



Options & Alternatives for Managing Plastic Film

Carrie Nash, CIF

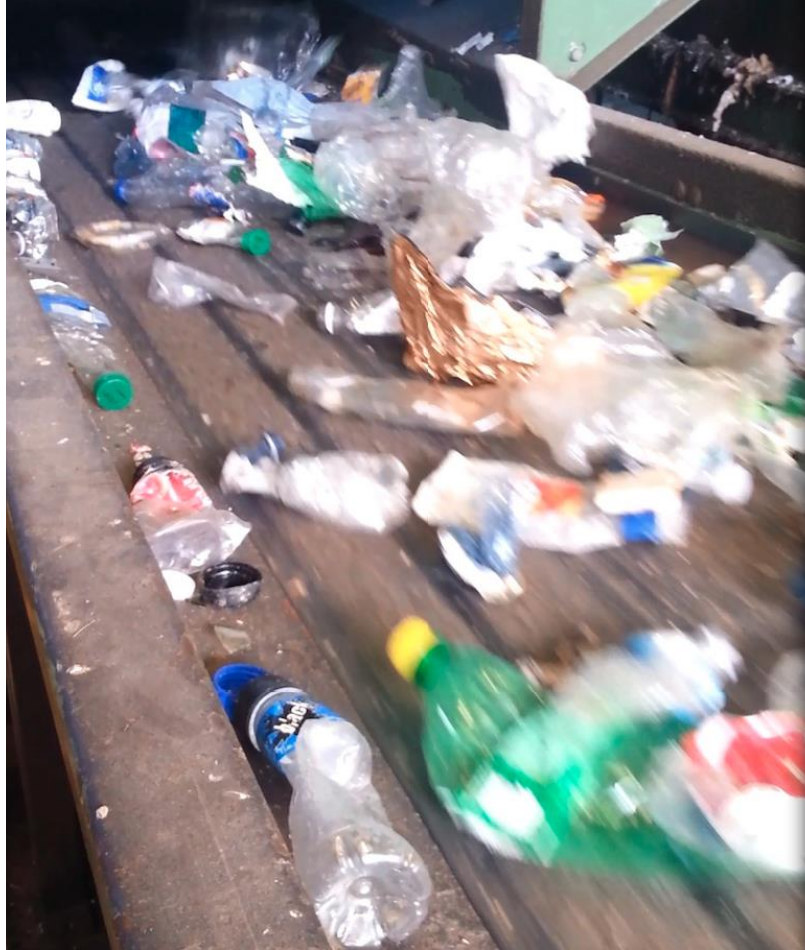
Plastic Film: Definition

Typically stretchy & lightweight:

- Frozen vegetable bags, milk bags, shrink wrap for unitizing multi-packs, sandwich bags, produce bags, & retail/grocery shopping bags



Plastic Film: Challenges



- Participation rates
- Labour intensive to sort
- Capture rates
- Market value
- Interferes with capture of higher value materials

Plastic Film: Options & Alternatives

Considerations:

- Access
- Resident acceptance
- Recovery potential
- Cost savings
- Ease of implementation
- Timing & other initiatives



Today's Speakers

- Neil Menezes, Reclay StewardEdge
 - Film Plastic Collection: Comparison of Current Systems Costs & Alternative Scenarios for Managing Plastic Film in the City of Hamilton
- Joel McCormick, Hamilton
 - Film Plastic Collection: Choosing the Best Way Forward
- Nina Butler, Moore Recycling Associates
 - Plastic Film Collection – Return to Retail/Depot



Reclay StewardEdge

Film Plastic Collection

Comparison of Current Systems Costs & Alternative Scenarios for Managing Plastic Film in the City of Hamilton Project # 749



Hamilton

Neil Menezes

Reclay StewardEdge



**CONTINUOUS
IMPROVEMENT FUND**

Project Highlights

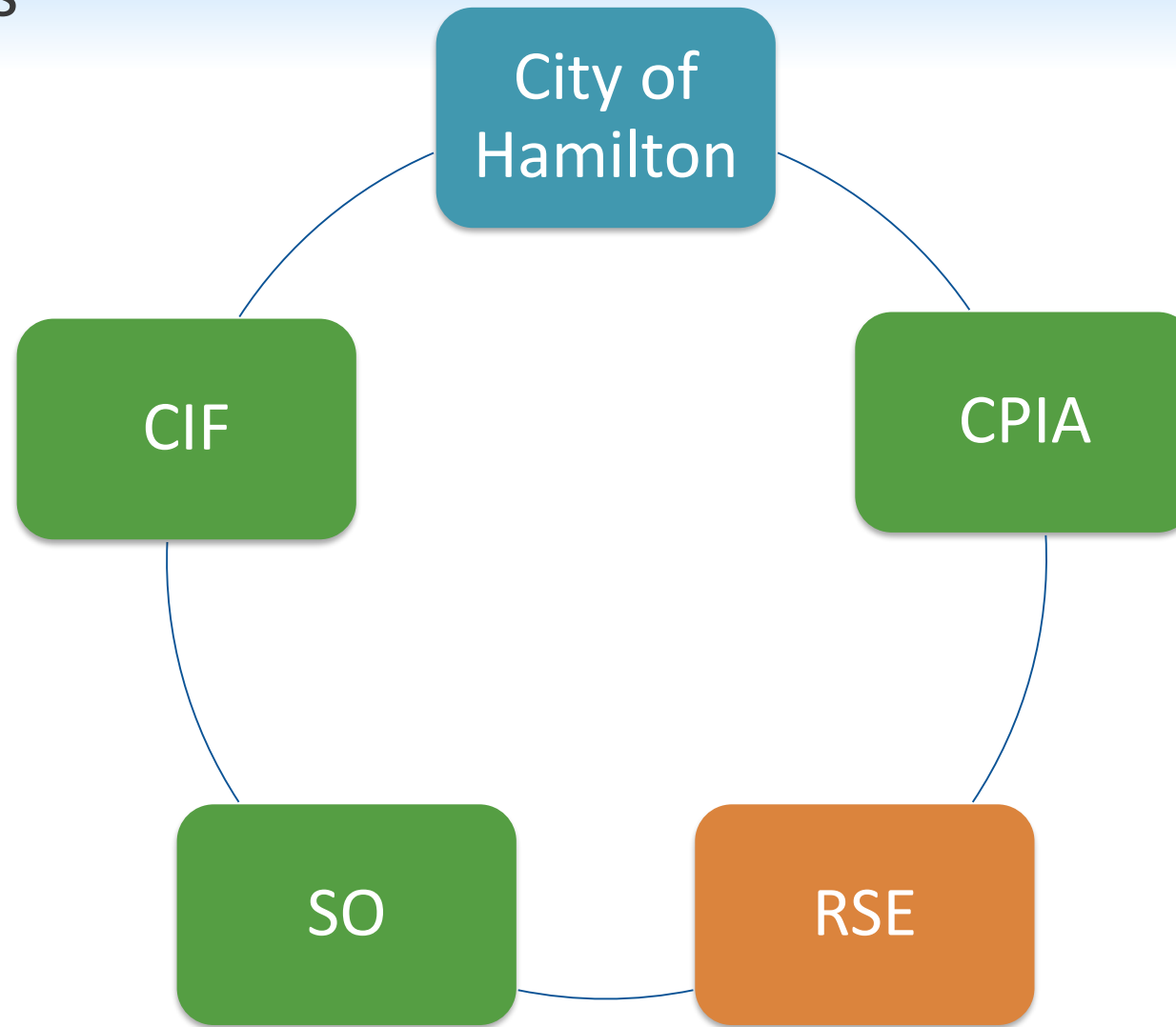
- Project goal:
 - Calculate the current cost to manage plastic film
 - Establish & calculate the cost of alternative collection options
- Impacts:
 - Reduction in sorting & disposal costs
 - Potential higher capture of plastic film & other materials
 - Increase in revenue from capture of cleaner materials
- More information:
 - nmenezes@reclaystewardedge.com
 - www.reclaystewardedge.com

