# Automated Cart Collection

## What Have We Learned

Gary Everett, CIF

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# Autocarts

- Carts available for >30 yrs.
- 16 municipalities (munis) in CA & 27 in USA use auto-cart collection
- ~10 munis in Ontario have switched
- CIF seeing growing interest by other munis
- Is autocart collection the next big thing?
- What have we learned so far?

# Today's Presenters

- George  South - Progressive Waste
  - Advocating for Change: What's to be Gained
- Trevor Barton - Peel Region
  - Case study: Why/How Peel Made the Switch
- Laurie Westaway – Wasteaway
  - CIF Project 888 – Automated Cart Recycling: A Study of Municipal Collection & Operations in Ontario

Progressive Waste Solutions | Safety. All day. Every day.

# Automated Collection – Why Does it Matter?

George South - Ontario Region
Progressive Waste Solutions

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# Overview

- Safety is the overriding priority – Agree or Disagree?
- TRIR (Total Recordable Incident Rate)
  - Rate of injury per 200,000 operating hours
- Simcoe County vs. Peel
- Rear-load vs. Peel

# How To Become Best In Class - Planning For Success

**Operational model leads to:**

- The right type of trucks
- Use of appropriate technology
- Labour/supervisory competency
- Maintenance standards
- Procedures leading to safety culture outcome

**Priorities**

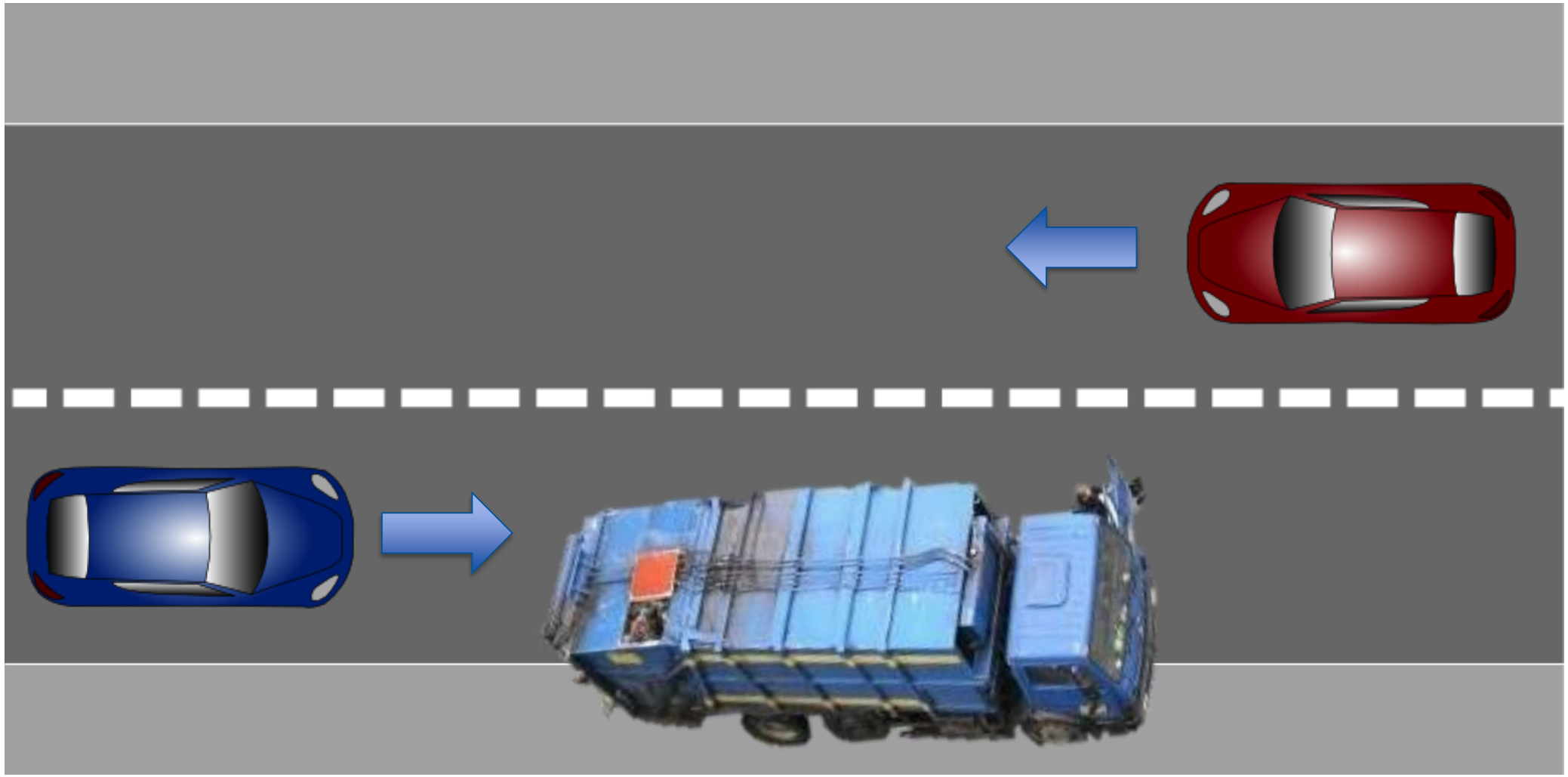
Investments in:

