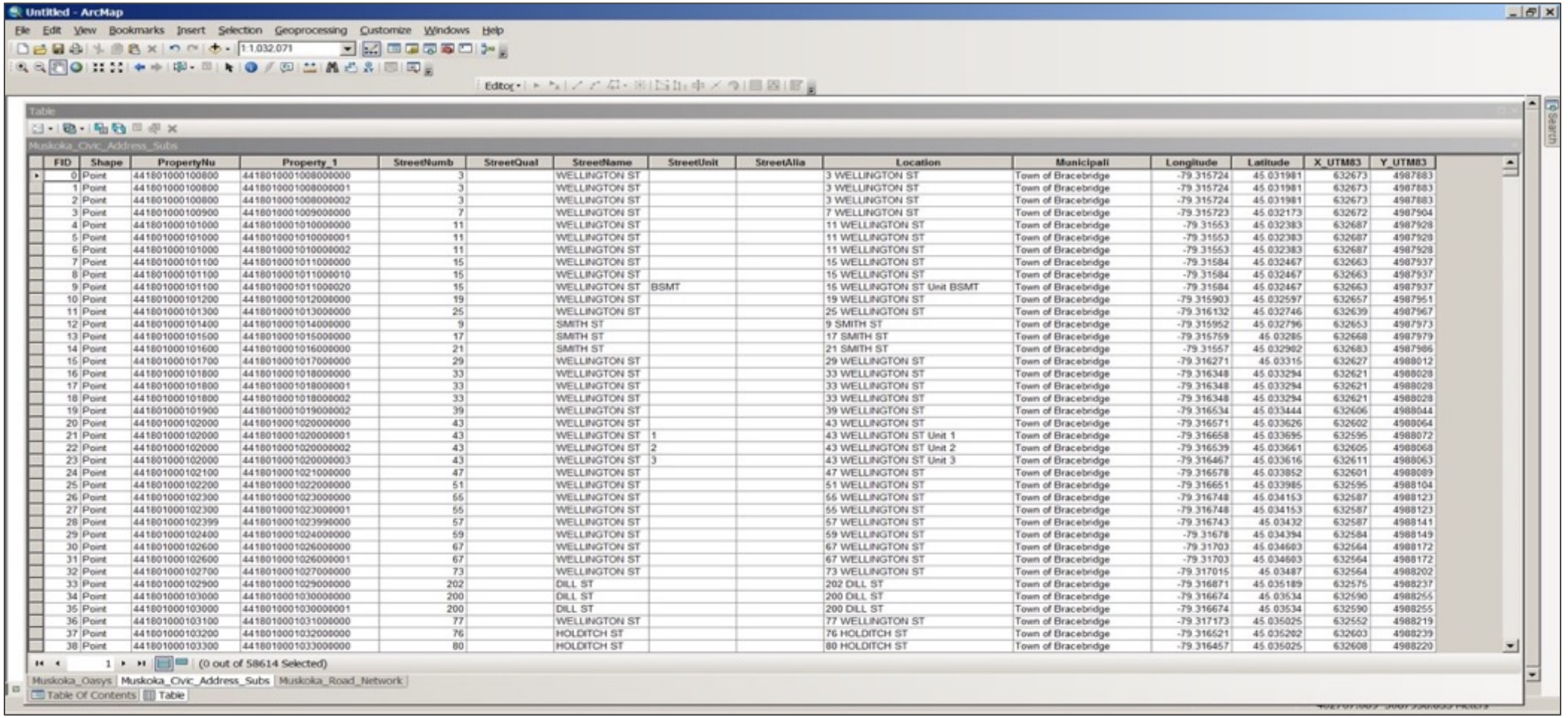


MPAC Dataset

Baseline Databases



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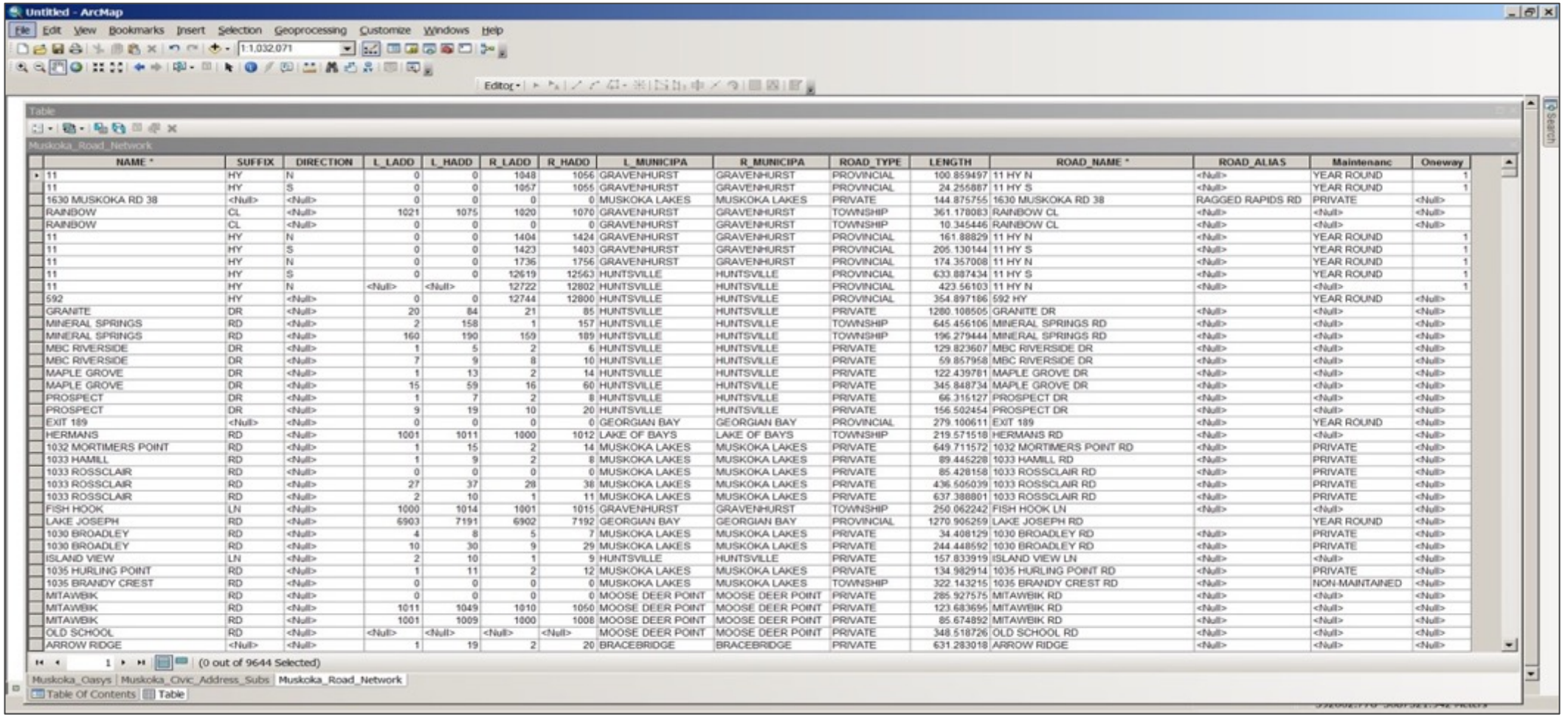
911 Point Dataset