Project Background

- Hamilton conducted MRF Container Line Assessment to evaluate sorting efficiency (2014)
- Identified that material capture rates for high value materials could be improved
- Estimated revenue loss for missed materials at \$490K/yr.
- Film posed challenge for manual sorters & sorting equipment to sort other materials

Material Type	Capture Rate (%)
HDPE	81.2%
Aluminum food & beverage cans	84.3%
Aluminum foil, trays & aerosols	62.6%
PET	73.1%
Mixed Plastics	43.1%
Cartons	73.6%

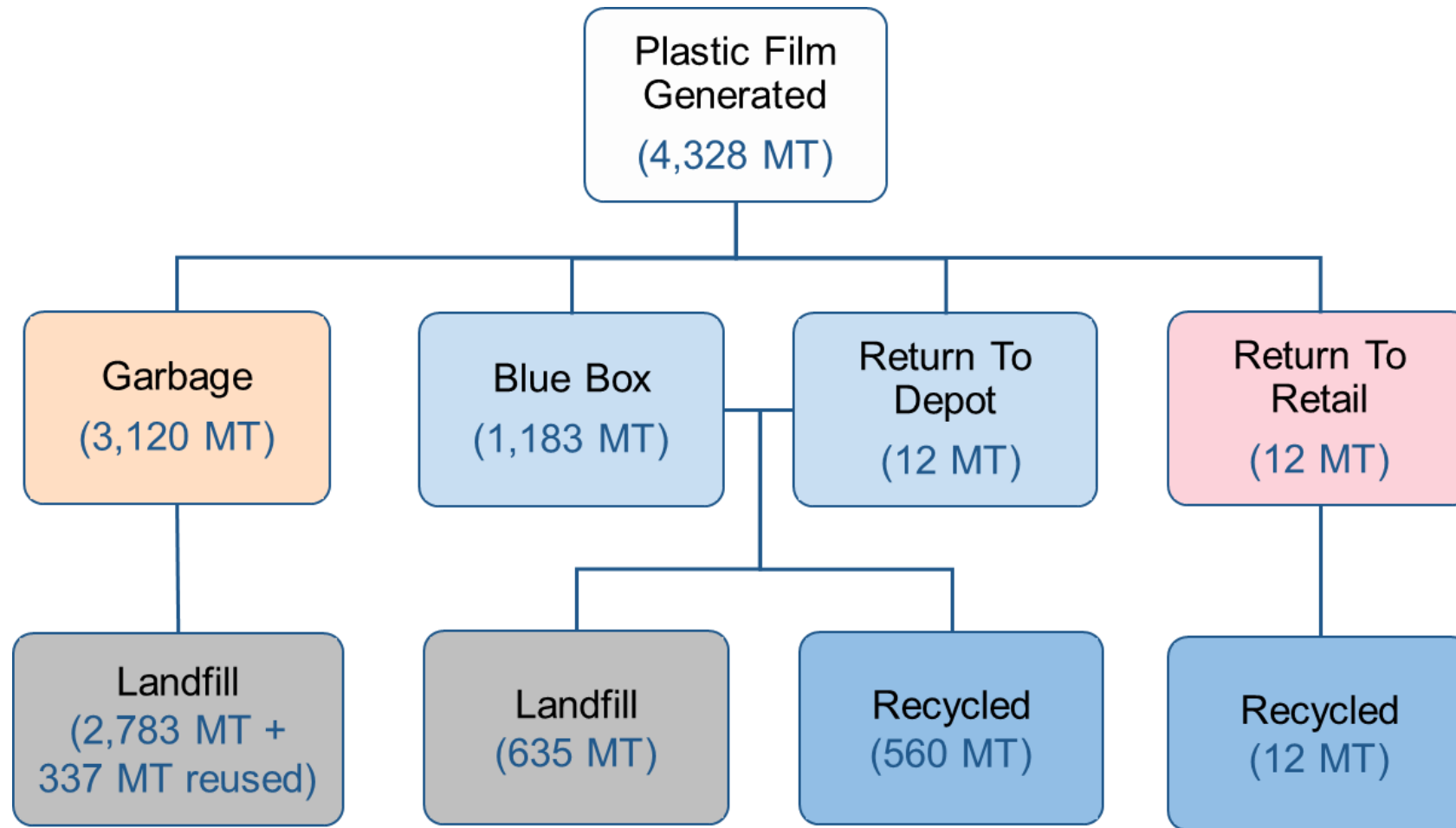
Project Partners



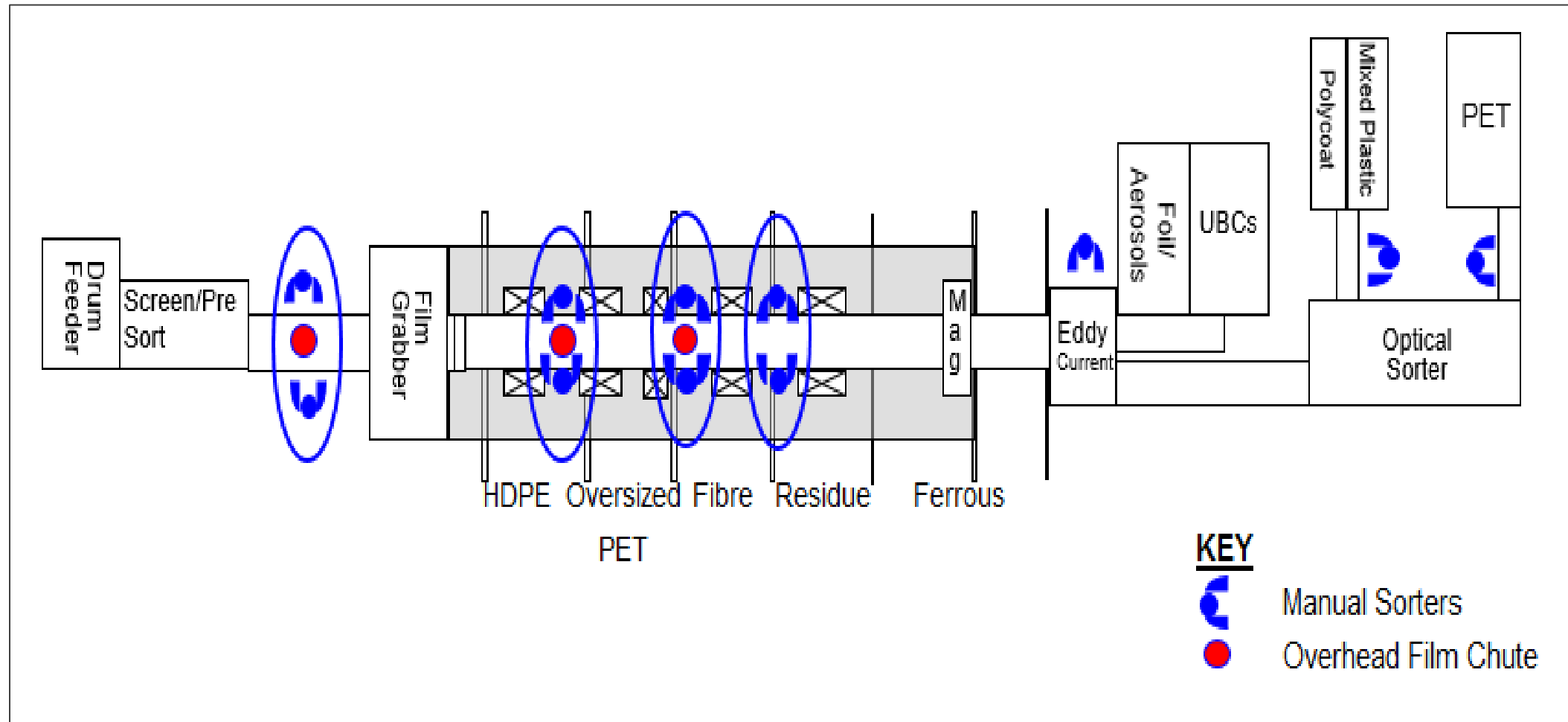
Methodology

- Study to quantify types of film received & MRF impacts
 - Loose film — polyethylene film/wrap set out for recycling
 - Container film — large clear bag used to contain recyclables
- Time & motion analysis
 - # of picks/sorted material category
 - Time spent managing film