- Safety – essential & translates into our community & organization
- Training, role definition & responsibility
- Maintenance programs & systems

# Equipment: Present & Future

- Present
  - rear-loader has been king
  - most ubiquitous & productive curbside vehicle in N.A.
- BUT…nothing has really changed since the 1960's
- Today's workforce:
  - lack of desire to work physically
  - older
  - very aware of alternatives
  - sedentary focus

# Equipment: Rear-Loaders Put Drivers In Harm's Way



# Why Has This Collection Model Stood For So Long?

- Pros
  - productive; dependable; fewer moving parts
  - adaptable for changing waste streams
  - capital & operating costs lower than other options

**SUMMARY – ITS CHEAP!**

- Considerations
  - safety issues
  - WSIB: rear-loader is a young-person's game

# So, What Do We Do?

- Do we agree that manual collection is inherently dangerous?
- Do we agree that our workforce is changing?
- Do we agree that young people have far more options today than in the past – options that are far less strenuous on the body?
- What are some alternatives?

# Alternatives



*Automated Side-loaders: more productive but infrastructure-dependent*


*Automated systems for single & 2 - stream*

# Overview: ASL Trucks

- Pros
  - ASL comes in single or co-collection form; based on:
    - waste stream splits
    - distance to transfer/landfill/processing
    - whether multiple streams means multiple tip facilities
- Considerations
  - ergonomic constraints: driving ahead & looking behind at all times/split attention
  - little to no opportunity to handle bulky items
  - need for “chaser” truck
- There is 1 more option

# Equipment: Other Automated Options – “Curotto-Can”


*Single or 2-stream trucks; front box can split longitudinally to accommodate different streams*