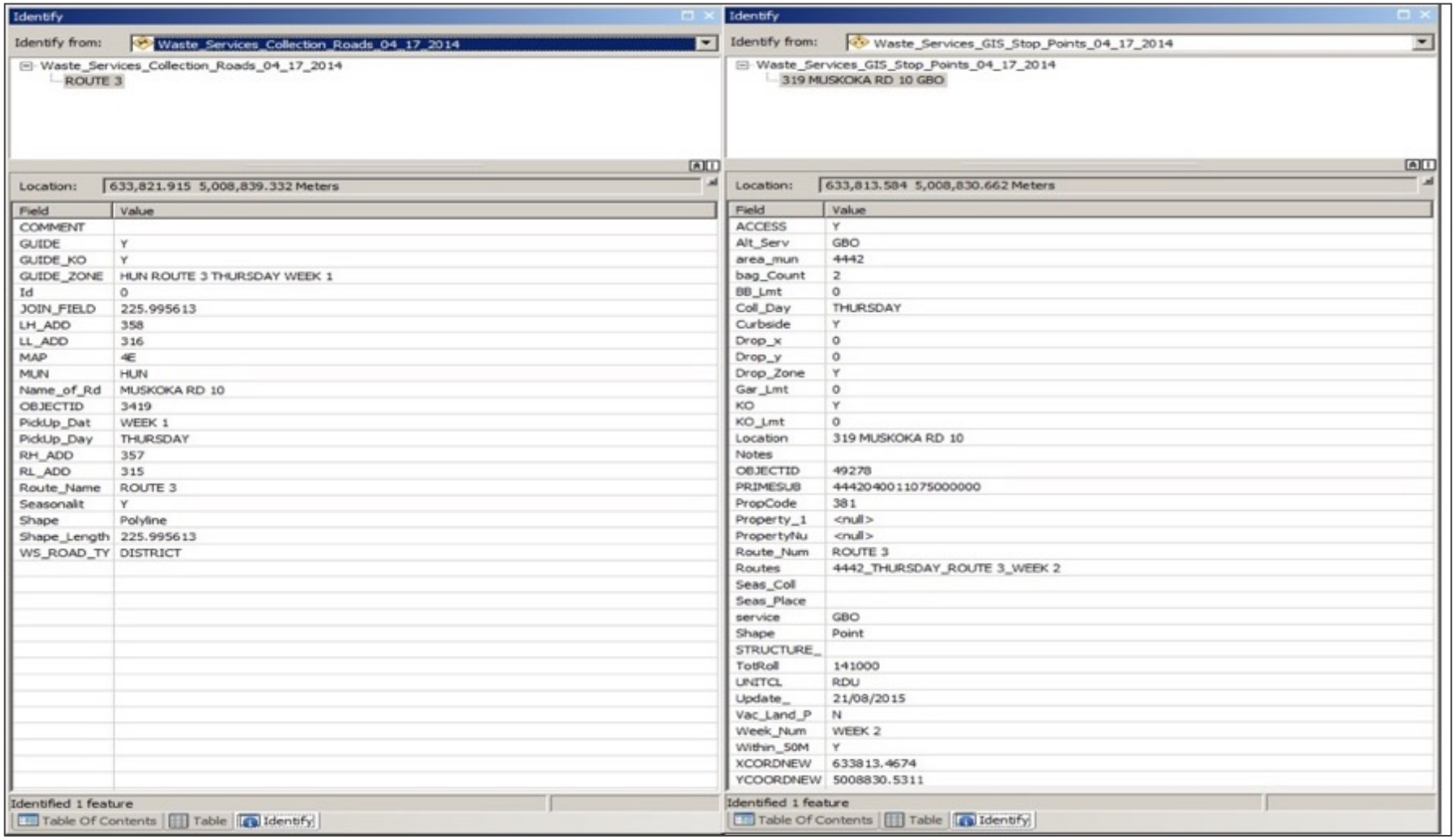
Baseline Databases



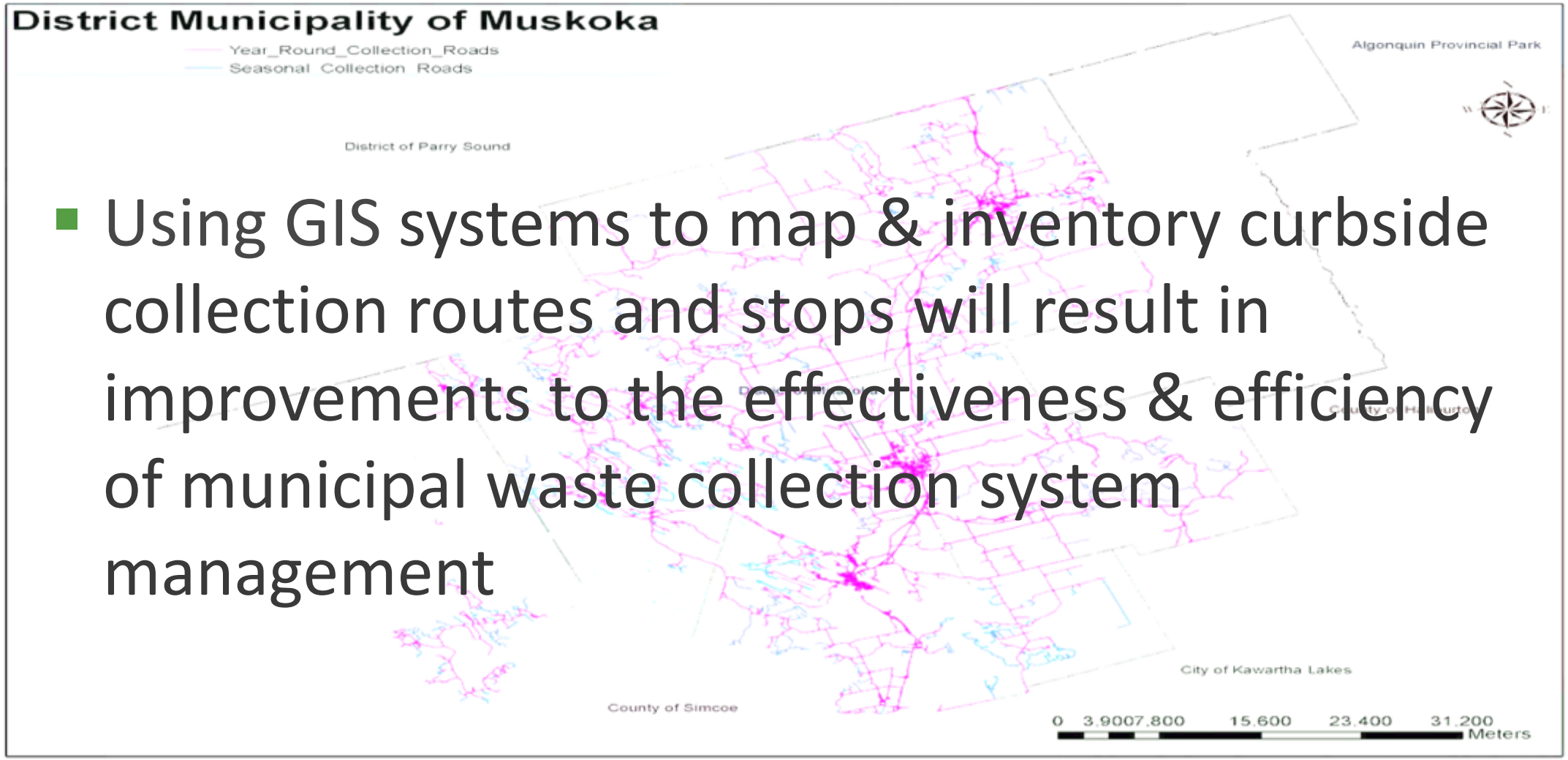
NAME *	SUFFIX	DIRECTION	L_LADD	L_HADD	R_LADD	R_HADD	L_MUNICIPA	R_MUNICIPA	ROAD_TYPE	LENGTH	ROAD_NAME *	ROAD_ALIAS	Maintenanc	Oneway
11	HY	N	0	0	1048	1056	GRAVENHURST	GRAVENHURST	PROVINCIAL	100.859497	11 HY N	<Null>	YEAR ROUND	1
11	HY	S	0	0	1057	1055	GRAVENHURST	GRAVENHURST	PROVINCIAL	24.255887	11 HY S	<Null>	YEAR ROUND	1
1630 MUSKOKA RD 38	<Null>	<Null>	0	0	0	0	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	144.875755	1630 MUSKOKA RD 38	RAGGED RAPIDS RD	PRIVATE	<Null>
RAINBOW	CL	<Null>	1021	1075	1020	1070	GRAVENHURST	GRAVENHURST	TOWNSHIP	361.178083	RAINBOW CL	<Null>	<Null>	<Null>
RAINBOW	CL	<Null>	0	0	0	0	GRAVENHURST	GRAVENHURST	TOWNSHIP	10.345446	RAINBOW CL	<Null>	<Null>	<Null>
11	HY	N	0	0	1404	1424	GRAVENHURST	GRAVENHURST	PROVINCIAL	161.88829	11 HY N	<Null>	YEAR ROUND	1
11	HY	S	0	0	1423	1403	GRAVENHURST	GRAVENHURST	PROVINCIAL	205.130144	11 HY S	<Null>	YEAR ROUND	1
11	HY	N	0	0	1736	1756	GRAVENHURST	GRAVENHURST	PROVINCIAL	174.357008	11 HY N	<Null>	YEAR ROUND	1
11	HY	S	0	0	12619	12563	HUNTSVILLE	HUNTSVILLE	PROVINCIAL	633.887434	11 HY S	<Null>	YEAR ROUND	1
11	HY	N	<Null>	<Null>	12722	12802	HUNTSVILLE	HUNTSVILLE	PROVINCIAL	423.56103	11 HY N	<Null>	<Null>	1
592	HY	<Null>	0	0	12744	12800	HUNTSVILLE	HUNTSVILLE	PROVINCIAL	354.897186	592 HY		YEAR ROUND	<Null>
GRANITE	DR	<Null>	20	84	21	85	HUNTSVILLE	HUNTSVILLE	PRIVATE	1280.108505	GRANITE DR	<Null>	<Null>	<Null>
MINERAL SPRINGS	RD	<Null>	2	158	1	157	HUNTSVILLE	HUNTSVILLE	TOWNSHIP	645.456106	MINERAL SPRINGS RD	<Null>	<Null>	<Null>
MINERAL SPRINGS	RD	<Null>	160	190	159	189	HUNTSVILLE	HUNTSVILLE	TOWNSHIP	196.279444	MINERAL SPRINGS RD	<Null>	<Null>	<Null>
MBC RIVERSIDE	DR	<Null>	1	5	2	6	HUNTSVILLE	HUNTSVILLE	PRIVATE	129.823607	MBC RIVERSIDE DR	<Null>	<Null>	<Null>
MBC RIVERSIDE	DR	<Null>	7	9	8	10	HUNTSVILLE	HUNTSVILLE	PRIVATE	59.857958	MBC RIVERSIDE DR	<Null>	<Null>	<Null>
MAPLE GROVE	DR	<Null>	1	13	2	14	HUNTSVILLE	HUNTSVILLE	PRIVATE	122.439781	MAPLE GROVE DR	<Null>	<Null>	<Null>
MAPLE GROVE	DR	<Null>	15	59	16	60	HUNTSVILLE	HUNTSVILLE	PRIVATE	345.848734	MAPLE GROVE DR	<Null>	<Null>	<Null>
PROSPECT	DR	<Null>	1	7	2	8	HUNTSVILLE	HUNTSVILLE	PRIVATE	66.315127	PROSPECT DR	<Null>	<Null>	<Null>
PROSPECT	DR	<Null>	9	19	10	20	HUNTSVILLE	HUNTSVILLE	PRIVATE	156.502454	PROSPECT DR	<Null>	<Null>	<Null>
EXIT 189	<Null>	<Null>	0	0	0	0	GEORGIAN BAY	GEORGIAN BAY	PROVINCIAL	279.100611	EXIT 189	<Null>	YEAR ROUND	<Null>
HERMANS	RD	<Null>	1001	1011	1000	1012	LAKE OF BAYS	LAKE OF BAYS	TOWNSHIP	219.571518	HERMANS RD	<Null>	<Null>	<Null>
1032 MORTIMERS POINT	RD	<Null>	1	15	2	14	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	649.711572	1032 MORTIMERS POINT RD	<Null>	PRIVATE	<Null>
1033 HAMILL	RD	<Null>	1	9	2	8	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	89.445228	1033 HAMILL RD	<Null>	PRIVATE	<Null>
1033 ROSSCLAIR	RD	<Null>	0	0	0	0	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	85.428158	1033 ROSSCLAIR RD	<Null>	PRIVATE	<Null>
1033 ROSSCLAIR	RD	<Null>	27	37	28	38	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	436.506039	1033 ROSSCLAIR RD	<Null>	PRIVATE	<Null>
1033 ROSSCLAIR	RD	<Null>	2	10	1	11	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	637.388801	1033 ROSSCLAIR RD	<Null>	PRIVATE	<Null>
FISH HOOK	LN	<Null>	1000	1014	1001	1015	GRAVENHURST	GRAVENHURST	TOWNSHIP	250.062242	FISH HOOK LN	<Null>	<Null>	<Null>
LAKE JOSEPH	RD	<Null>	6903	7191	6902	7192	GEORGIAN BAY	GEORGIAN BAY	PROVINCIAL	1270.905259	LAKE JOSEPH RD		YEAR ROUND	<Null>
1030 BROADLEY	RD	<Null>	4	8	5	7	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	34.408129	1030 BROADLEY RD	<Null>	PRIVATE	<Null>
1030 BROADLEY	RD	<Null>	10	30	9	29	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	244.448592	1030 BROADLEY RD	<Null>	PRIVATE	<Null>
ISLAND VIEW	LN	<Null>	2	10	1	9	HUNTSVILLE	HUNTSVILLE	PRIVATE	157.833919	ISLAND VIEW LN	<Null>	<Null>	<Null>
1035 HURLING POINT	RD	<Null>	1	11	2	12	MUSKOKA LAKES	MUSKOKA LAKES	PRIVATE	134.982914	1035 HURLING POINT RD	<Null>	PRIVATE	<Null>
1035 BRANDY CREST	RD	<Null>	0	0	0	0	MUSKOKA LAKES	MUSKOKA LAKES	TOWNSHIP	322.143215	1035 BRANDY CREST RD	<Null>	NON-MAINTAINED	<Null>
MITAWBIK	RD	<Null>	0	0	0	0	MOOSE DEER POINT	MOOSE DEER POINT	PRIVATE	285.927575	MITAWBIK RD	<Null>	<Null>	<Null>
MITAWBIK	RD	<Null>	1011	1049	1010	1050	MOOSE DEER POINT	MOOSE DEER POINT	PRIVATE	123.683695	MITAWBIK RD	<Null>	<Null>	<Null>
MITAWBIK	RD	<Null>	1001	1009	1000	1008	MOOSE DEER POINT	MOOSE DEER POINT	PRIVATE	85.674892	MITAWBIK RD	<Null>	<Null>	<Null>
OLD SCHOOL	RD	<Null>	<Null>	<Null>	<Null>	<Null>	MOOSE DEER POINT	MOOSE DEER POINT	PRIVATE	348.518726	OLD SCHOOL RD	<Null>	<Null>	<Null>
ARROW RIDGE	<Null>	<Null>	1	19	2	20	BRACEBRIDGE	BRACEBRIDGE	PRIVATE	631.283018	ARROW RIDGE	<Null>	<Null>	<Null>

Road Centerline Dataset

Road & Stop Database Metadata



What Did We Learn?



- Using GIS systems to map & inventory curbside collection routes and stops will result in improvements to the effectiveness & efficiency of municipal waste collection system management

Record Update Script for ArcPad Edit Tracking

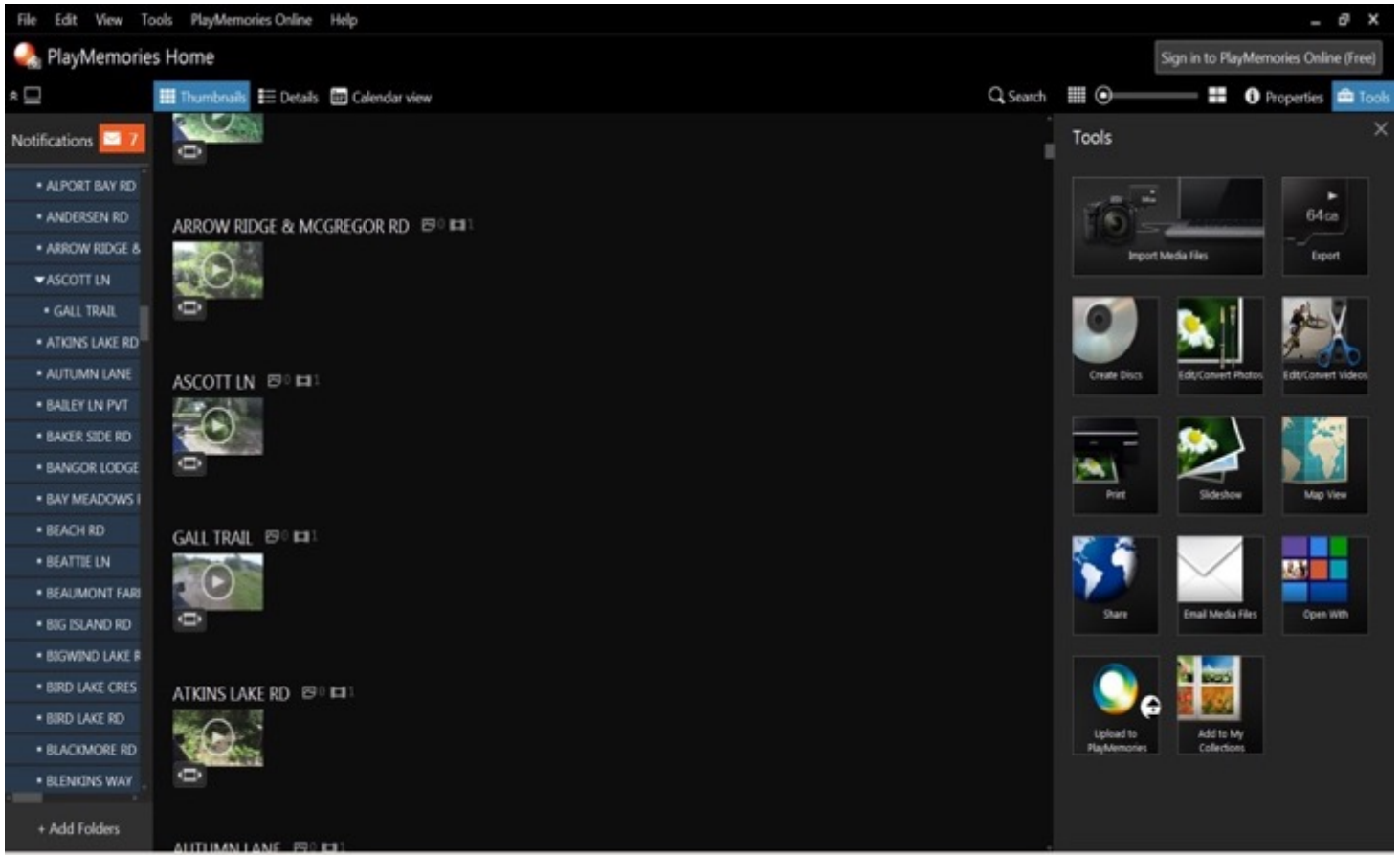
Update_Edit_Date

```
Option Explicit

Sub Automatic_date_update
        Dim objLayer, objRS, objRec, objFields, objfield
        Dim strDate
        set objLayer = thisevent.Object

        ' TO GET THE SELECTED RECORD
        set objRS = Map.SelectionLayer.Records
        objRS.Bookmark = Application.Map.SelectionBookmark
        set objFields = objRS.Fields
        strDate = CStr(formatDateTime(Date,vbShortDate))
        objFields("UPDATE_").Value = strDate
        objRS.Update
        set objRS = Nothing
End Sub
```