Generation & Recovery of Plastic Film



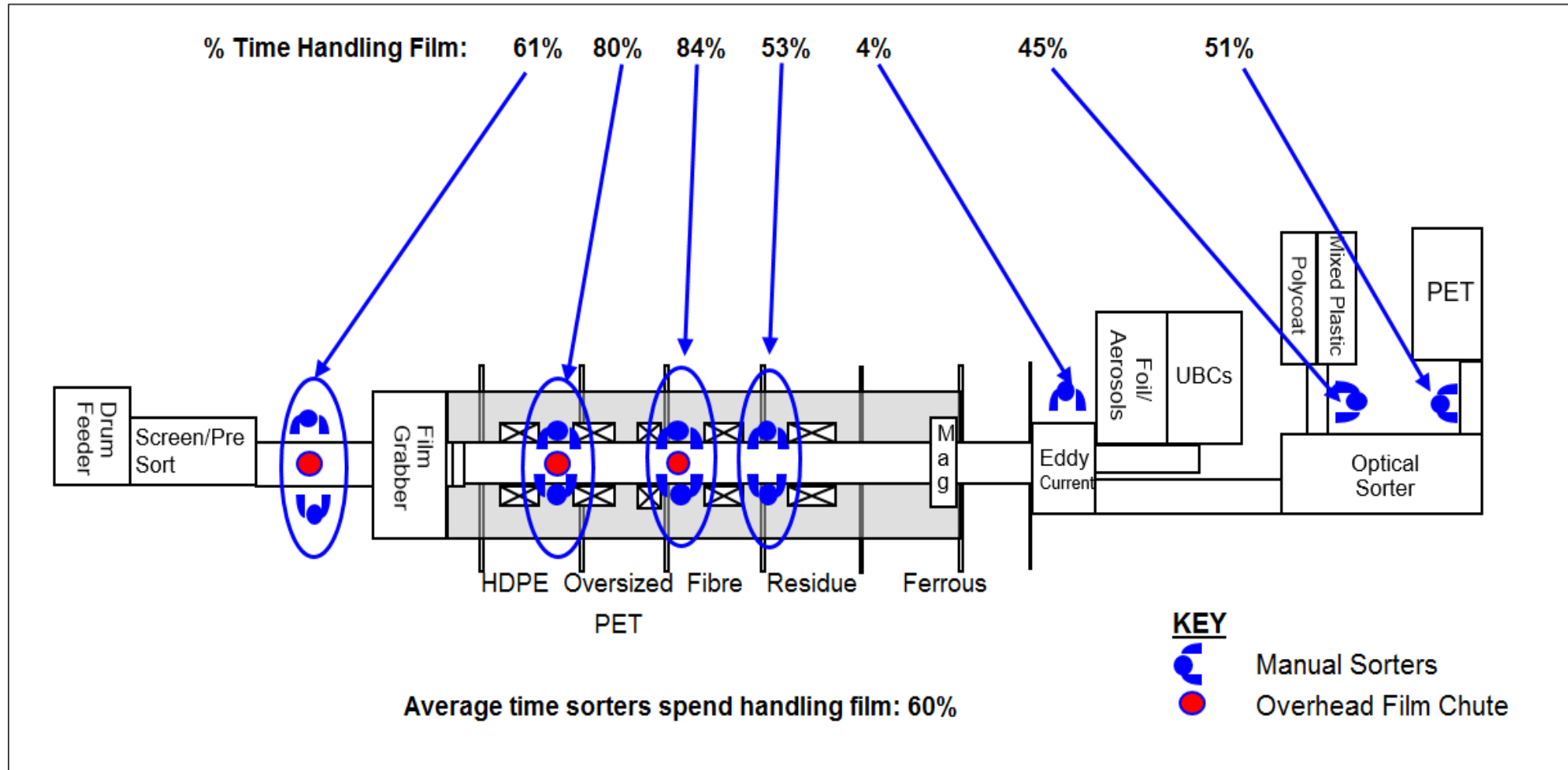
Container Line Sorters



Time & Motion Analysis

	Picks/Min.	Picks/Yr.	Time (%)	Hours/Yr.
Positions 1 & 2	36	9,175,000	61%	2,583
Positions 3 & 4	64	16,153,000	80%	3,367
Positions 5 & 6	54	13,722,000	84%	3,544
Positions 7 & 8	41	10,391,000	53%	2,239
Position 9 -- Alum QC	45	5,694,000	4%	94
Position 10 -- PET QC	67	8,448,000	51%	1,081
Position 11 -- MP/P QC	88	11,151,000	46%	966
Total on Container Line		74,733,000		14,000
Fibre Line Sorter 1	16	2,070,000	-	-
Fibre Line Sorter 2	25	3,227,000	35%	741
Fibre Line Sorter 5	12	1,504,000	21%	451
Total on Fibre Line		6,801,000		1,000
Total		81,534,000		15,000

Container Line Sorters (Percentage of Time Spent on Film)



Current System Costs & Impacts

Film generated: disposed, reused & recycled	4,328 tonnes