# Overview: “Currotto-Can” Automation

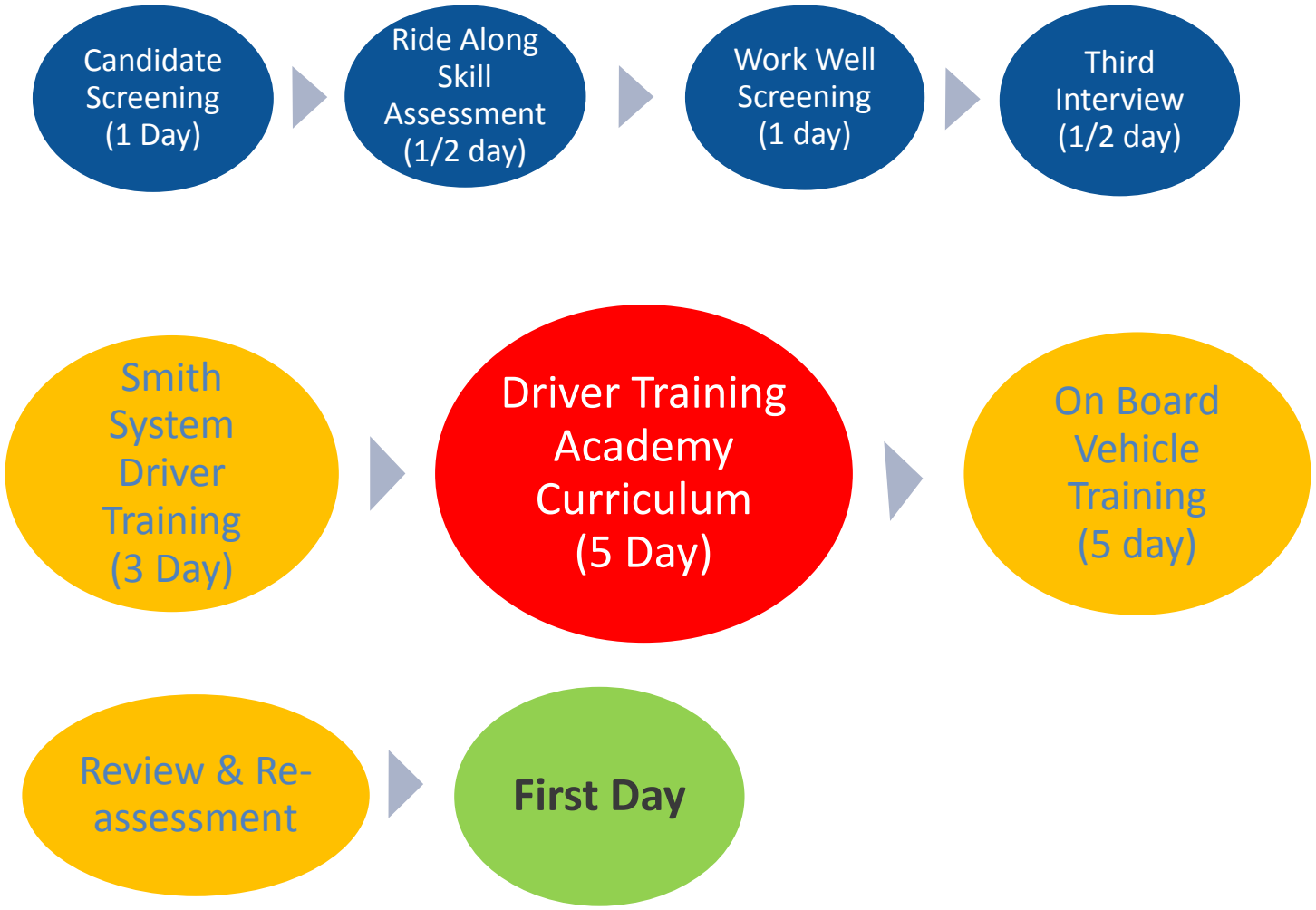
- Pros
  - High productivity
  - Can pick up carts & manual loads
  - All activity takes place in front of driver on curbside
  - Truck between public & driver
  - Driver in cab; eyes forward
  - Ease of overflow & bulky item loading
- Considerations
  - Higher capital cost