Point of View Video Software



Sony PlayMemories Software

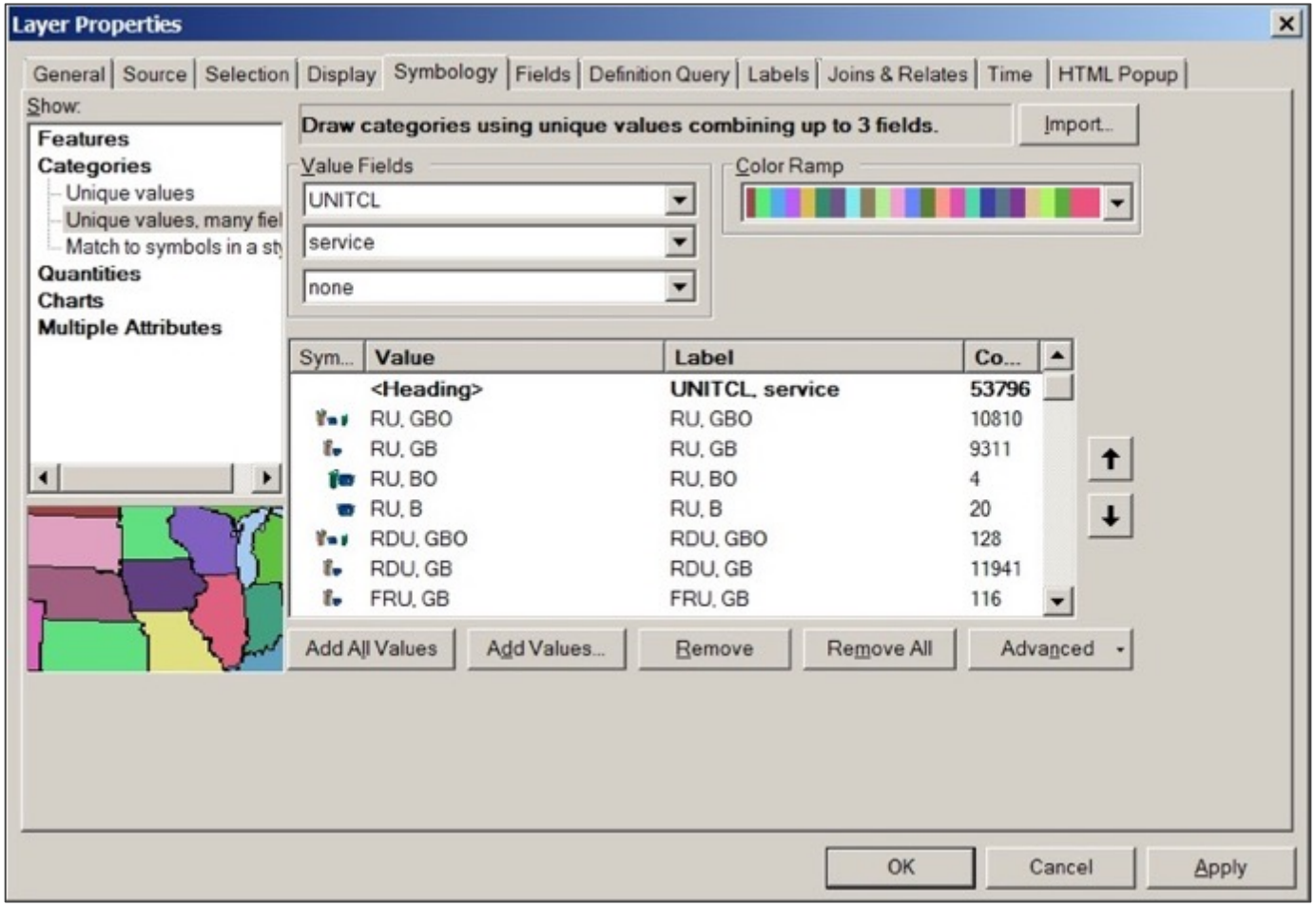
Point of View Camera & Remote

Sony HDR-AS100V & RM-LVR1 Remote

Point of View Camera Video

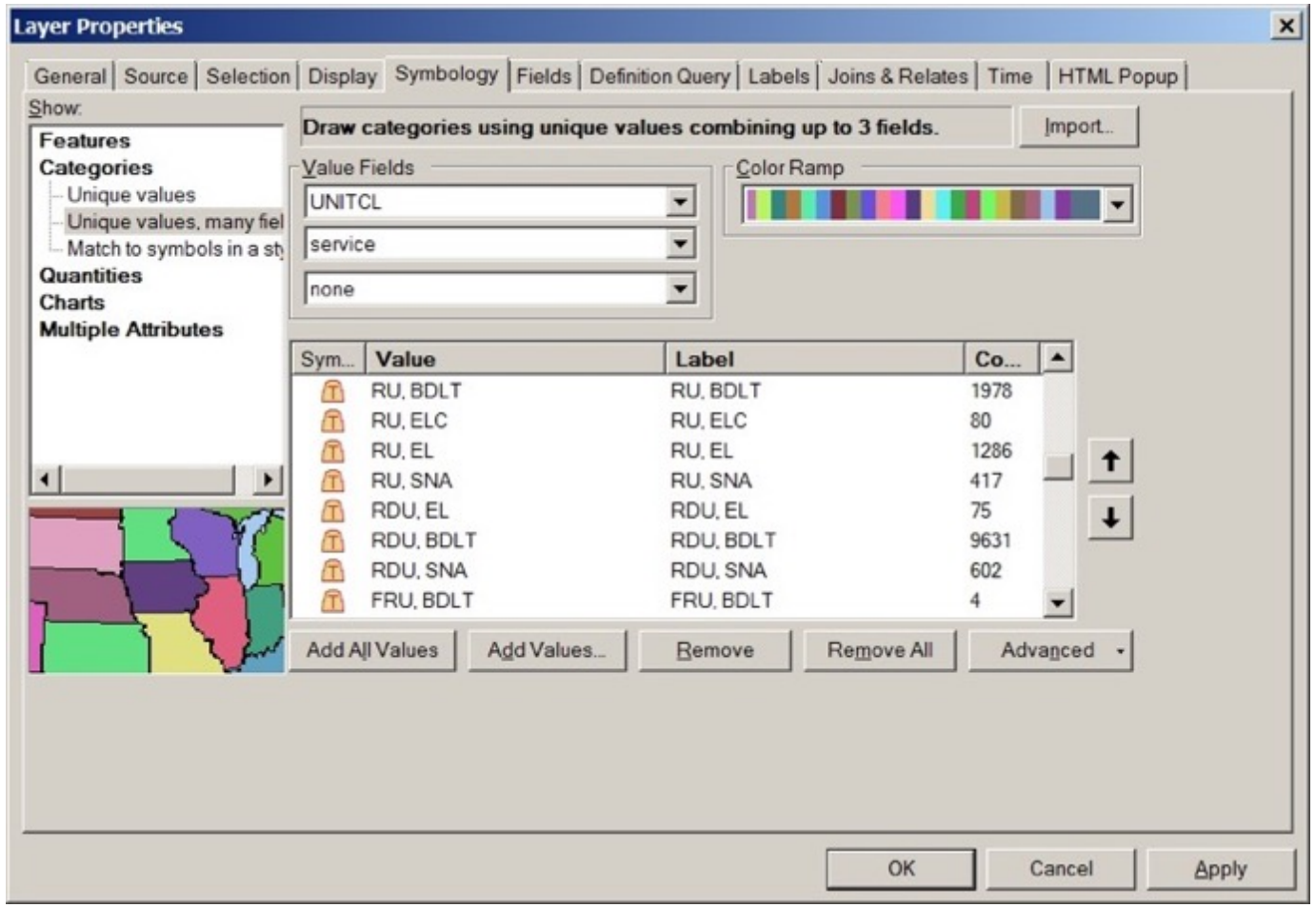
Sony HDR-AS100V

Results



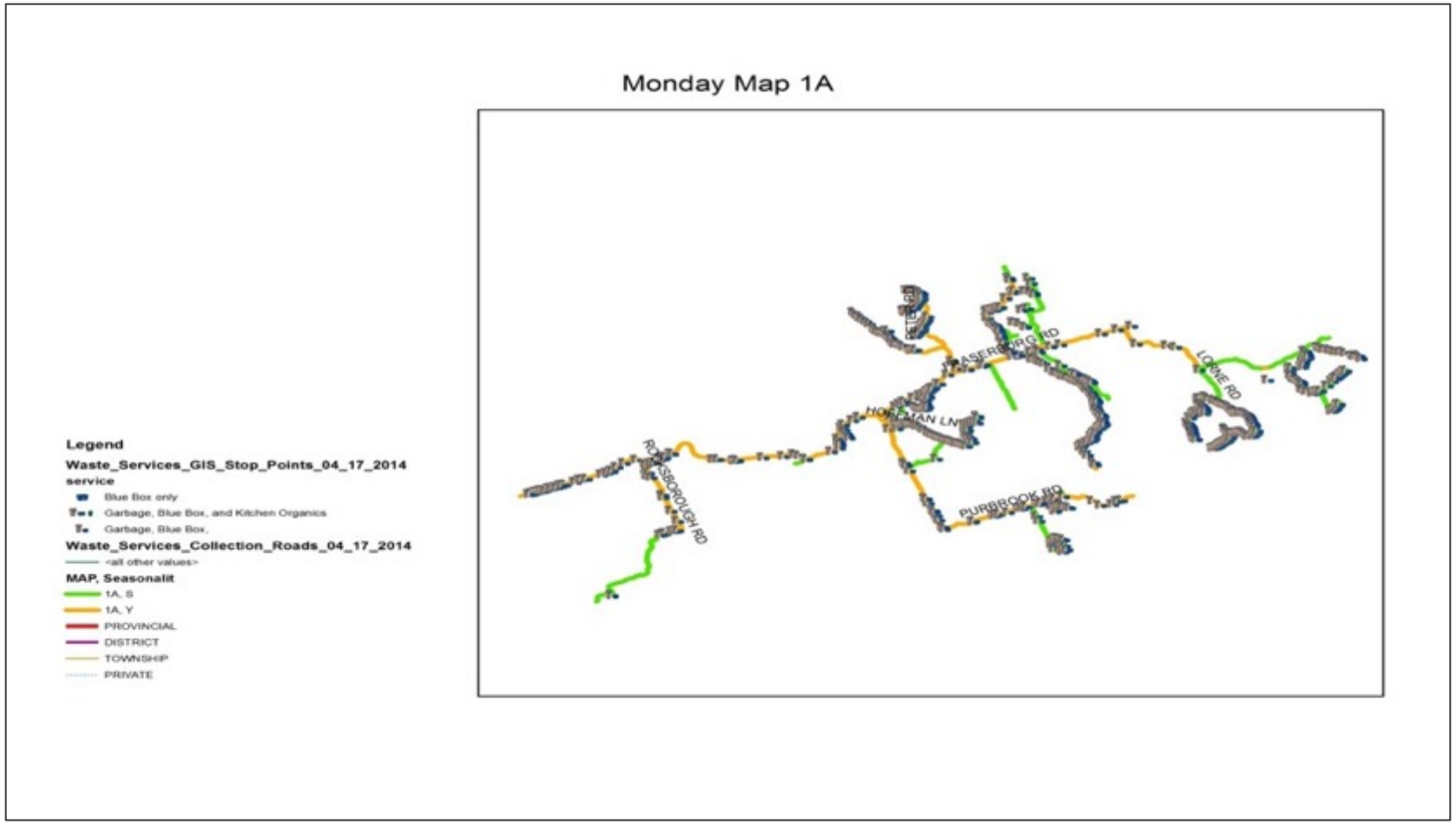
Curbside by Unit Type and Service

Results (1)



Depot by Unit Type & Service

Results (2)



Depot by Unit Type & Service

Closing Comments

- GIS-based Waste Management System Service Level Models can be developed in house with existing data
- For varied collection route types (seasonal roads) field verification is necessary for locating stops along routes
- Collection Models lead to improved efficiency & effectiveness

MRF Mass Balance Study Trends: How the Findings Can Help You

Carrie Nash

CIF Project Manager

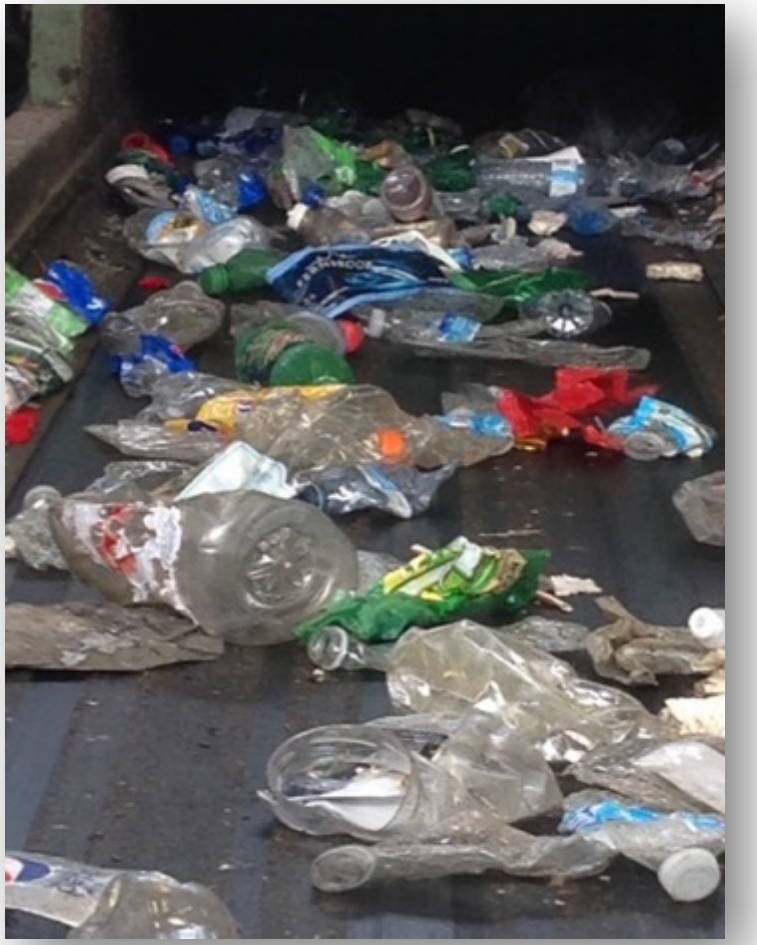
CIF
CONTINUOUS IMPROVEMENT FUND

Background

- Performance Audit funding available through the REOI
- Funded Audits in 5 facilities
  - 2 single stream
    - Peel Region, Bluewater Recycling Authority (BRA)
  - 3 dual stream
    - Hamilton, Essex Windsor Solid Waste Authority (EWSWA), Waterloo Region

MRF Performance Audits: What Are They?

- A mass balance study to determine:
  - Efficiency & effectiveness of equipment & sort stations
  - Where inefficiencies lie
  - Extent & cost of problem
  - Where improvements are most needed to improve material management & capture & drive down costs



MRF Performance Audits: How Do They Work?

Equipment/Sort Station	Target Material	Expected Efficiency	Efficiency	Purity
HDPE – Manual	HDPE	--	80%	--
Fine Screen	Glass	90%	98%	95%
OCC Screen	OCC	--	52%	85%
ONP Screen	ONP/Mixed fibre	--	84%	76%
Film Grabber	Plastic film	30%	0%	0%
Magnet	Steel	90-98%	97%	92%
Eddy Current	Food & beverage	90-95%	80%	91%
Optical Sorter	PET	90-95%	88%	95%
Dual Optical Sorter	Polycoat cartons	90-98%	60%	91%
	Mixed rigid plastics		35%	85%

MRF Performance Audits: How Do They Work?