Total tonnes entering MRF	1,195 tonnes 560 tonnes marketed
Total collection cost	\$287,000
Processing cost (excludes capital cost allocation)	\$281,000
Gross cost to collect & process film	\$568,000
Disposal cost	\$76,000
Baling cost	\$36,000
Estimated revenue	\$17,000
ESTIMATED ANNUAL NET COST	\$663,000
Net cost/tonne marketed	\$1,183

Alternative Methods for Collecting Film (1)

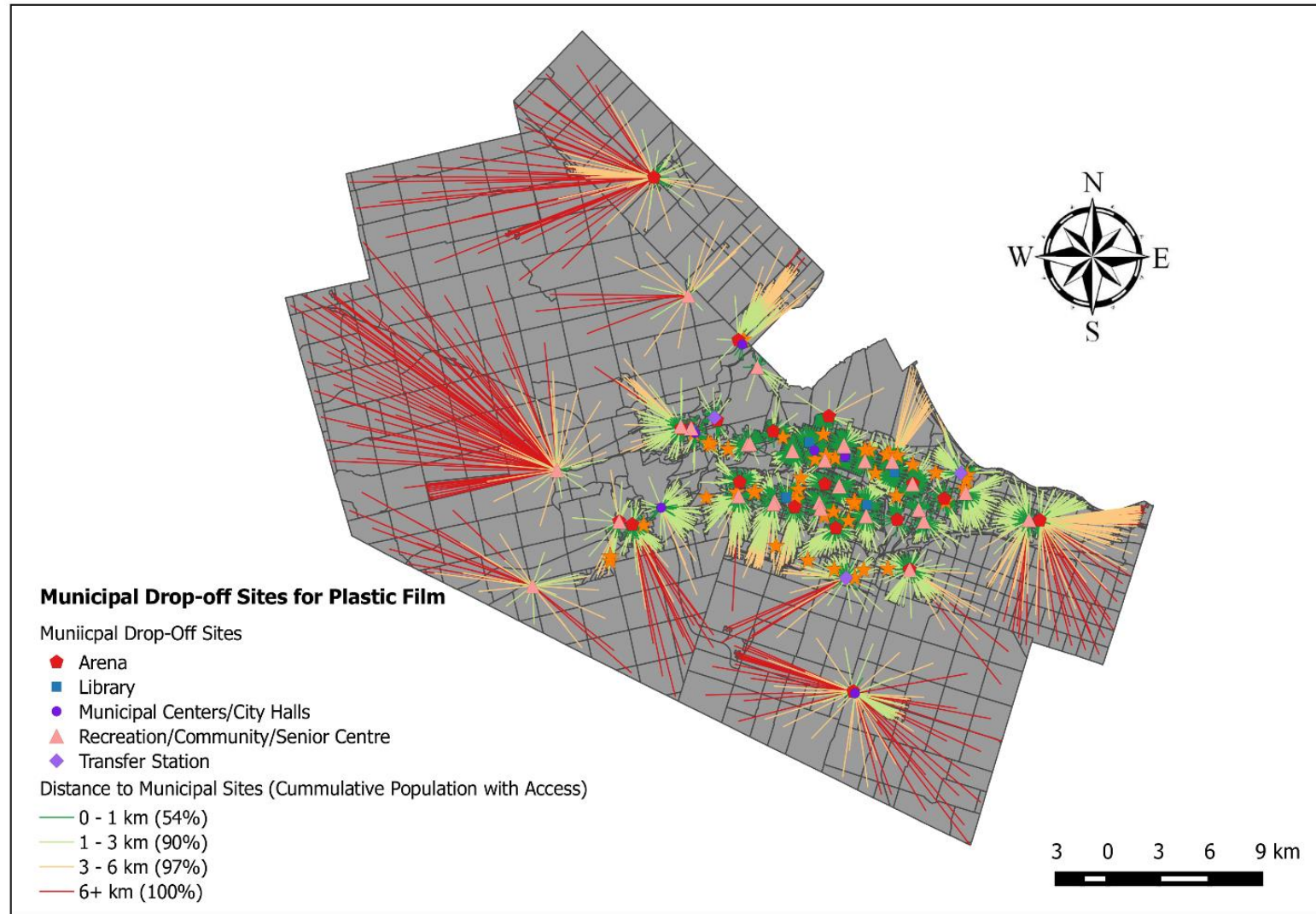
- #1: Return to municipally-owned sites with curbside collection
 - Film will be collected in branded durable bags; collected with other recyclables.
 - Bags will be delivered to MRF; separated manually; kept separate from MRF grade film
- #2: Return to municipally-owned sites & collected separately (milk-run model)
 - Collected film will be delivered to baling site
- #3: Return to retail locations
 - Collected film will be blended with back-of-store film