# Height & Road Density Considerations

*Like all equipment there is a proper application.*

*This unit is not meant for “416” density, but perfectly suits the “905”*

# Recruitment Case Study




*Average lead time is 16 days for complete training*

# Peel Compared to Simcoe County – Small Case Study

**Peel**

~ 70 trucks

All CNG

121,000 HH

**Simcoe**

~70 trucks

All CNG

130,000 HH

# Safety Performance

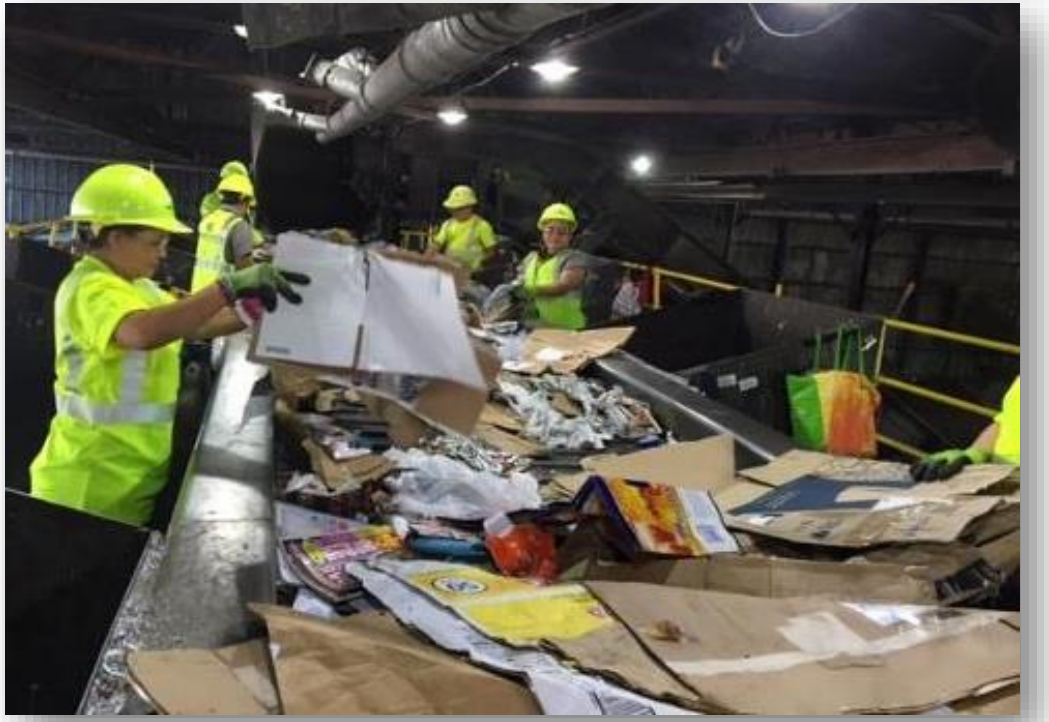
| Peel | Simcoe |
|---|---|
| Total Recordable Incident Rate = 0.00 | Total Recordable Incident Rate = 33.6 |
| Most prevalent injury - None | Most prevalent injury – over exertion/sprains/strains/cuts |
| Safety cost/month = $15,000 | Safety cost/month = $60,000+ |
| Lost Time = 0 | Lost Time = 4.97 |
| WSIB – rebate position | WSIB – surcharge position |

# Productivity Performance

| Peel | Simcoe |
|---|---|
| Waste – first place by 8% | Waste – second place |
| Recycle – first place by 12% | Recycle – second place |
| Organics – newly automated cart use | Organics – n/a |
| Bulk – mix of ASL & R/L | Bulk - same |
| L&Y – R/L | L&Y – R/L |

# MRF Quality Impacts

Material quality is a legitimate concern



Remember the concerns regarding

- 2 stream from 5 stream
- single stream from 2 stream &
- blue box to blue bag

# Avoiding

As with all system changes as we move from manual sorting/collection to more mechanical options we need to maintain our ability to innovate & develop work-arounds including pre-screening & pre-sort options

# Summary: Future Predictions

- Rear-loader significance will decline in our industry
- Where there are carts there will be automation
- Safety focus will drive activity in front of operator
- Older workforce will be a factor in the drive toward automation
- Efficiency will drive special collections to be combined (bulky items)
  - necessitates adaptable truck body design
- Evolution in cart systems
  - Front-load automated collection, powered by CNG where there is a local desire

# Thank You!

*Make the leap and go automated!*

For more information:

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www.progressive.com

Progressive Waste Solutions

# Automated Cart-based Collection: Is it Right for All Municipalities CIF Project #882

D. Trevor Barton

Region of Peel

Region of Peel
Working for you

CIF
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# Project Highlights

- Overview
  - January 4, 2016: curbside waste collection services changed from weekly, manual collection to bi-weekly, cart-based collection
- Project Goal
  - Improve overall participation & diversion in curbside waste collection programs while keeping residue levels low
- For more information
  - Trevor.Barton@peelregion.ca
  - www.peelregion.ca/waste