	Material Flow →													
Commodity	Residue - Pre-Sort	Film	OCC	Glass	Mixed Fibre	Residue - Fibre Line	Steel	Aluminum	PET	Mixed Plastics	Polycoat Cartons	HDPE	Residue - End of Line	Total
Film	13%	56%	1%	0%	16%	9%	0%	0%	0%	0%	0%	0%	5%	**100%**
OCC	0%	0%	61%	0%	37%	1%	0%	0%	0%	0%	0%	0%	1%	**100%**
Glass	1%	0%	0%	92%	3%	0%	0%	0%	0%	0%	0%	0%	4%	**100%**
Mixed Fibre	2%	0%	3%	0%	88%	1%	0%	0%	0%	0%	0%	0%	5%	**100%**
Steel	2%	0%	0%	0%	9%	0%	82%	0%	0%	0%	0%	0%	6%	**100%**
Aluminum	2%	0%	1%	0%	14%	2%	0%	72%	0%	0%	0%	0%	7%	**100%**
PET	2%	0%	1%	0%	12%	1%	0%	0%	79%	2%	0%	0%	4%	**100%**
Mixed Plastics	15%	0%	6%	0%	24%	5%	0%	0%	1%	25%	0%	0%	23%	**100%**
Polycoat Cartons	1%	0%	0%	0%	28%	1%	0%	3%	1%	0%	51%	0%	16%	**100%**
HDPE	1%	0%	2%	0%	2%	1%	0%	0%	1%	4%	0%	81%	8%	**100%**
Residue	21%	6%	1%	5%	27%	12%	0%	0%	2%	0%	0%	0%	24%	**100%**

MRF Performance Audits: How Do They Work?

Materials	Avail. Tonnes	Capture Rates (%)	Captured (tonnes)	Expected Revenue ($)	Actual Revenue ($)	Net Diff. ($)
Aluminum Prime	626	84%	528	$1,095,000	$923,000	-$172,000
Aluminum B-Grade	87	63%	54	$98,000	$62,000	-$37,000
PET	2,842	73%	2,078	$1,125,000	$822,000	-$303,000
HDPE	993	81%	806	$607,000	$493,000	-$114,000
Mixed Plastics	1,406	43%	606	$77,000	$33,000	-$44,000
Film	1,116	55%	615	$0	$0	$0
Cartons	376	74%	277	$40,000	$30,000	-$11,000
Steel	1,372	94%	1,288	$423,000	$397,000	-$26,000
Glass	3,100	98%	3,034	-$85,000	-$84,000	$2,000
TOTAL	**11,917**	**78%**	**9,286**	**$3,380,000**	**$2,677,000**	**-$704,000**

MRF Performance Audits: Why Undertake One?

- Determine effect on MRF performance & material management with:
  - Single vs. dual stream
  - Changes to packaging mix
  - Inbound composition shifts (lighter, smaller, composite materials)
  - Contamination
    - Resident confusion, apathy
  - Impact of hard to serve sectors on MRF
    - MR public areas such as parks
  - Market fluctuations
    - Price drops, market closures, foreign policy changes

Inbound Material Mix

- Stark difference between sites
  - Ranged from ultra clean to heavily contaminated
- Continuing evidence of light-weighting
  - More film & small rigid plastics
  - Less newspaper & fine paper

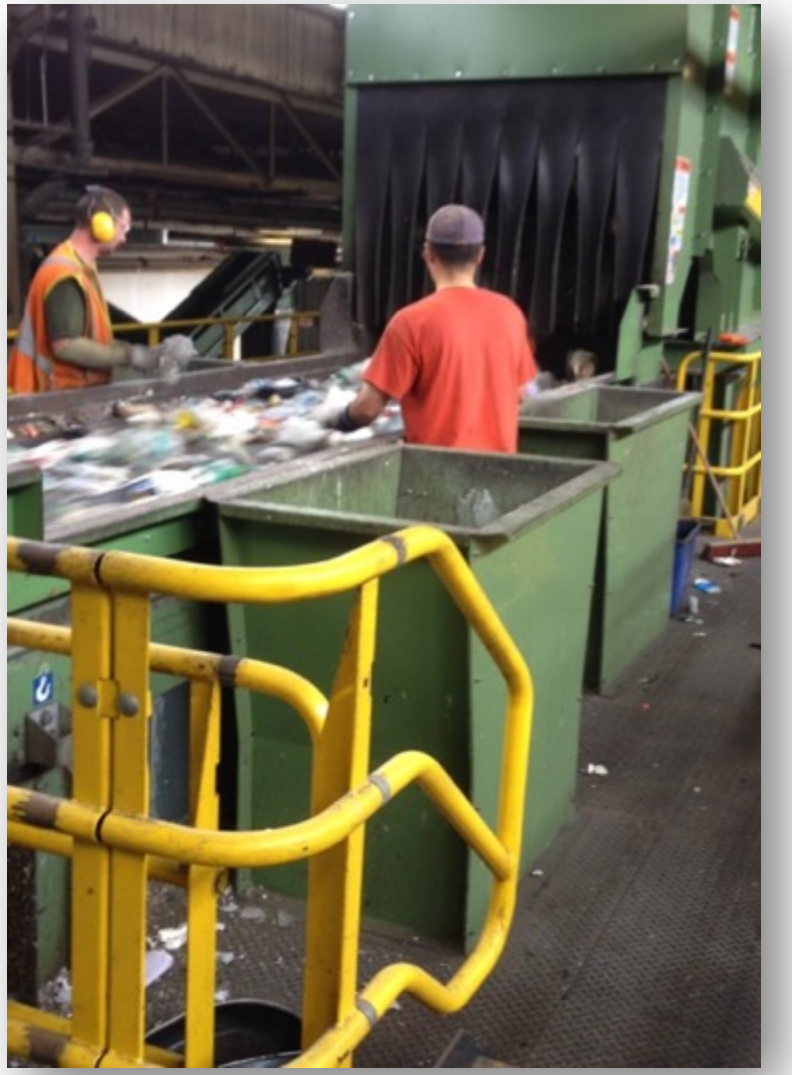
Contamination

- Impacts sorting efficiencies, capture rates & bale purity
- Dual stream challenge
  - Cross contamination
- Single stream challenge
  - Medical waste, scrap metal, oversized wasted, electronics
  - Downtime

Equipment & Material Handling

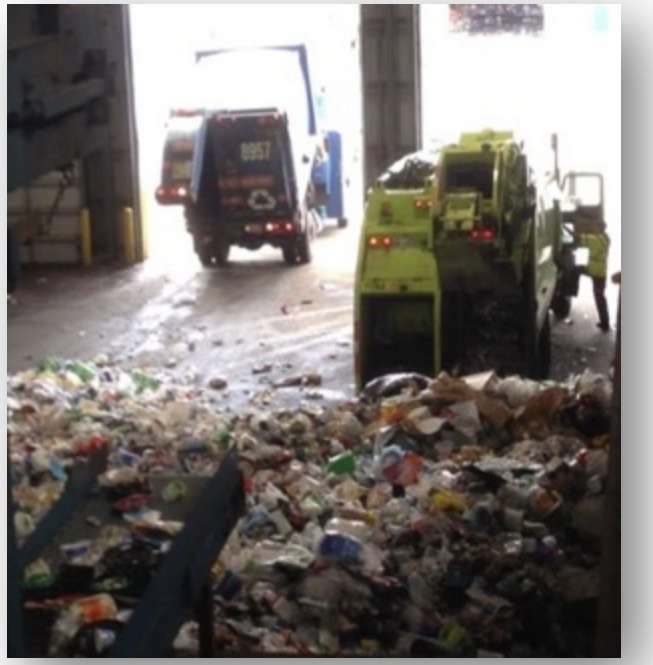
- Audit helped quantify the problem
  - Film plastic management in Hamilton
- Audit sometimes revealed small, easy fixes
  - Air compressor in EWSWA
- Equipment configuration & maintenance matters
  - Clean up material as much as possible before the optical
  - Proper maintenance to avoid downtime & costly repairs
- Sometimes an equipment fix doesn't exist
  - Bag breaker for small tied off grocery bags
  - Plastic film capture

Other Themes & Trends



- Residue
  - Monitor throughout process to determine where the leak is
- Material Capture
  - Low capture rates for high value materials
- Equipment
  - Neglected record keeping leads to overspending on maintenance
  - Dual eject optical sorters underperform

Key Takeaway: We Need to Widen Our Approach



Collection → Processing → Markets

Markets → Processing → Collection → P&E → Policy & Enforcement

Key Takeaway

- MRF audits are barometer of performance, & key indicator of where time & budgets would yield best return on investment
- Visit CIF Projects web page for individual reports for each site

Questions

CIF
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IMPROVEMENT FUND

Enjoy Your Break

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IMPROVEMENT FUND

Welcome Back

CIF
CONTINUOUS IMPROVEMENT FUND

In This Section

- RPRA Update
  - Mary Cummins, RPRA
- Cost Models: Who's Used Them & Do They Work
  - Panel