Alternative Methods for Collecting Film (2)

- #4: Collect bag-in-bag through fibre stream
 - Collect in clear bags; place in fibre bin at curb
 - New equipment & sorters to manage film on fibre line
- #5: Collect bag-in-bag through container stream (branded bags)
 - Residents to use branded durable bags to place plastic film in container bin at curb
 - Bags will be removed manually on container line
- #6: Combination: film collected through municipal sites & retail locations
 - Collect film in branded durable bags at municipal sites
 - Film from municipal sites to be delivered to MRF; separated manually; kept separate from other MRF grade film
 - Film collected from return to retail sites to be blended with back of store film

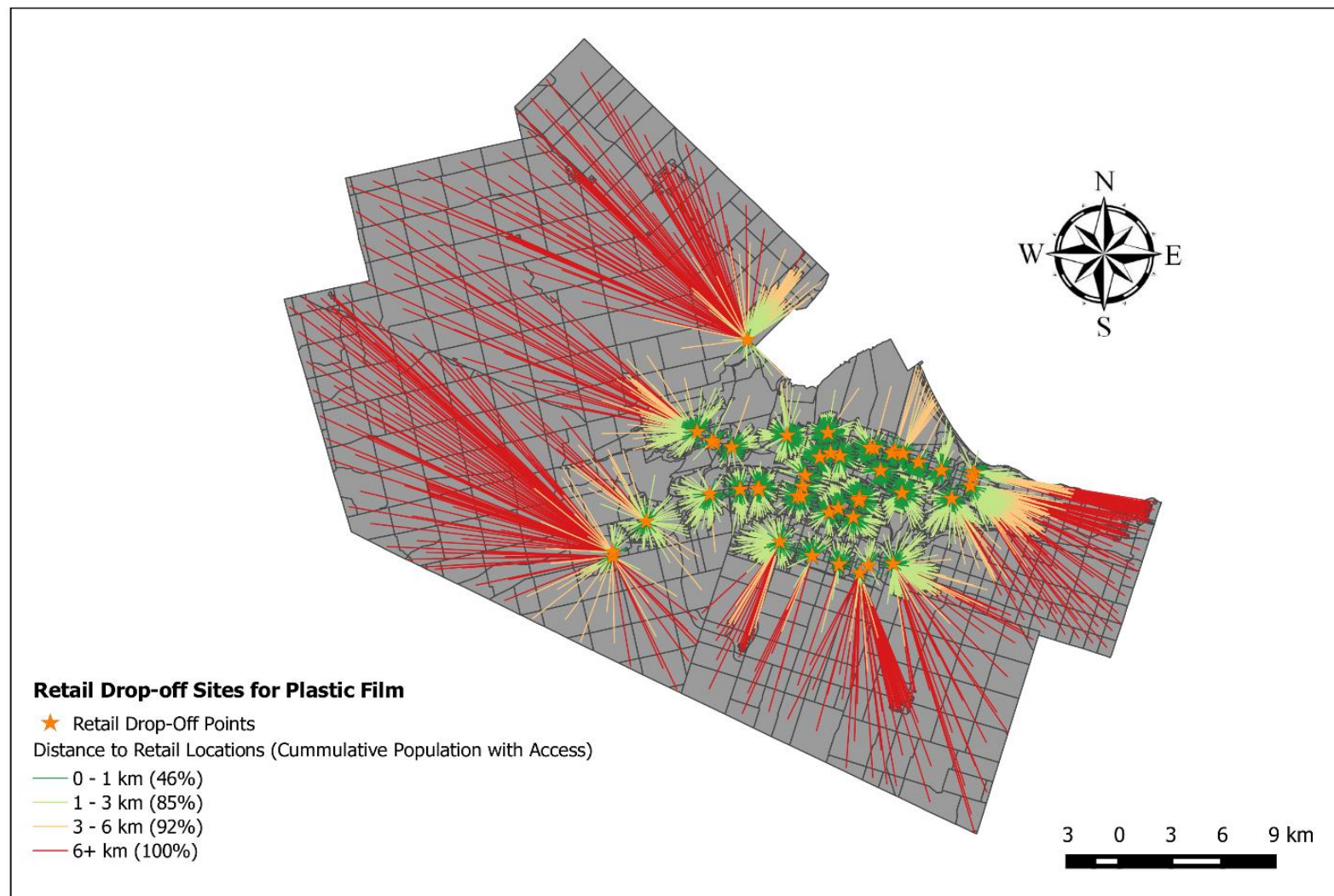
Existing Infrastructure & Service Levels