# Why Cart-Based Collection?

- Research & the results of a year-long pilot project were used to make an evidence-based recommendation for Regional Council's decision to move to bi-weekly, cart-based waste collection

- Main reasons for the recommendation:
  - Environment:
    - It will reduce the amount of waste sent to landfill
    - GHG emissions will decrease with fewer collection vehicles on the roads
  - Financial: It will reduce the annual waste collection costs to the Region
  - Safety: Cart-based collection programs are associated with a reduction in worker injuries

# Impacts: Details & Highlights (1)

- Initial Key Impacts
  - **Environment:**
    - Reduction of waste sent to landfill: 101% increase in organics tonnes collected from January to March 2016 compared to 2015
    - Increased organics participation from 35% to 50% in January 2016
    - Fleet reduction by up to 22 vehicles deployed daily
    - Brand-new compressed natural gas (CNG) vehicles will reduce greenhouse gas emissions by approximately 25% compared to diesel
    - Focused resident education, outreach and communications about the new program helped to reiterate the importance of diversion & proper participation in the Region's waste management programs.
    - 2016 1st quarter review indicates that there are cart contamination issues at the MRF that need to be addressed immediately
  - **Financial:** Estimated annual collection savings of approximately $5.8 million

# Impacts: Details & Highlights (2)

- Key Impacts Continued
  - Safety: Anticipated reduction in worker injuries from switching to automated collection
  - Aesthetics: Reduction in windblown litter from changing recycling boxes to lidded carts
  - Processing: Recycling materials are protected from rain and snow – drier & easier to process, lesser impact on equipment & lesser maintenance cost for repair & replacement, however, hidden incorrect materials in recycling carts are challenging
  - Convenience/Benefit to Resident:
    - Carts have wheels, making it easier for residents to transport waste to the curb, with less trips
    - Carts can provide increased capacity to accommodate the bi-weekly collection schedule
    - Continued weekly organic cart collection ensures that “stinky” items are collected every week
    - Carts are pest resistant

# Contamination Strategy: What's Being Done?

- Based on 1st quarter results for 2016 there is an estimated 2,600 tonne increase in Residue required to be managed from the MRF for 2016 vs. 2015. This is a 2.6% increase in Non-Recyclable material received at the MRF. It also represents an urgent possible 22% increase in Residue being shipped from the MRF.
- Collection vehicle audits at the MRF.
- Short-term & long-term strategy addressing increasing amount of Home Health Care Waste & partnerships with CCAC, Peel Public Health, health teaching facilities, Canadian Diabetes & home health care (kit) retail suppliers.
- Communication support for proper use of recycling carts.
- Reallocated 6 staff to conduct curbside waste audits.

# Challenges: The Anticipated

- Project size & scope
- Tight timelines:
  - To procure cart vendor, manufacture & deliver carts
  - Communications to residents
- Public awareness of the program changes & cart selection timeframe
- Digital-first communication & removal of traditional customer contact
- March of Progress marketing campaign
- Political will
- Public acceptance of changes
- Volume of resident complaints & inquiries


- Resident cart storage until 2016 start date
- Continued education support for program changes
- Siting of CNG fleet yards
- New contractors (collection & cart)
- Contamination level increase & mitigation

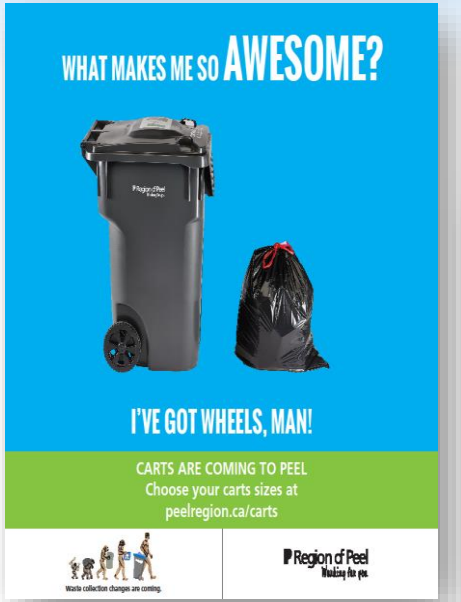
# Challenges: The Unexpected

- Collection calendars (colour vs. black & white)
- New Customer Relations Management tool (Salesforce)
- Political will
- Tip trucks not all ready for the start the program
- Kitchen containers being left inside the carts during the first collection cycle
- Size of the organics cart & freezing locks
- Media popularity of vermin
  - Squirrels & the organics cart
- Contamination levels of MRF materials