RPRA PROGRAM UPDATES

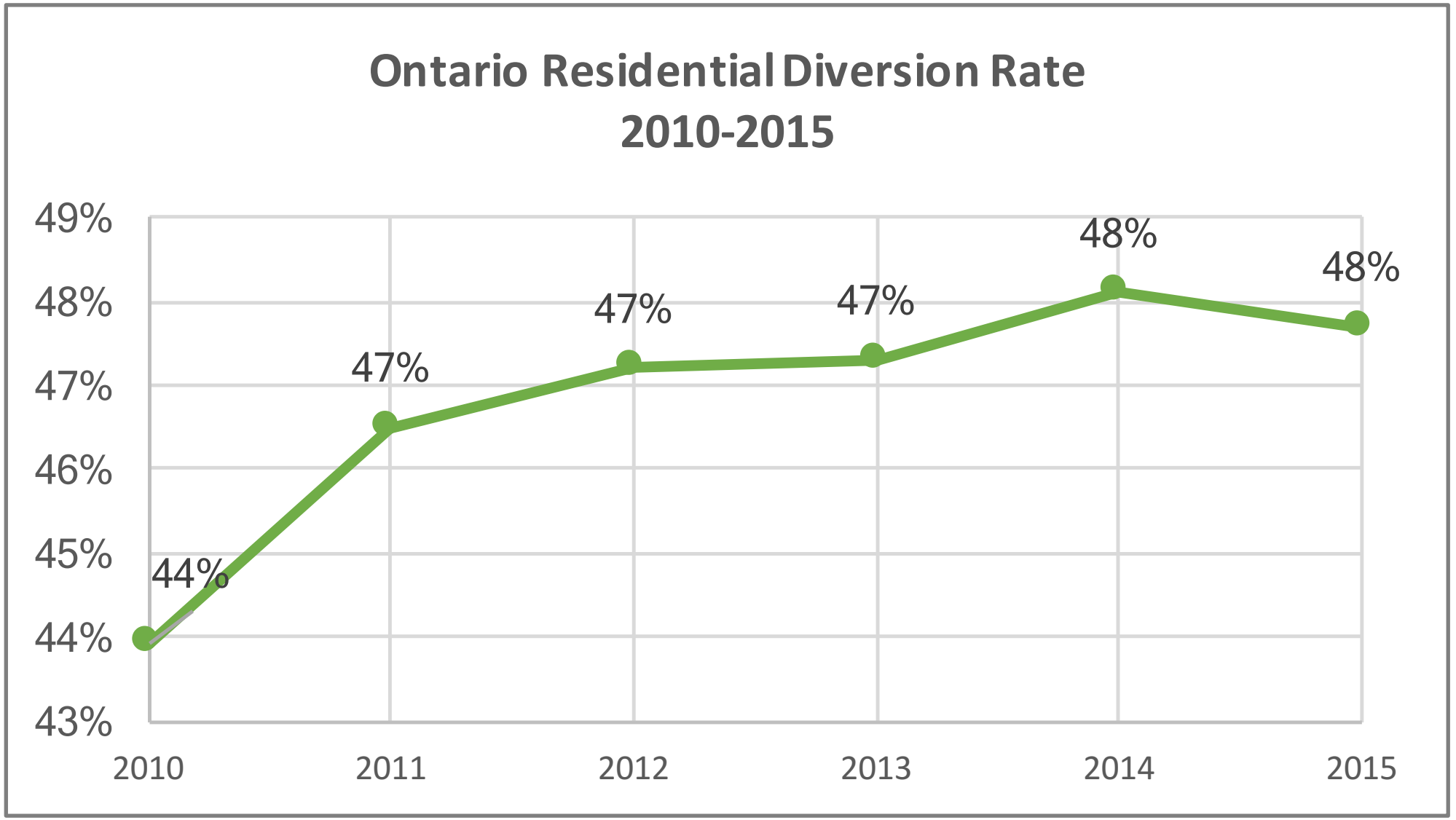
May 18, 2017

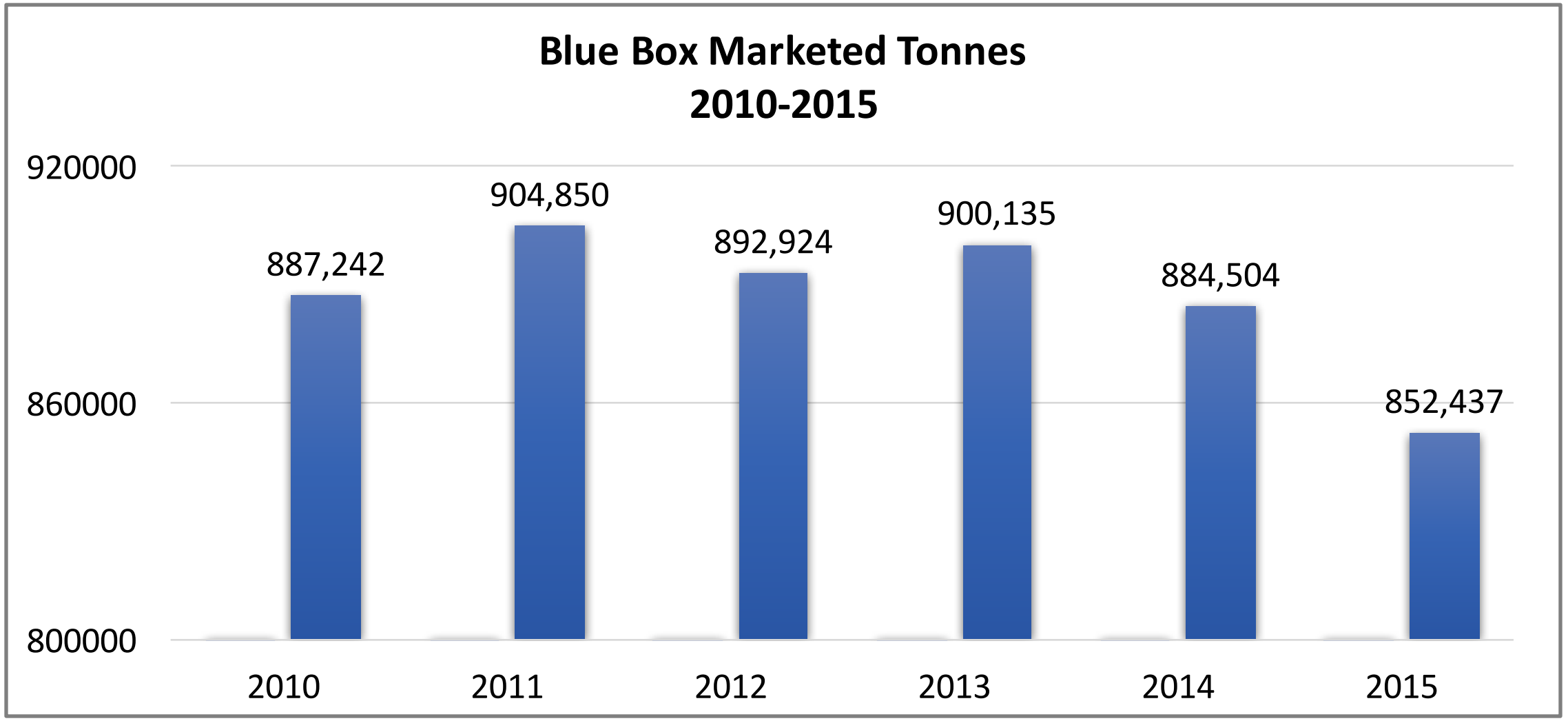
Mary Cummins, Program Lead

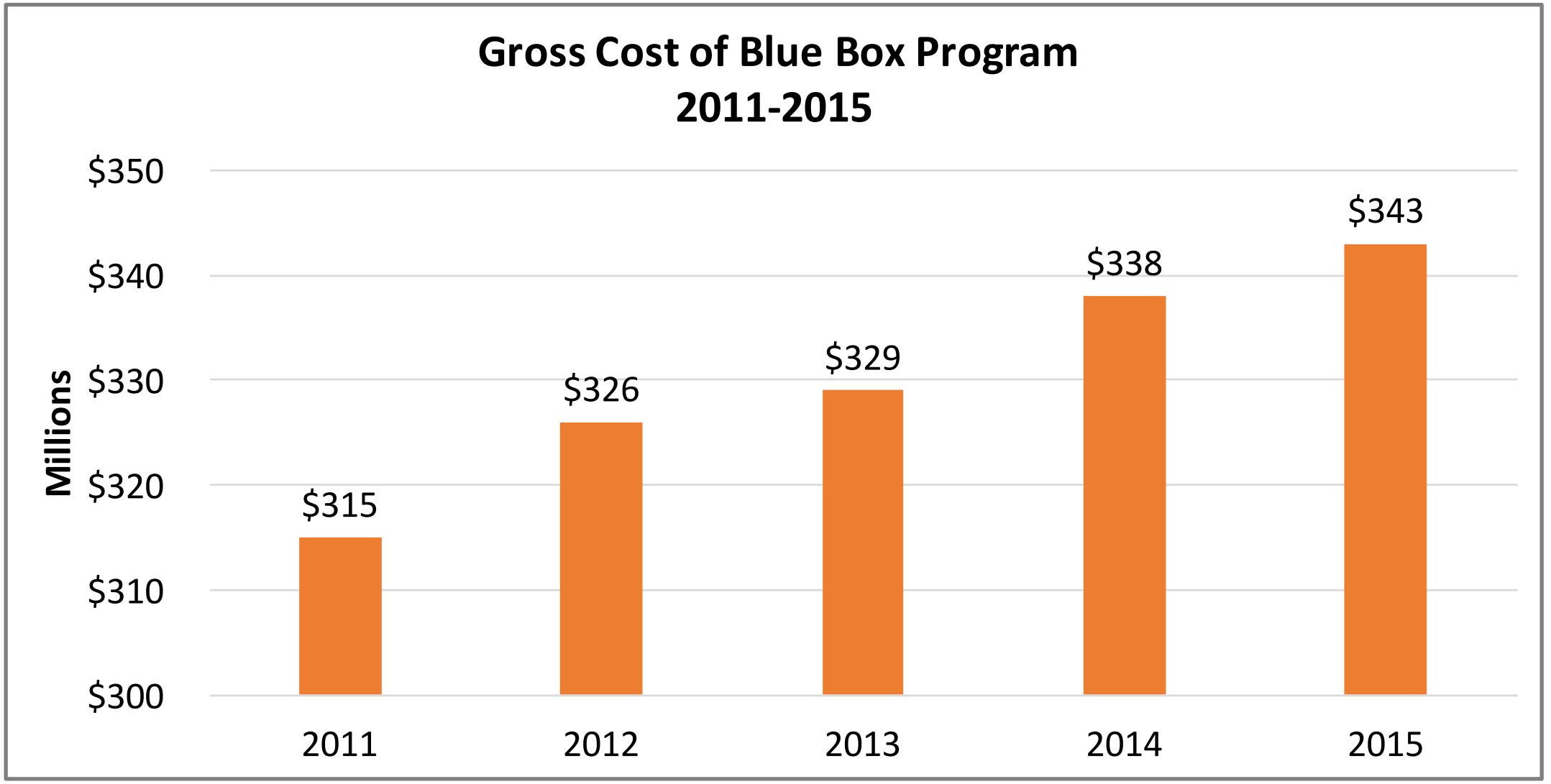
Resource Productivity & Recovery Authority | Office de la Productivité et de la Récupération des Ressources

Blue Box

1. Steward Obligation
2. InKind
3. MIPC
4. CIF
5. Diversion Reports

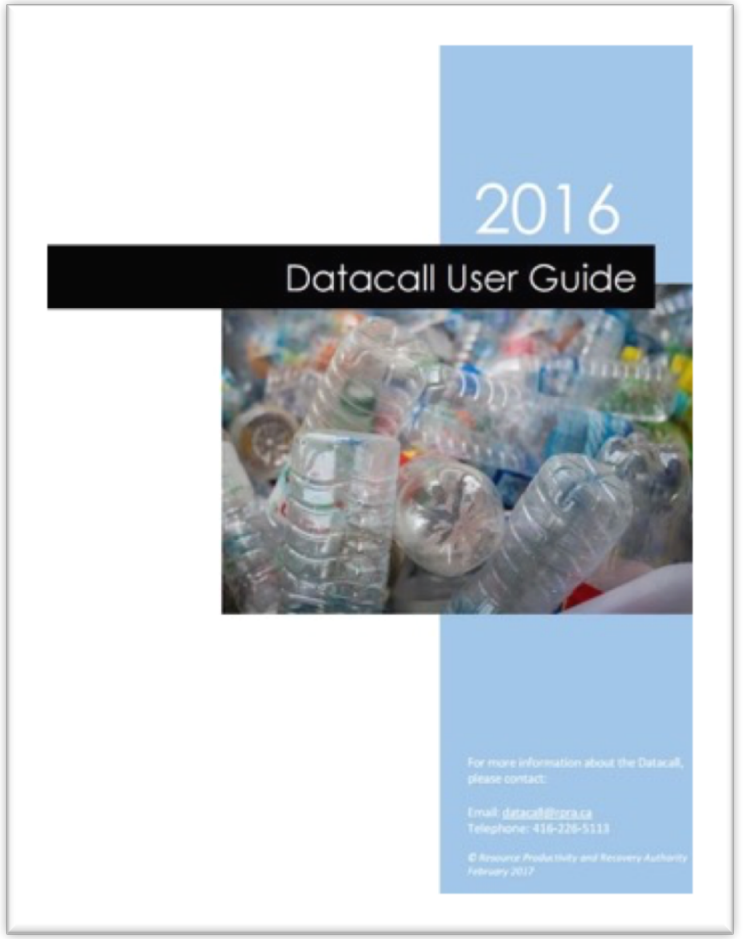

Ontario Residential Diversion Rate
2010-2015
49%
48%
47%
46%
45%
44%
43%
44%
47%
47%
47%
48%
48%
2010
2011
2012
2013
2014
2015


Blue Box Marketed Tonnes
2010-2015
920000
860000
800000
887,242
904,850
892,924
900,135
884,504
852,437
2010
2011
2012
2013
2014
2015


Gross Cost of Blue Box Program
2011-2015
Millions
$350
$340
$330
$320
$310
$300
$315
$326
$329
$338
$343
2011
2012
2013
2014
2015

Datacall

1. New tools this year!
2. Datacall Audits
3. Datacall ShortForm
   - 133 users this year
4. The Registry
5. Datacall Consultations



ORANGEDROP

Automotive Materials Stewardship

PaintReuse
Free Leftover Paint

Used Tires

1. Transition under the WDTA
2. Privacy and Municipal Documentation Issue
3. New Steward Fees – May 1

WEEE

1. New Steward Fees – June 1

Ontario Electronic Stewardship

Thank you

Mary Cummins
mcummins@rpra.ca
416.640.6961
www.rpra.ca

Resource Productivity & Recovery Authority | Office de la Productivité et de la Récupération des Ressources

Cost Models:
Who's Used Them & Do They Work?

Gary Everett, CIF
Project Manager

CIF
CONTINUOUS IMPROVEMENT FUND

Why Cost Models?

- EPR train has left the station
- Automotive Materials Stewardship **effective Apr. 1/17**
- Is it a good deal ???

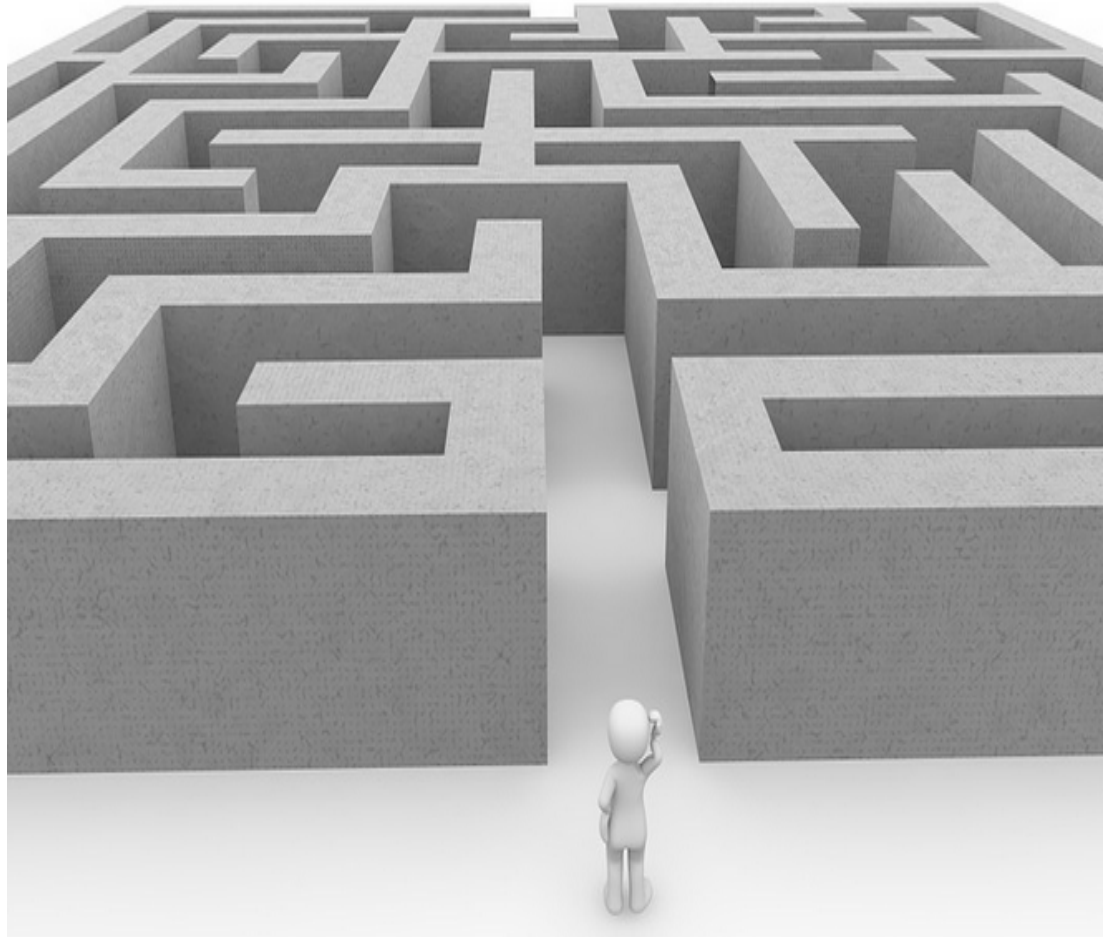
Why Cost Models?

- Can’t identify **cost drivers**
- Can’t track costs by **specific activity**
- Can’t track costs by **specific material**

What's in the Works

Several CIF projects ongoing to:

- Identify & adapt ABC models
- Build checklists & guides for costing
- Develop procedures for asset valuation



Today's Speakers

- Lindsay Milne, York Region
  - Full Cost Accounting Study - CIF Project #975
- Neil Menezes, Reclay StewardEdge
  - CIF MRF Cost Model: A Key Component of Your EPR Planning
- Alex Piggott, City of Woodstock
  - Depot Cost Model Experience - CIF Project # 875
- Kate Dykman, City of Vaughan
  - Collection Contract Cost Modelling - CIF Project #965
- Heather Roberts, City of Kingston
  - Developing a Collaborative Processing Hub in Eastern Ontario

Full Cost Accounting Study CIF Project #975

Lindsay Milne, York Region

Manager, Sustainable Waste Management

Project Highlights

- Project goal:
  - Identify all solid waste management system costs & revenues
- Impacts:
  - Supports preparation for transition to full EPR
  - Informs decision making during transition
- More information:
  - Lindsay.Milne@York.ca
  - Laura.Darnell-Omotani@York.ca
  - www.york.ca

Full Producer Responsibility Regime

Background

- Full Cost Accounting (FCA) Study part of SM4RT Living Master Plan
- Initial strategy included 2-phased approach to funding large capital projects
  - Phase 1: Full Cost Accounting Study
  - Phase 2: Rate based service
    - on hold until implications of WFOA fully understood

Challenges

- Data acquisition template
- Cost allocation methodology
  - Different allocation methodologies at York Region vs. local Municipalities
  - Not all administrative costs tracked by material type
  - Allocation methodologies differed depending on material type

Cost Information
(in $000s CAD)

		2013	2014
Direct fixed costs (to be considered for all waste streams)	Salaries and Benefits		
	Travel/Meeting Expenses		
	Materials and Supplies		
	Advertising		
	IT Costs		
	Hardware		
	Software		
	Fleet Expenses		
	Vehicles		
	Fuel		
	Fuel Surcharge		
	Maintenance		
	Office Supplies		
	Printing		
	Occupancy and RM		
	Collection Contracts		
	Minor Capital		
	Financing Costs		
	Debt		
	Interest		
	Bank Charges		
	Contribution to Reserves		