Municipally-Owned Buildings Only



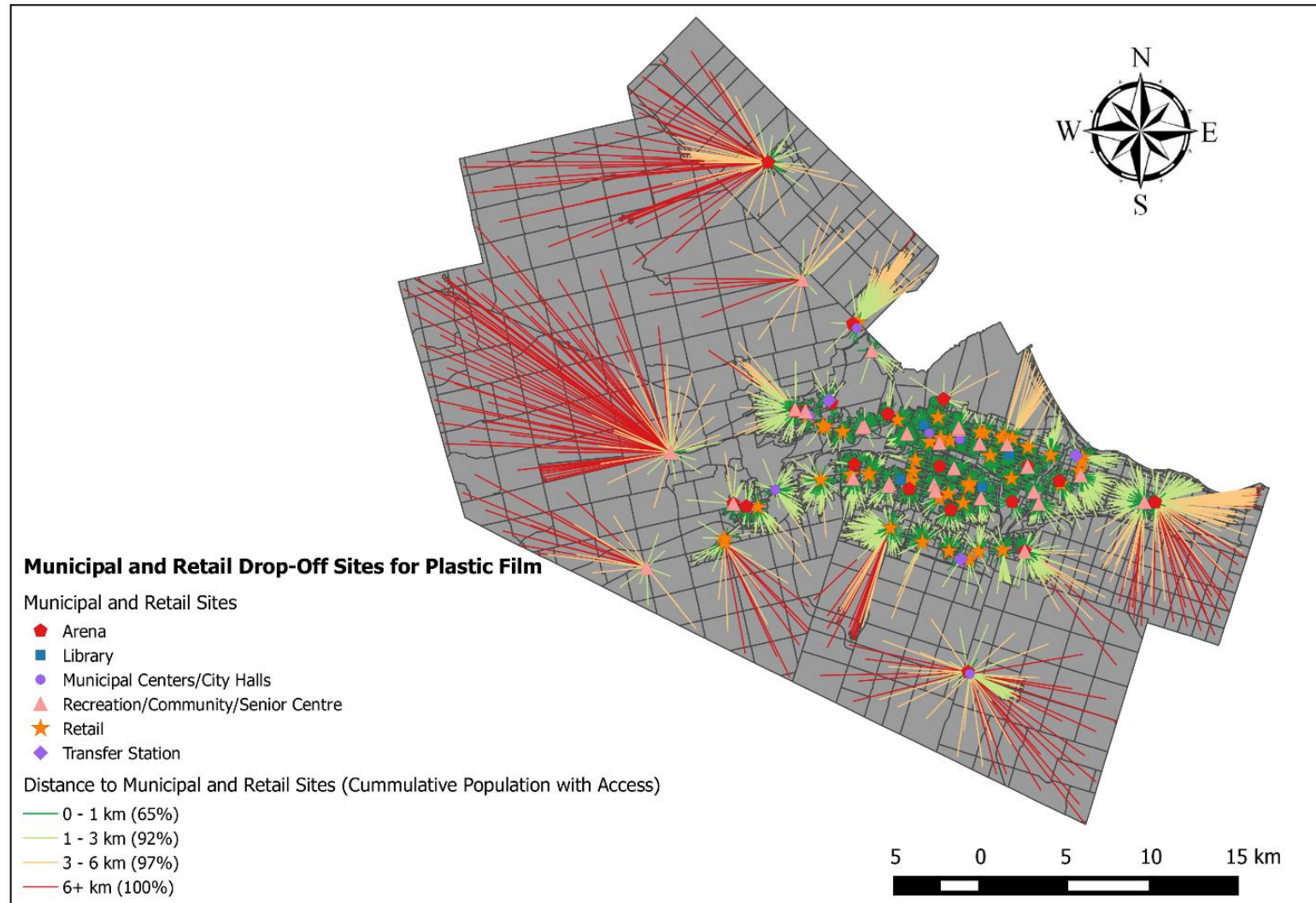
Existing Infrastructure & Service Levels

Retail Sites Only



Existing Infrastructure and Service Levels

Municipally-Owned Buildings & Retail Sites



Alternative Collection Scenarios Analysis

	1 Return to Municipal Site	2 Return to Municipal Site - Milk Run	3 Return to Retail	4 Fibre Stream	5 Containers Stream- Branded Bags	6 Combination of 1 & 3
Annual Capital & Operating Costs	\$175,000	\$199,000	\$213,000	\$0	\$271,000	\$287,000
Annual Transportation Costs	\$0	\$164,000	\$0	\$0	\$0	\$0
MRF Costs	\$19,000	\$18,000	\$18,000	\$421,000	\$19,000	\$19,000
Annual Cost	\$194,000	\$380,000	\$231,000	\$421,000	\$290,000	306,000
Total Tonnes	598	598	598	598	598	598
Cost (\$/tonne)	\$325	\$636	\$386	\$704	\$485	513

Added Revenue from Other Materials

Material	Low Scenario Revenue Increase	High Scenario Revenue Increase
Aluminum (Prime)	\$40,000	\$141,000
Aluminum (B-Grade)	\$1,000	\$5,000
Cartons	\$2,000	\$19,000
HDPE	\$27,000	\$89,000
PET	\$44,000	\$82,000
Total	\$115,000	\$337,000

Cost Comparison of Current to Alternative Scenarios

Annual Net Cost of Handling Plastic Film Using Alternative Methods			
	% of Total Film Received Via Scenario (\$k)		
	25%	50%	75%
Current Scenario Costs	\$660k		
1: Return to Municipal Sites	\$375k-\$597k	\$248k-\$470k	\$145k-\$366k
2: Return to Municipal Sites - Milk Run	\$479k-\$701k	\$434k-\$656k	\$413k-\$634k
3: Return To Retail	\$412k-\$634k	\$285k-\$507k	\$181k-\$403k
4: Collection via Fibre Stream	\$602k-\$823k	\$475-\$696k	\$371k-\$592k
5: Collection with Branded Bags	\$470k-\$692k	\$344k-\$566k	\$240k-\$462k
6: Municipal Sites + Return to Retail	\$487k-\$709k	\$360k-\$582k	\$257k-\$478k

Note: green font denotes costs below current scenario cost

No Silver Bullet...

Scenario Evaluation						
	1	2	3	4	5	6
	Municipal Sites	Municipal Sites (milk run)	Return to Retail	Fibre Stream	Container Stream	Municipal Sites & Return to Retail
Impact on Access	Medium	Medium	Medium	Low	Medium	Medium
Impact (Negative) on Recovery	Medium - High	Medium - High	Medium	Low	Medium	Medium
Net Cost	Low	High	Low - Medium	High	Medium	Medium
Challenge to Implementation	Medium	Medium	Medium - High	Medium - High	Low	Medium - High



Film Plastic Collection: Choosing the Best Way Forward Project # 749

Joel McCormick
City of Hamilton

Project Highlights

- Project goal:
 - Calculate the cost of processing plastic film
 - Establish & calculate the cost of alternative collection options
 - Report/update findings to council
- Expected Outcome:
 - Higher capture of inbound plastic film & other materials
 - Increased diversion of plastic film from the landfill
- For more information:
 - Joel.Mccormick@hamilton.ca
 - <https://www.hamilton.ca/garbage-recycling>

Plastic Film



Why this project?