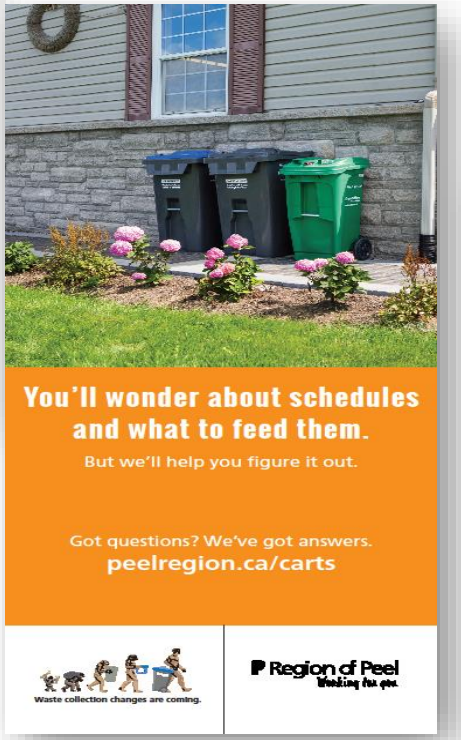
# Costs to Launch to Program

- 27 contracted dedicated waste staff Support services
  - 21 Contracted Curbside Advisors+ 6 FTE dedicated staff
- Customer Contact Centre
  - Digital team; website re-launch, videos, multi-channel support
  - Education & Outreach Strategy
- Dedicated communications support
  - Print & digital content

**PHASE ONE:**
**Cart Selection**




**PHASE TWO:**
**Cart Delivery**




**PHASE THREE:**
**Program Launch**

# Lessons Learned

- Manage expectations with key stakeholders
- Ensure there is a system in place to document issues/concerns to review at a later date (e.g. Salesforce)
- Ensure staffing is equipped with the proper tools to address concerns
- Ensure that you have flexibility to address high priority concerns that come in from Councilors' offices
- Ability to respond & rectify contamination issues

Wasteaway

# Automated Cart Recycling: A Study of Municipal Collection & Operations in Ontario

## CIF Project #888

Laurie Westaway

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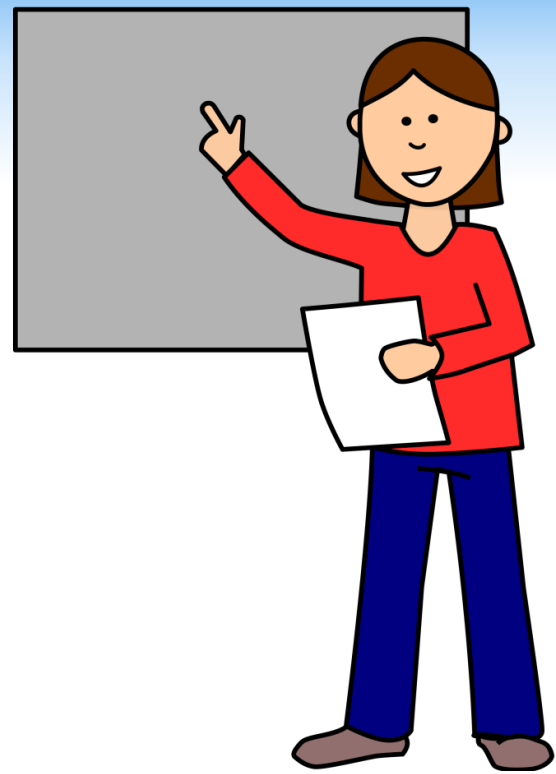
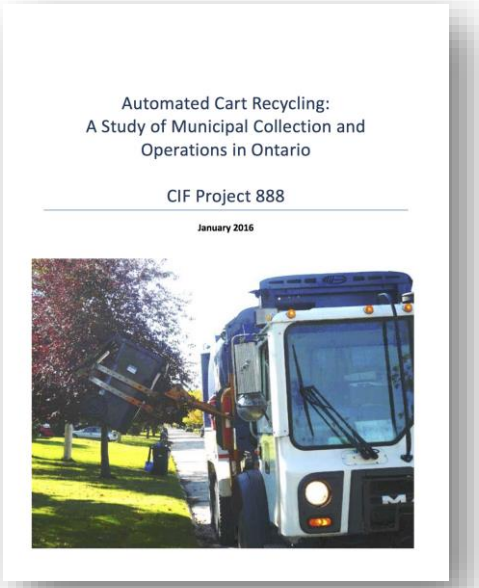
# Project Highlights