Snapshot from Template: Cost Information

Findings

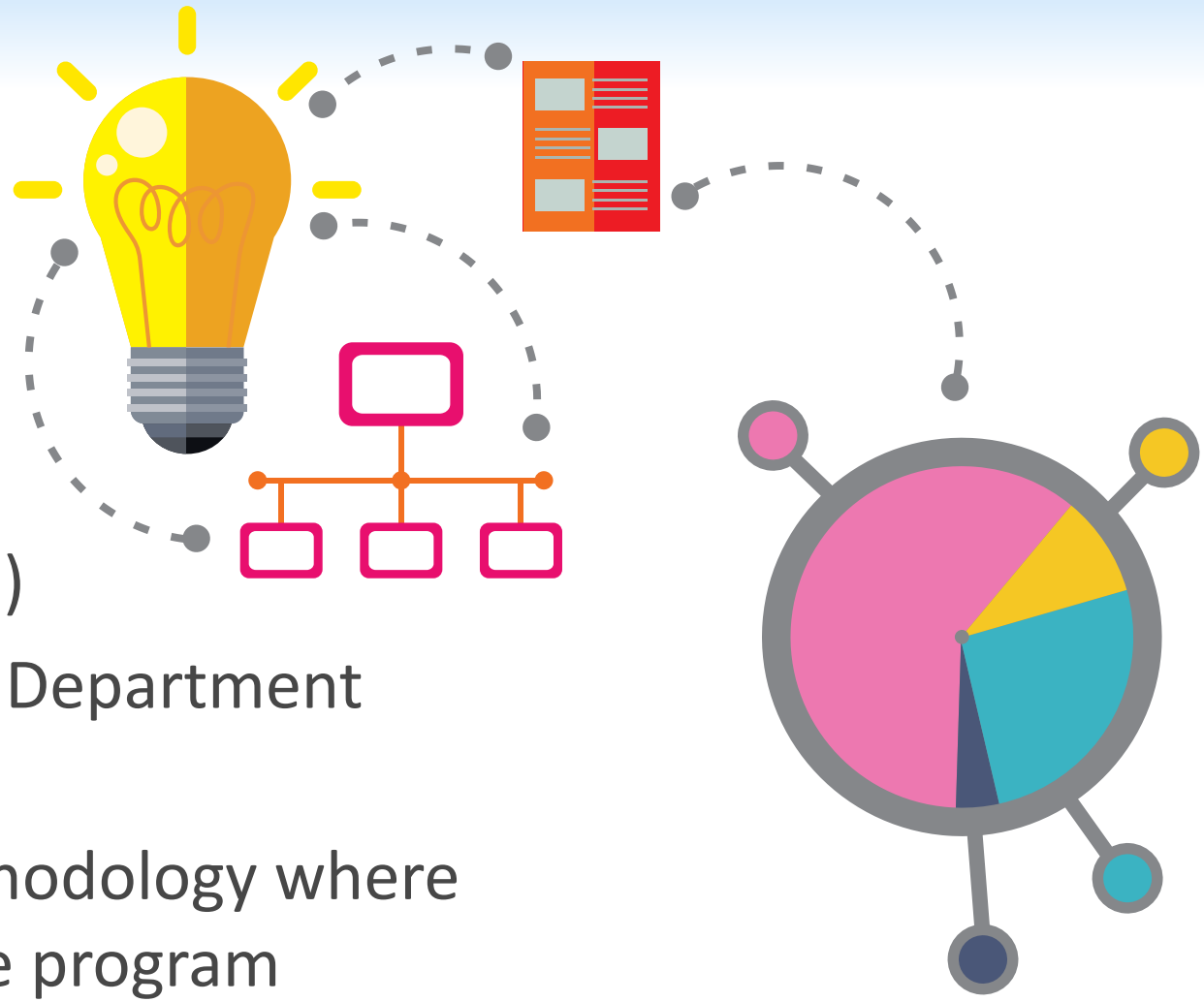
- FCA Study findings will include summary of total system costs & suite of KPIs:
  - Total costs/tonne
  - Net costs/tonne
  - Cost/household
  - Cost/capita
  - Curbside collection costs vs. multi-residential collection costs
  - Cost/event vs. cost/depot
  - P&E & customer service cost/tonne

Key Message & Take-Away

- Need financial & operational understanding of diversion programs
- Need better understanding of municipal administration & overhead costs required to deliver diversion programs
- Where costs not attributed directly to waste stream, need to determine fair & reasonable allocation methodology

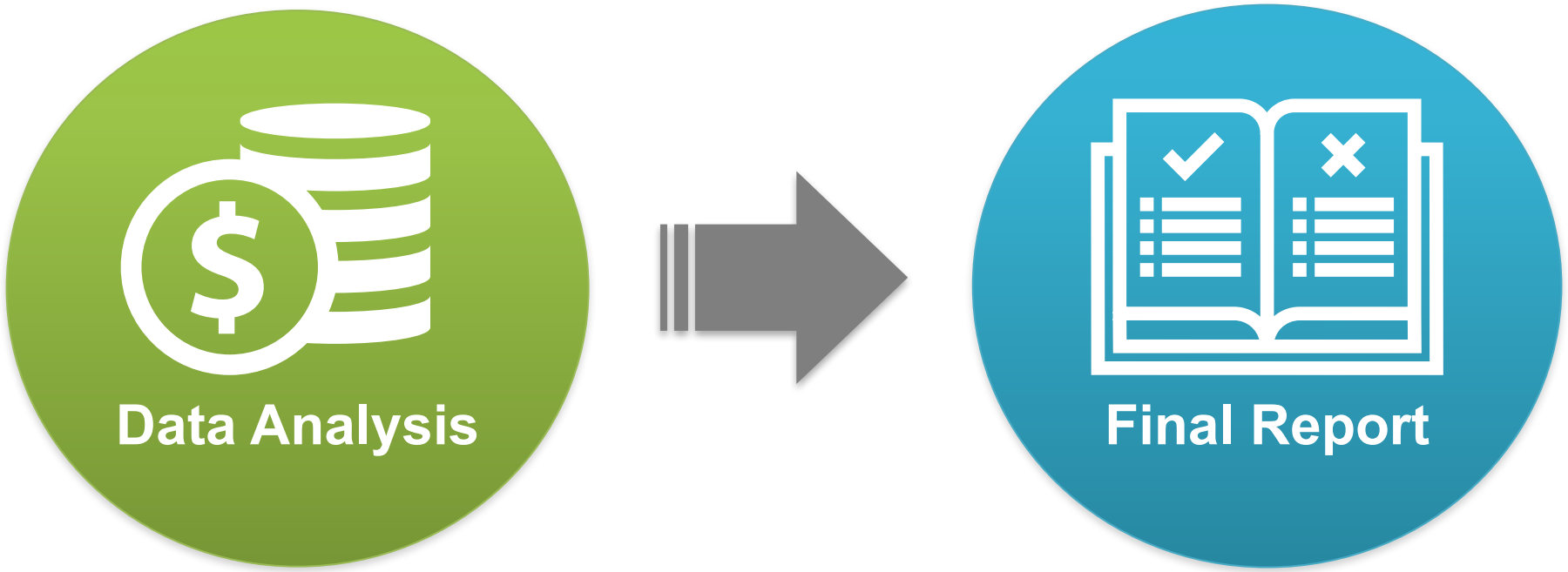
Advice

- Determine study outcomes such as KPIs early in process
- Need to think broadly about internal services support (Legal; HR; Communications; etc.)
- Close collaboration with Finance Department essential
- Need to establish allocation methodology where admin costs not tracked by waste program



Next Steps

- Complete analysis and FCA final report
- CIF will share tools and templates with other municipalities
- Anticipate completion of study in Q2/Q3 2017



Reclay StewardEdge
Product Stewardship Solutions

CIF MRF Cost Model:
A Key Component of Your EPR Planning

Neil Menezes

Reclay StewardEdge

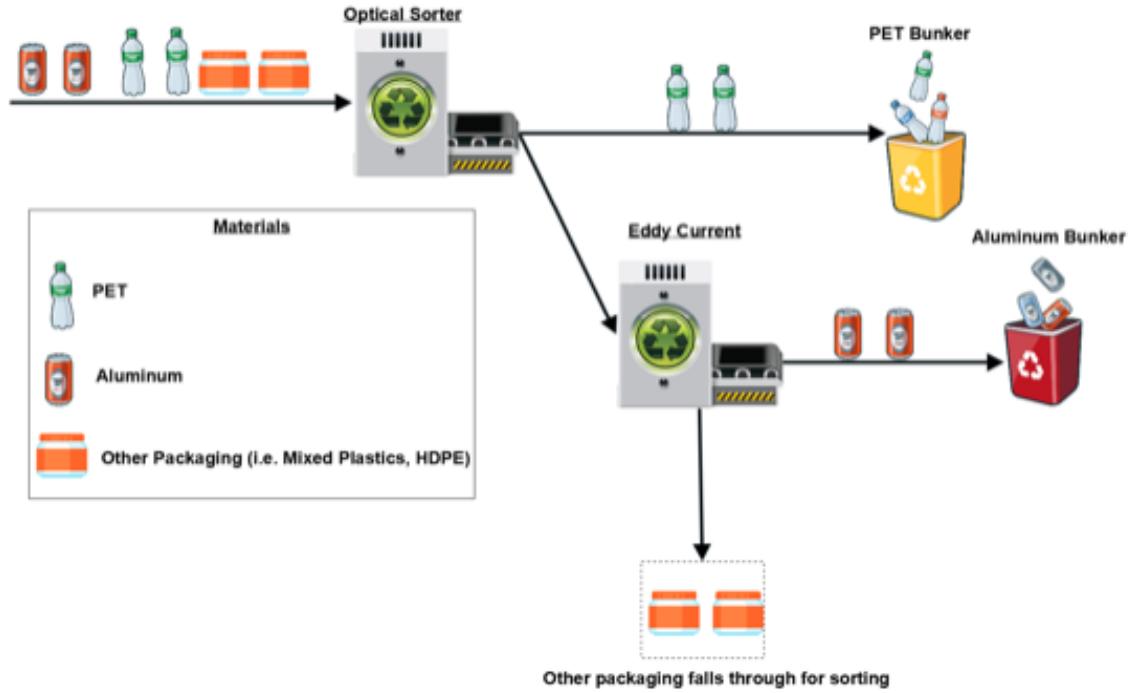
CIF
CONTINUOUS IMPROVEMENT FUND

Project Highlights

- Project goal: to develop a model to determine the costs to manage individual materials within municipal MRFs
- Impacts: Enable municipalities to utilize this knowledge to identify opportunities to increase capture & lower MRF costs
- More information:
  - nmenezes@reclaystewardedge.com
  - www.reclaystewardedge.com

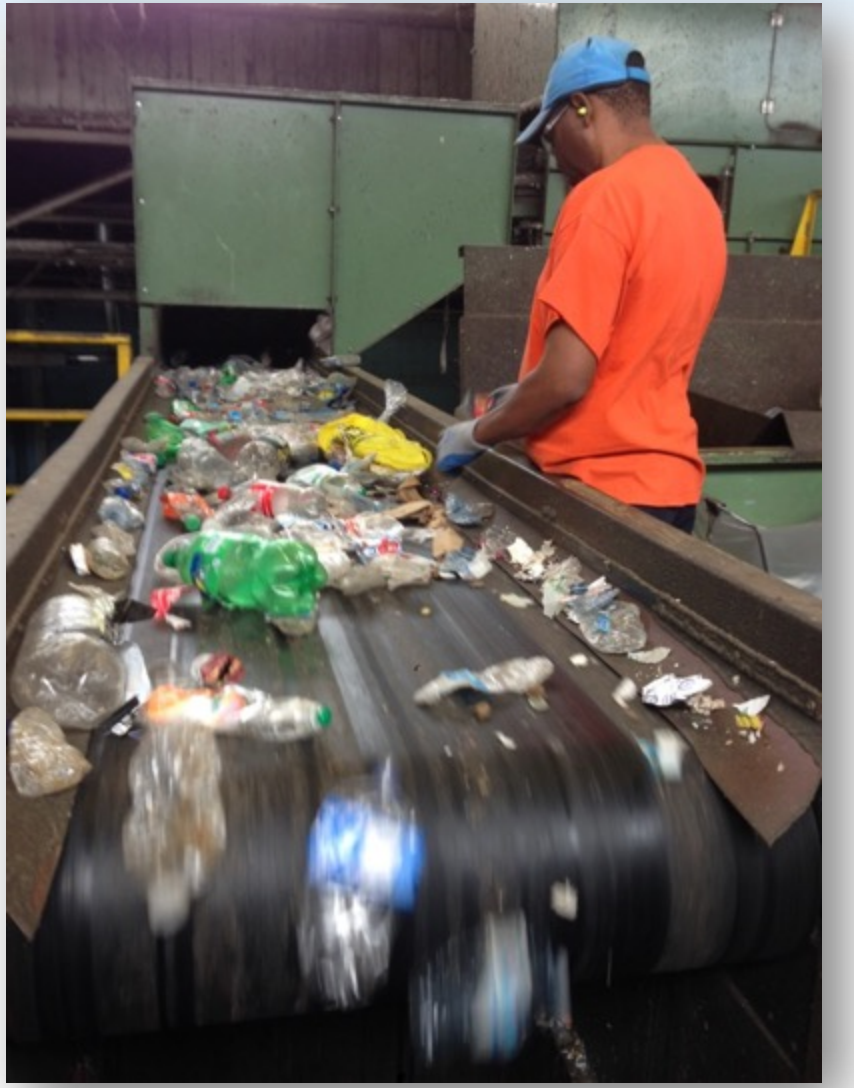
Background

- Limited tools for municipalities to understand costs to sort materials
- SO provides material handling costs but at a provincial level
- Project considered how to build on these aspects, refining them to meet needs of individual MRFs
- Launched in response to municipal requests