- Capture
- Cost management - including revenue generation
- Budget planning
- Future program changes?
 - in MRF or curbside?

Plastic Film: Management Options

CURRENT	FUTURE OPTIONS
Collected curbside, & managed on the container line	Status Quo
	Bag in Bag Container Side
	Bag in Bag Fibre Side
	Return to Community Centre – existing run
	Return to Community Centre – dedicated run
	Return to Retail
	Combo: Community Centre + Retail

Plastic Film: What Now?

Decision making framework:

- ① Need for change?
- ② Best suited option?
- ③ Timing/other initiatives?
- ④ Regulatory considerations?
- ⑤ Resident/Council acceptance/willingness?
- ⑥ Budget?



Plastic Film: What's Next

Striving for:

- Resident outreach
- Pilot

Need:

- Council approval

Timelines

- Q4 2016 – Q1 2017



Thank you!



Contact me, the project partners, or RSE for information about the study:

- Hamilton, Joel McCormick
- CIF, Carrie Nash
- SO, Sherry Arcaro
- CPIA, Krista Friesen & Joe Hruska
- RSE, Neil Menezes

Plastic Film Collection – Return to Retail/Depot



Nina Butler

nina@moorerecycling.com

Clean, Dry Polyethylene Film

- >10B pounds of plastic film produced in North America each year
- ~ 80% of film is polyethylene
- Most is readily recyclable – IF kept clean & dry

RECYCLE

clean & dry
plastic film packaging,
bags & wraps

 **HERE** 

NOT in Curbside Recycling

 Produce Bags	 Plastic Shipping Envelopes	 Bread Bags	 Dry Cleaning Bags	 Case Wrap
 Air Pillows	 Newspaper Bags	 Food Storage Bags	 Product Overwrap	 Bubble Wrap



and Carryout Bags

Also look for any packaging with this How2Recycle label

NO candy bar wrappers, chip bags, six-pack rings or degradable bags

PlasticFilmRecycling.org

Recycle if Clean & Dry



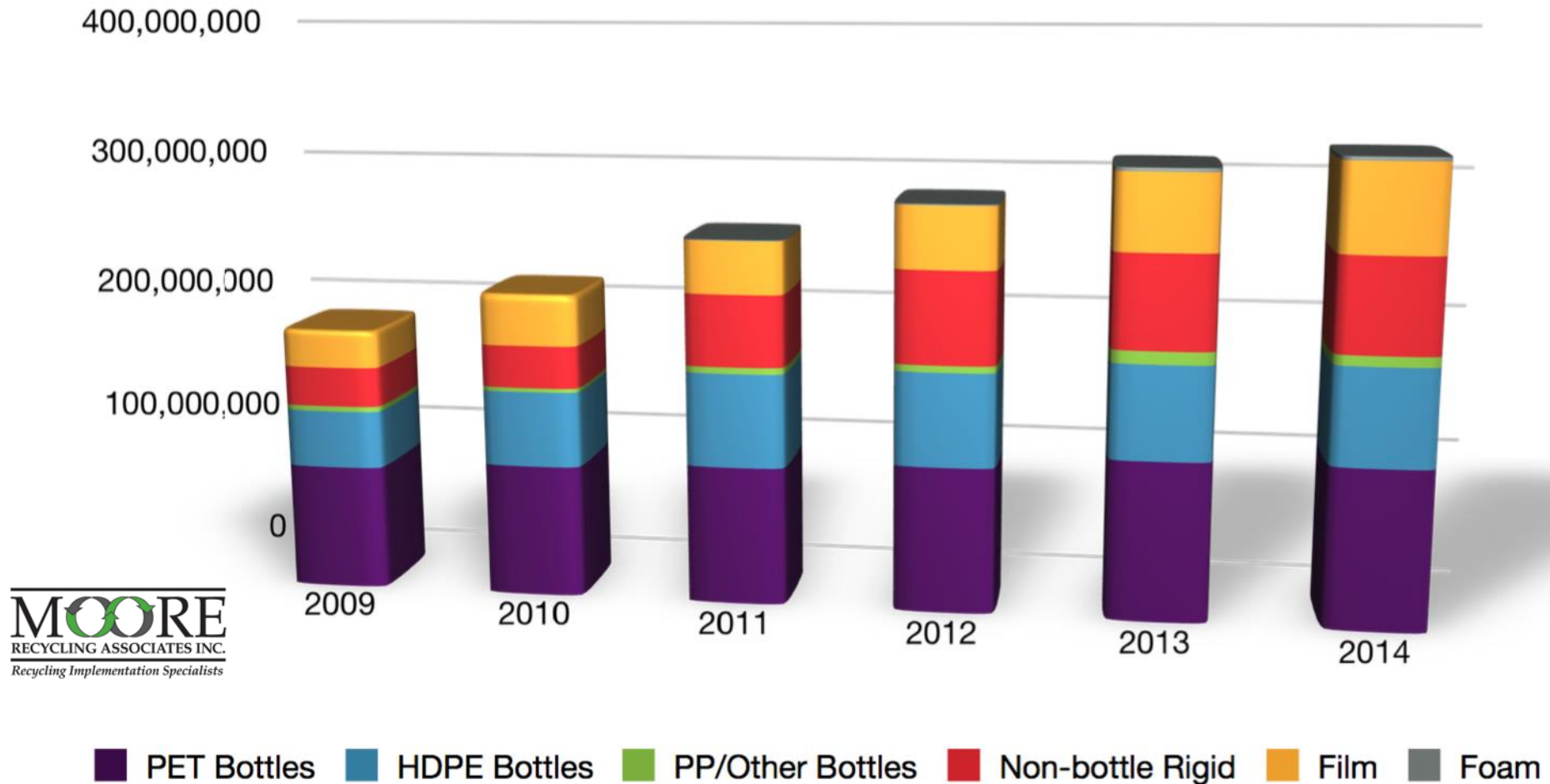
PLASTIC
BAGS / FILM / WRAP
how2recycle.info