- Project goal: consider if auto-cart transition benefits outweigh costs
- Impacts: evidence from 7 ON municipalities re: carts vs. manual curbside collection
- More information:
  - laurie@westaway.ca, robins.environmental@sympatico.ca
  - Download the full project report: http://cif.wdo.ca/projects

    Project #888



# Purpose to Study Questions Asked?

- Collection
  - Efficiencies & costs
- Capacity
  - Recyclable materials & participation
- Health and Safety
  - Claims & costs


City of Timmins
Temiskaming Shores
Sault Ste. Marie
Region of Peel
Toronto
Bluewater Recycling Assoc.
Guelph
Kilometers
300
400
500

# Report Overview

- Collection design considerations
- Operations
  - Collection efficiency & challenges
  - Processing implications
- Financial implications
- Resident feedback
- Program planning & implementation
- Promotion & education
- Recycling impact

# Collection Efficiency

- Single-stream
- Co-collection
- Bi-weekly

# Collection Costs - Datacall

| Ontario Single Stream Municipalities 2010 – 2014 (5 years as applicable) | Average Collection Costs per Marketed Tonne |
|---|---|
| Carts – 5 Municipalities | $235.28 |
| Non-Cart – 12 Municipalities | $272.08 |
| **Difference** | **$36.80** |

# Capital Expenditures

- Cost/truck +30%
- Carts
  - Capacity (vol. & weight)
  - Purchase ($40-$60/hh)
  - Deploy ($3-$5/hh)
  - Promote ($3.50-$5/hh)
  - Store & replace (1-3% annually $65-$100/cart)
  - Ongoing P&E & enforcement

# Labour

- Lower labour costs
- Diverse workforce
- Enhance available services?

# Impact on Recycling (1)

- Marketed recycling
  - 6 out of 7 programs rates improved 1-3%
  - Region of Peel: 3 months

| | | | | | |
|---|---|---|---|---|---|
| **Recycling** | **+5%** | **Organics** | **+106%** | **Garbage** | **-12%** |

- Improved Participation as residents appreciate:
  - Ease of use
  - Storage capacity
  - Convenience

# Impact on Recycling (2)

- Collection monitoring
  - Reduced visual/handling
  - Requires directed P&E & strong feedback
- Residue rates
  - ~5-6% increase (over 20%)
- Processing costs
  - ~27% more

# Processing Costs – Datacall

| Ontario Single Stream Municipalities 2010 – 2014 (5 years as applicable) | Average Processing Costs per Marketed Tonne |
|---|---|
| Carts – 5 Municipalities | $142.58 |
| Non-Cart – 9 Municipalities | $112.12 |
| **Difference** | **$-30.46** |

# Examples …

- Sault Ste. Marie first dual/two compartment recycling system in ON
  - Datacall – 3% increase in marketed tonnage


- City of Guelph
  - Net savings of $230,000 (crew, vehicles, & WSIB)

- Region of Peel launched January 2016
  - Reduced collection fleet by 15-20%

# Key Learnings

- Recycling composition
- Jurisdiction over all waste streams
- Ability to collect/process Single Stream
- Availability of reserve monies
- Current contracts and/or fleet replacement
- Capacity to implement engaging multi-faceted communications

**Evaluation List**