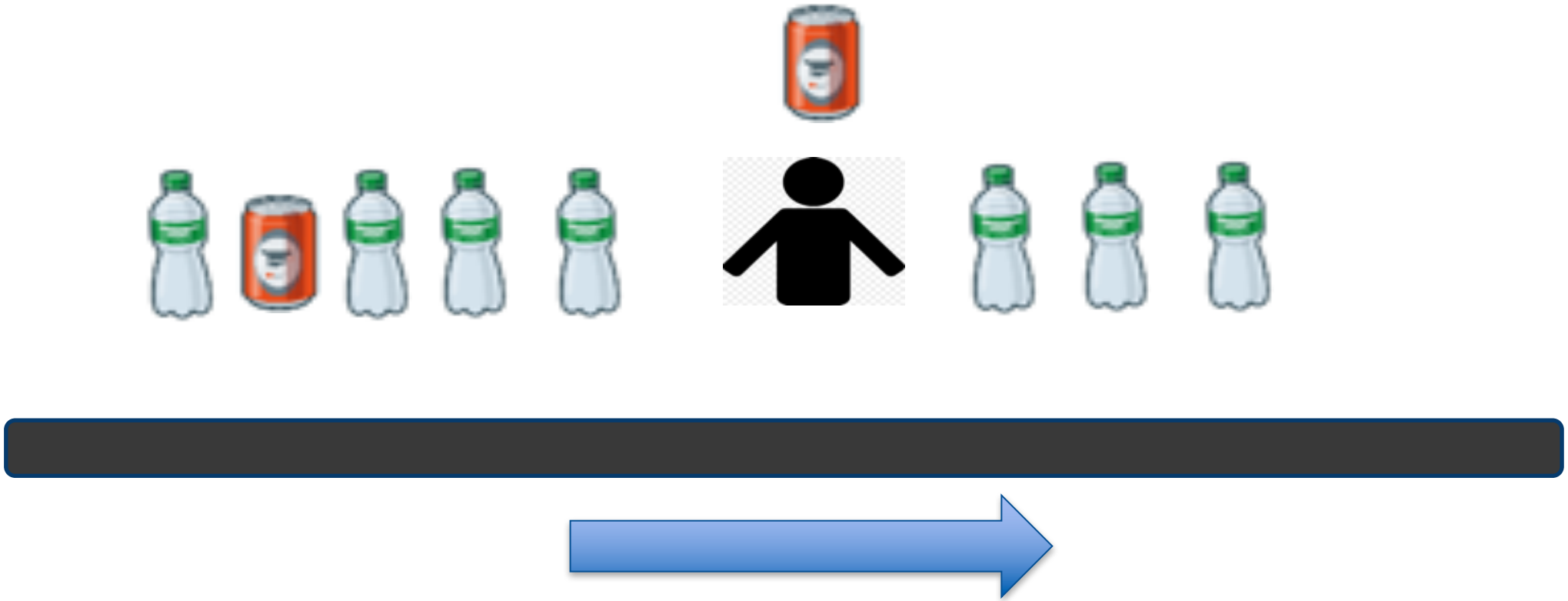
MRF ABC Model Considerations

- Tool's functionality
- Equipment & labour allocations
- Order in which materials are sorted
- Common vs. material specific costs determination
- Allocation methodology
- Impact of how a material is sorted:
  - Positive (manual)
  - Positive (equipment)
  - Negatively

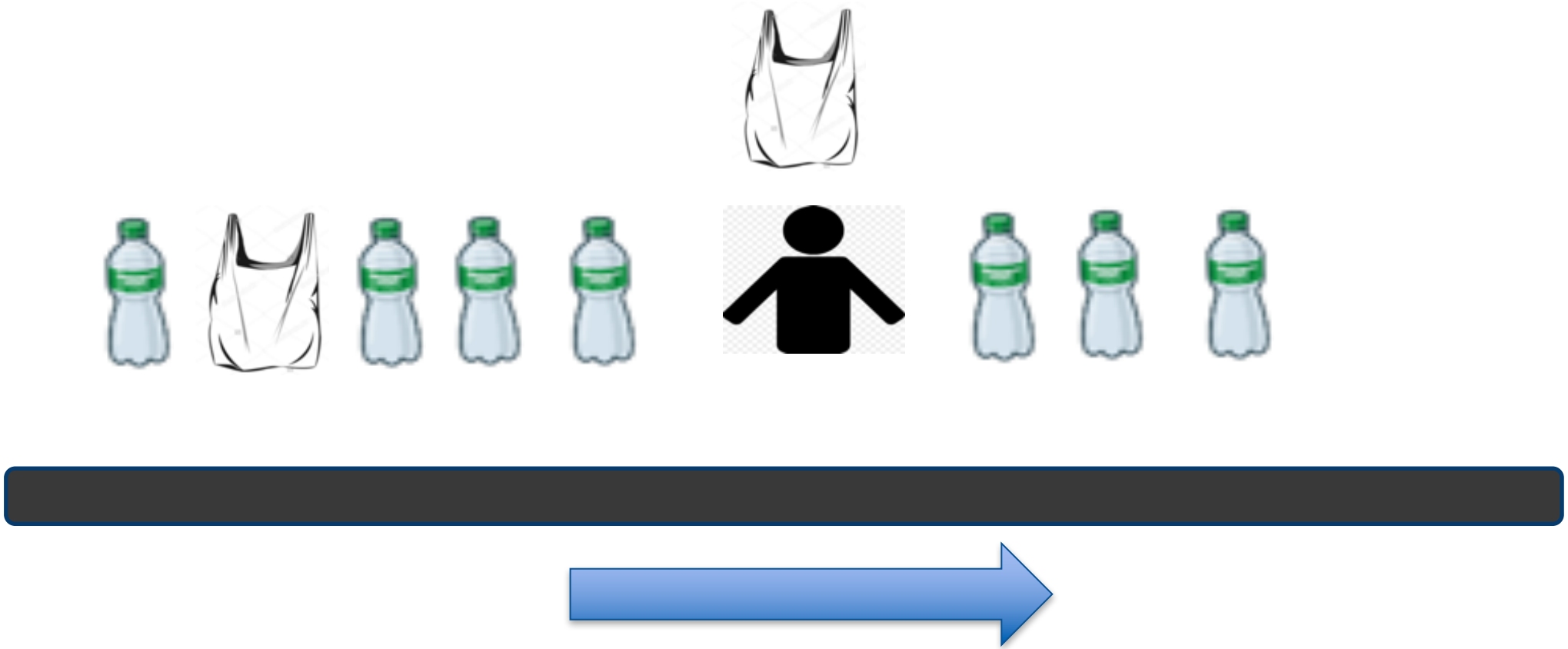


Example 1: What Material Benefits?

Example 2: What Material Benefits



Example 3: What Material Benefits?



Complexity of the Issue

- Determining how to allocate costs is a complex issue
- MRF operations are shared systems with same objective for all materials
- Shared system includes
  - common costs: building, baler, floor staff
  - material specific costs: eddy currents, manual sorters, etc.
- Some materials require greater effort to separate to produce valuable commodity or prevent contamination of other materials
- Multiple factors affect material specific costs

Sorting Through the Complexities

- CIF has facilitated 3 workshops to-date
- 11 municipal representatives from cross section of operations i.e.
  - single & dual stream
  - small & large scale MRFs
  - southern to eastern locations
- Discussions aimed at reaching consensus on Activity Based Costing (ABC) principles & methodology
- Begun sorting through issues & concerns related model design

Building the MRF ABC Model

- Differences among MRFs
  - mix of material
  - equipment complement & configuration
  - # of sorters, etc.
- Tool will enable municipalities to evaluate costs & share data with other municipalities
  - identify opportunities to change operations if & where needed
- Tool needs to be complex enough to capture many scenarios, but simple enough to be usable

Sample Screenshot of the Model

PRINTED PAPER		Materials Collected (Check all that apply)	Inbound Composition (% by weight)
	Newsprint - CNA/OCNA	☑ Check	20%
	Newsprint - Non-CNA/OCNA	☑ Check	13%
	Magazines and Catalogues	☑ Check	6%
	Telephone Books	☑ Check	1%
	Other Printed Paper	☐ Check	0%
PACKAGING			
Paper Based Packaging	Corrugated Cardboard	☐ Check	17%
	Boxboard	☑ Check	9%
	Gable Top Cartons	☑ Check	
	Paper Laminates	☐ Check	
	Aseptic Containers	☑ Check	
Plastic Packaging	PET bottles	☑ Check	
	HDPE bottles	☑ Check	

Sorting Equipment

Equipment	Materials Targeted	Materials Targeted
Single- Eject Optical Sorter	PET	
Dual-Eject Optical Sorter	HDPE	Mixed Plastics
Eddy Current	Aluminum	

Single-Eject Optical Sorter
Dual-Eject Optical Sorter
Eddy Current
Overhead Magnet

Road to Completion

- To date:
  - A municipal working group has met 3 times to discuss and agree on principles and allocation methodology
- June – August:
  - Onsite data collection begun at pilot facilities
  - Data gathered is to be used as the inputs into the model –June & July 2017
- June – September
  - 1 to 2 municipal group meetings remain to work with & tweak model - ensure end product meets working group expectations for ease of use & utility

Depot Cost Model Experience
CIF Project # 875

Alex Piggott

City of Woodstock

Project Highlights

- Project goals:
  - Test CIF Depot Costing Model for tracking Blue Box costs
  - Compare to ongoing project (#875)

- Impacts:
  - Verified completeness of cost elements and provide recommendations to improve utility

- More information:
  - apiggott@cityofwoodstock.ca
  - www.cityofwoodstock.ca

Old System

- Conflict btw collection vehicles & public

New System

- Public separate from collection vehicles

Accounting for Upgrades at the Depot / Transfer Station

- What was the financial impact of the project?
  - Preconstruction vs. Budget vs. Post (Actual)

- Depot Costing Model Areas
  1. Capital Amortization
  2. Operating Costs
  3. Haul to MRF

CIF Depot Costing Model – At a Glance…

Depot Components (Units)	Amortization Period	Amortization Payment	Quantity	Cost per Unit	Total Cost	Best Practices	Blue Box	Wood	Metal
Site Lighting (light poles)	15 years	$53	1	$800	**$800**	Site lighting is required when hours of operation extend past day light hours. Number of poles on site will depend on pole height, lighting intensity. Lighting on average costs approximately $100 / square metre	yes	no	no
Site Electrical (per square metre)	20 years	$0	0	$90	**$0**	Connect to permanent electrical power source from the street if available. Average $2,000 per utility pole. Cost for utility poles have been included in sq. metre cost	no	no	no
Water/ Sanitary (per metre)	20 years	$0	0	$500	**$0**	Potable water supply is required for depot staff. Either connect to City services or provide bottled water and well for non-potable uses. Connect washrooms/shower to sanitary sewer or construct septic system.	no	no	no
Septic Installation (per unit installed)	20 years	$0	0	$25,000	**$0**	Drilled well and septic system installation. The example cost This cost would be representative of a system to meet the needs of 3-4 staff.	no	no	no
Landscaping (per square metre)	20 years	$0	0	$100	**$0**	Landscaping can be used as a visual incentive for site residents to use a depot. An aesthetically appealing, clean site will attract more users and can include grass space, trees, and other vegetation. Muddy and dusty areas should not be present in high traffic areas.	no	no	no
Litter Fence (per metre)	10 years	$0	0	$100	**$0**	Litter fencing should be placed in an area where wind is most likely to carry litter off site. Local assessment will be needed to determine best locations. Standard fence is 8 feet tall.	no	no	no
Fencing (per metre)	15 years	$180	36	$75	**$2,700**	Chain link fencing with barbed wire (where permitted) at the top around the perimeter of the site minimizes vandalism, animals and illegal dumping. Other materials can also be used for fencing to visually separate the site if needed. Site gates and fencing should be regularly maintained and locked during non-operating hours. Fence height should be 2m high at a minimum.	yes	no	no
Kiosk (per square metre)	15 years	$0	0	$1,700	**$0**	A small kiosk can be used for one site staff to provide direction, site information, and collect fees upon entering/exiting the site. Basic kiosk design should include a fully sheltered structure with a seat and desk for an attendant at a minimum. More comprehensive designs can also include washroom facilities, lunch room areas, etc..	no	no	no

Capital Amortization for My Project

Capital expenditures

- 4 cubic yard dump style bins
- Site preparation
- Paving & concrete curb
- Signage

Annualized Cost & Allocation

- Each capital item amortized separately
- Present value method
- Assigned to program (Blue Box)

Depot Components (Units)	Amortization Period	Amortization Payment	Quantity	Cost per Unit	Total Cost	Blue Box	Wood	Metal
4 Yard Bins	7 years	$2,286	4	$4,000	**$16,000**	yes	no	no

Operating Costs

Costs relating to operations

- Staffing
- Utilities
- Processing

- Allocation of annual costs
- Annual Cost per Unit (Operators Salary)
- Estimate % to program (Blue Box)

Operational Requirement	% Used for Blue Box	% Used for Other Waste Management	% Used for Non-depot Activities	Annual Cost per Unit	Depot Cost	Blue Box	Wood	Metal
Loader Operator (% FTE)	10%	0%	90%	$64,500	$6,450	yes	no	no

Hauling to MRF

	Fibres	Containers	Stryofoam
Recycling (tonnes)	100	100	100
Volume (cubic metres)	1085	2070	5000
Compaction	2	2	1
Vehicle volume (cubic metres)	108	108	108
Annual loads	6	10	47
Cost per pickup	$120	$120	$120
Annual haul cost	$720	$1,200	$5,640

The Bottom Line

- Cost allocations
  - Programs (Blue Box vs. Garbage vs. Shingles)
  - Streams

	Total	Fibres	Containers	Stryofoam
Annual tonnes	418	266	127	1
Monthly volume (m^3)	464	240	220	4
Annual cost	**$145,506**	**$89,726**	**$48,342**	**$504**
Annual cost per tonne	**$348**	**$338**	**$379**	**$503**

Key Learnings – Comparing the Budget vs. Actual

- If you build it, they will come…
  - 300 – 500 vehicles per day
  - Clean-up from weekend dumping
- Adjustments to the plan
  - Additional staff, hours of operation
- Annual additional costs for depot
  - $40,000

Evaluation of Model - Benefits

1. Comprehensive list of costs
   - No eligible costs forgotten

2. Spreadsheet structure & formulae
   - Does the work for you

3. For landfill / blue box depot operations
   - Cost allocations btw programs (garbage, tires, etc.)
   - Cost allocations btw material streams (fibre, containers, etc.)

Conclusions & Next Steps

- Uses
  - Budget planning amongst programs
  - Assessing compensation under EPR
- Recommendations/improvements
  - Costs assigned to municipal account codes
  - Costs assigned to individual Blue Box materials

Acct #	Description	Amount
0302-0101	Transfer stn – full time	50,700
0302-0102	Transfer stn – over time	1,850

- CIF will be re-releasing the depot costing model soon! Stay tuned…

Collection Contract Cost Modelling
CIF Project #965

Kate Dykman

City of Vaughan

CIF
CONTINUOUS IMPROVEMENT FUND

Project Highlights

- Project goal: Prepare budget estimate for new collection RFP & test CIF collection costing model
- Impacts: Improved understanding of cost generating activities & connection to RFP/contract provisions
- More information:
  - kate.dykman@vaughan.ca

Background – A Very Long Contract

- Initial Contract – Jan. 2006
  - 5-yr. term ended Dec. 2010
  - Four extensions to the contract, ending Dec. 2017

- Significant changes during this period
  - Weekly garbage → biweekly
  - Added residential organics collection

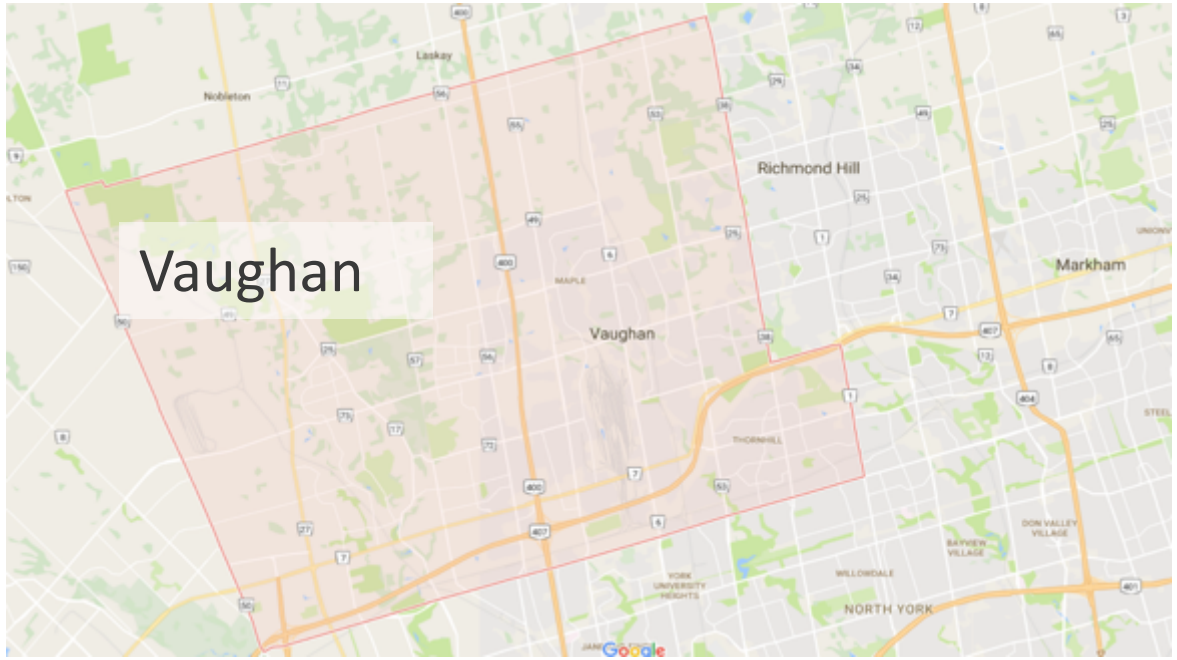
The Big Questions

- What should we budget for the contract?
- What is the optimum contract length?

- Options:
  1. Take current contract price and add 5-10%
     - Simple, but includes significant assumption
  2. Estimate contract cost
     - More complex, but can increase accuracy of estimate

CIF Collection Cost Model

- Cost components to build costing model
  - Vehicles
  - Labour estimates
  - Licensing, insurance, maintenance
  - Fuel use
  - Contractor overhead



Collection Vehicle Centred Costs

- Value of annual amortized cost (like car payments)
- Staffing level needed for service
- Proscribed amounts for maintenance, insurance, etc.

Category	Capital Cost	Amortization or Rate	Annual Payment or Unit Cost	Units	% Allocation of Unit	Annual Cost
Collection vehicles	$100,000	7 yr.	$17,914	1.0	100%	$17,914
Salvage	$10,909	7 yr.	($1,954)	1.0	100%	($1,954)
Full Time Collection Staff			$76,361	1 FTE	100%	$76,361
Maintenance		5%	$5,000	1.0	100%	$5,000
Insurance, licensing, CVOR, etc.		1.5%	$1,500	1.0	100%	$1,500

Estimated costs are reflected in this table

Other Collection Costs

Fuel use components

1. Residential route length
2. Distance to transfer point
3. Idling time – a function of households

Contractor overhead

1. Non-collection staff
2. Buildings & yard

Results

- Bid awarded ($8.7M)
- Historical data as a predictor of future costs
- Revised model to reflect service changes

Key Learnings

- Timing & Capital costs
  - USD:CD Exchange rate
- More data is good data
  - Vehicle listings & use reports
- Historical information
  - Is it reliable?
  - Consider alternate scenarios

Next Steps

- Future uses
  - Budget planning and/or negotiating midterm service delivery changes
  - Assessing compensation under Extended Producer Responsibility (EPR)

- Recommendations – improvements to model outputs
  - Costs assigned to municipal account codes
  - Costs assigned to individual Blue Box materials

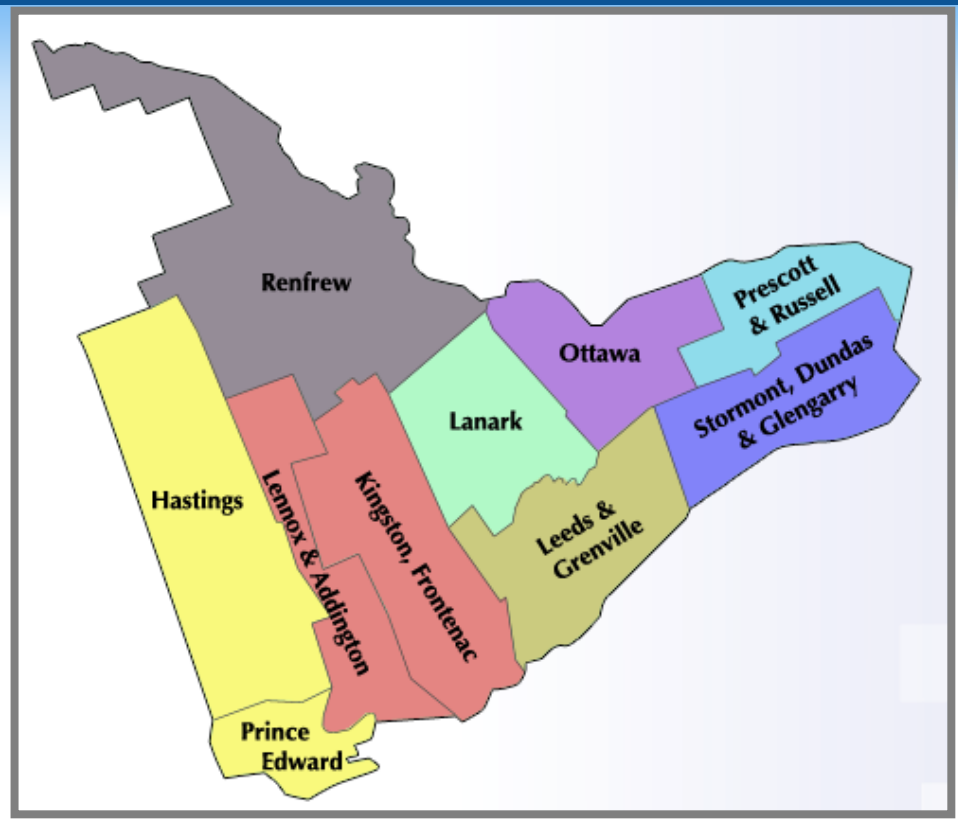
- CIF will be releasing the collection costing model soon! Stay tuned…

Developing a Collaborative Processing Hub in Eastern Ontario
CIF Project #817

Heather Roberts

City of Kingston

Project Highlights



- Project goal: Verify if City could be cost competitive within Eastern Ontario if MRF was expanded to 25,000 tpy
  - Sub-goal: Get tonnes & build relationships
- Impacts:
  - Shortfall of tonnage
  - Beneficial processing model
  - Putting together an Eastern Ontario Collaboration
- More information:
  - hroberts@cityofkingston.ca | www.cityofkingston.ca/waste | #wastenotygk

Two R's
Rationalizing Regionalization

- **Question: Should Kingston expand the MRF?**
  - Problem 1: Are there enough tonnes?
  - Problem 2: Single stream or Dual stream?
  - Problem 3: Do we have the cash?

- 2015 MRF Regionalization Study
  - Preferred option of 25,000 tpy, dual stream
  - $7.2M
  - Enough tonnes in eastern Ontario to support
  - But…legislation is changing

Two R's
Rationalizing Regionalization…**HOLD PLEASE…**

- June 2015 – Project paused
- November 2015 – Draft WFOA released
- Q1 – Q2 2016 – WFOA Consultation
- June 2016 – WFOA Passed
- September 2016 – Re-open Project
- Q3 2016 – Q1 2017 – Validation Review
- Q2 2017 – Staff recommendation & Council Approval

Two R's
Rationalizing Regionalization

- **Question: Are the 2015 findings still valid?**
  - Problem 1: Are there enough tonnes?
  - Problem 2: Cost competitive?
  - Problem 3: Do we have the cash?

- 2017 MRF Validation Review
  - Municipalities reporting $0/tonne for processing
  - Likely not cost competitive
  - Capital & operating projections look accurate
  - Price tag up to $7.6M (2018)

SWOT Analysis

Strengths	Weakness/Risks
• Geographic location (identified as a viable option in MIPC Study) • Eastern Ontario Municipal Collaboration • Long standing operation • $5M	• Tonnage supply • Hauling costs • Stranded asset
Opportunities	**Threats**
• Lower costs • Collaborating with other municipalities • Expand /Attract the MRF • System improvements	• Legislation/Regulations • Other external unknowns

Rational Approach

Get some tonnage

Tonnage justifies expense

Tonnage + $ = MRF expansion

Build attracts more municipalities to haul to Kingston

Brings greater supply of tonnes

Reduce costs

Leads to deal with Producers

Avoidance of stranded asset

Eastern Ontario Collaborative Approach

- Updates on project status
- 1st Eastern Ontario Municipal meeting on April 28, 2017
- 31 municipal leaders in attendance
  - WFOA Update
  - What's on our minds about the WFOA
  - Opportunities in Kingston
  - Continue to research programs
  - Eastern Ontario values
    - What do our customers care about?
    - What do they value about the programs?
    - What's unique about us

Results & Approach

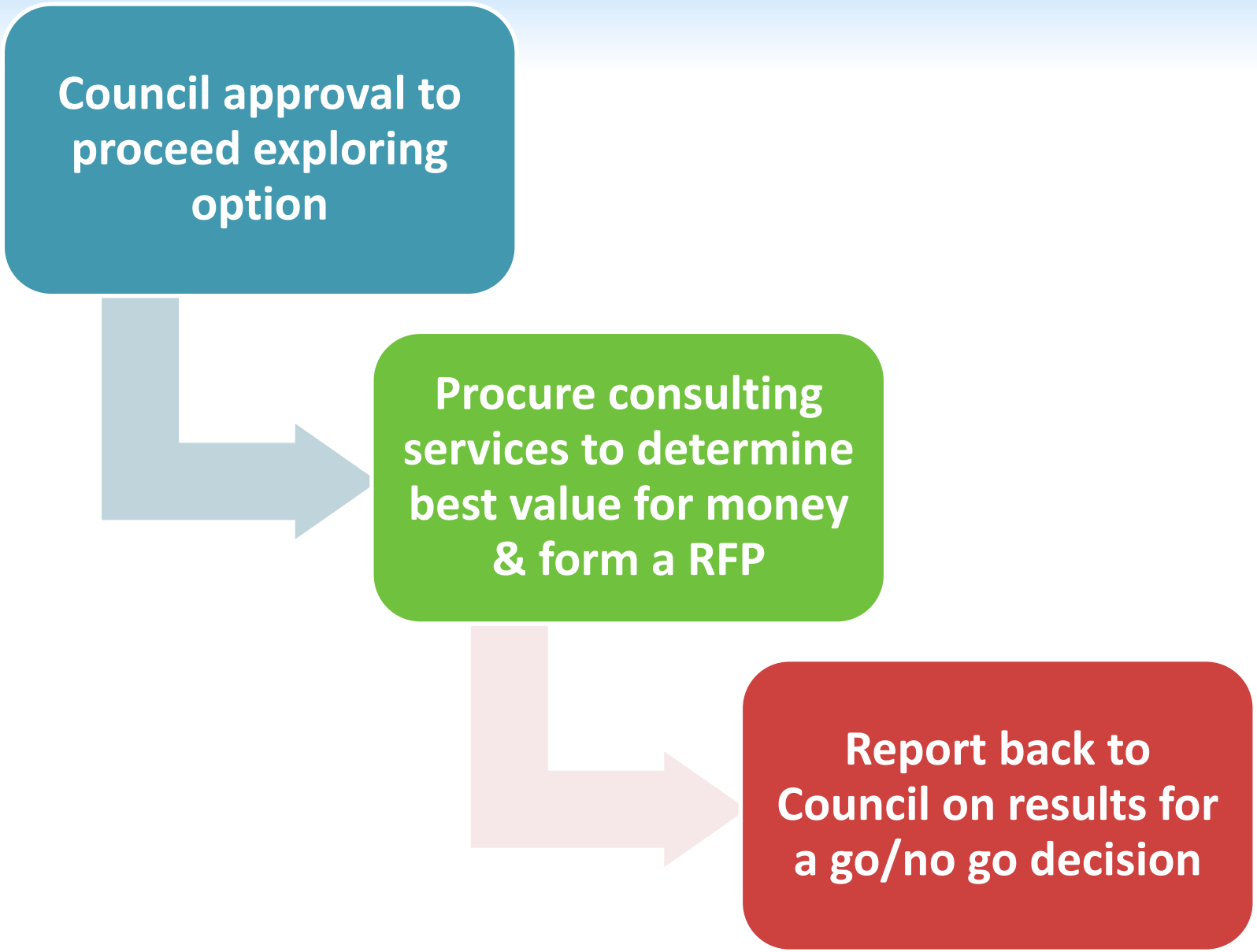
Results:

- Shortfall of municipal tonnage
  - Additional tonnage from IC&I sector or external companies necessary
- Est. expansion cost of $7.6M
- Municipalities are interested
- $5M in 2018 capital
  - $2.6M shortfall of funds
  - Kingston will need to find a partner solution at the design/build stage
- Corporate management and Council support for expansion
- Status quo approach leads to exit from business

Approach/Action:

- Continue to explore the preferred expansion option

Next Steps


Council approval to proceed exploring option
Procure consulting services to determine best value for money & form a RFP
Report back to Council on results for a go/no go decision

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Closing Remarks

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Thank you!

Please complete ORW survey next week

See ORW slides & webcast archive:
thecif.ca/ontario-recycler-workshop-orw/

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