Film Use Growing

- Protects products
- Is economical
- Is efficient in distribution
- It is found in every business



Postconsumer Plastic Collected (kg)



Flexible Film Recycling Group (FFRG) Members:

- Facilitating best practices in film recycling
- Raising awareness
- Engaging stakeholders to expand film collection programs



Flexible Film Recycling Group



Web-based Resources

For the public:

- Finding Drop-off locations

For retailers:

- Setting up a collection program
- Facilitating bag & film recycling

The screenshot displays the homepage of plasticfilmrecycling.org. The header includes navigation links: Home, Find a Drop Off Location, Set Up a Collection Program, Facilitate Bag and Film Recycling, Add Your Location, Get Listed, and W.A.A.P. The main banner features the text 'bag plasticfilmrecycling.org wrap'. Below the banner, there are several sections:

- What's New:** A news item titled 'WRAP Reminds Chicago Residents About Hundreds of Locations to Recycle Film and Bags' with a photo of a woman holding a recycling bag.
- Media:** A link to a story about 'Lynette Bassett Joins FFRG and North Carolina Becomes WRAP Partner'.
- Learn What To Recycle:** A section with a 'Find a Drop Off Location in the US and Canada' button and a 'Recycle What To Recycle' button.
- Get Involved!** A section titled 'Learn How Your Company Can Support Plastic Film Recycling' with a list of bullet points.
- Directories:** Four icons representing different directories: 'Recycled Film and Bags products', 'film dropoff directory', 'film recycler directory', and 'How2Recycle Label'.
- Success Stories:** A section titled 'The How2Recycle Label' and 'Success Stories' featuring a story about 'N.S. Farrington'.
- Retailer Spotlight:** A section titled 'Retailer Spotlight' featuring a story about 'Weaver Street Market'.
- Recycler Spotlight:** A section titled 'Recycler Spotlight' featuring a story about 'Wisconsin Film & Bag'.
- Sponsors and Partners:** A section titled 'Sponsors and Partners' with logos for Trex, ExxonMobil Chemical, Wisconsin Film & Bag, Johnson, and Sealed Air.

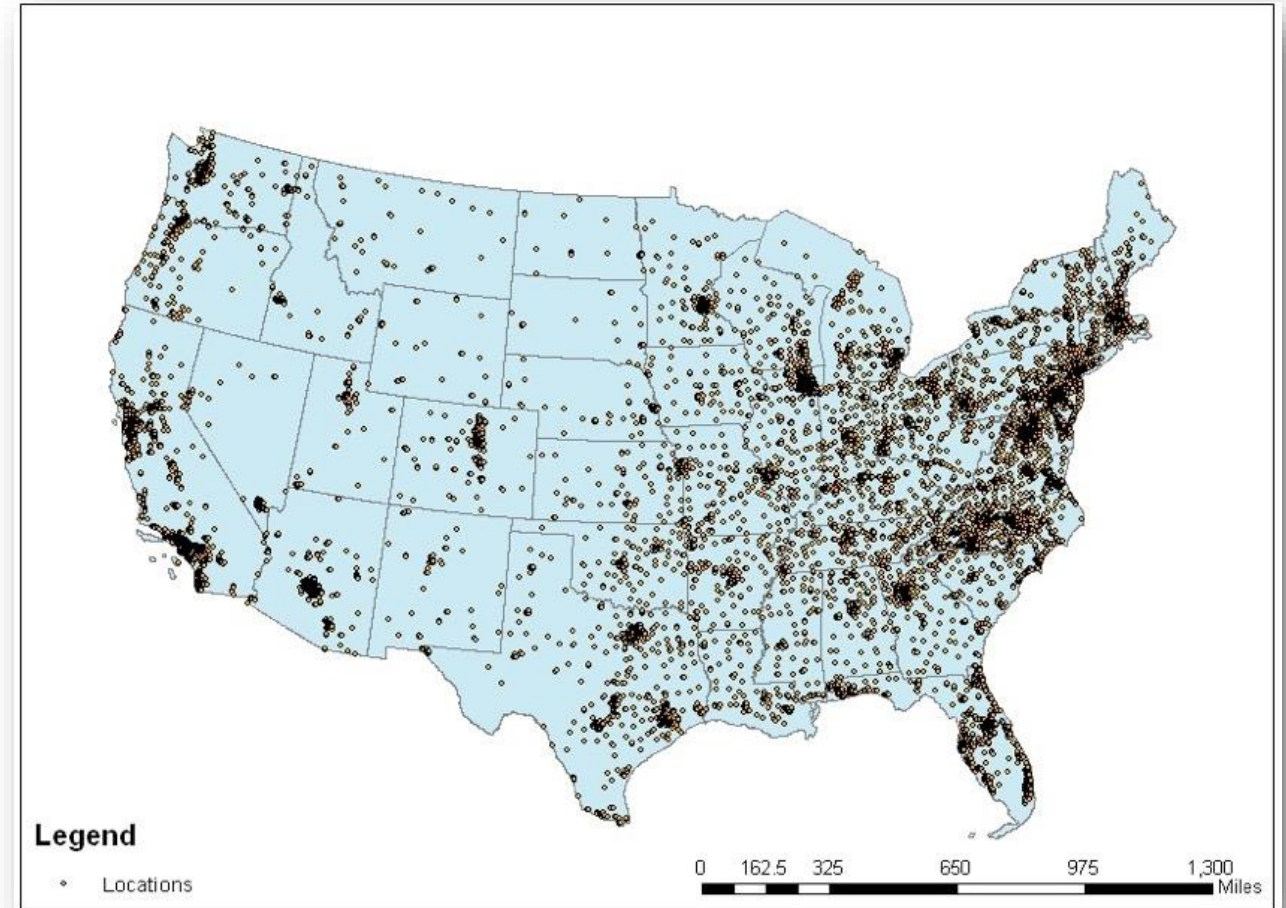
The footer contains copyright information: '©2013-2015, American Chemistry Council. All rights reserved.' and links to 'Terms & Conditions', 'Privacy Policy', and 'Administrative Log-In'.

U.S. Film Drop-off Facilities

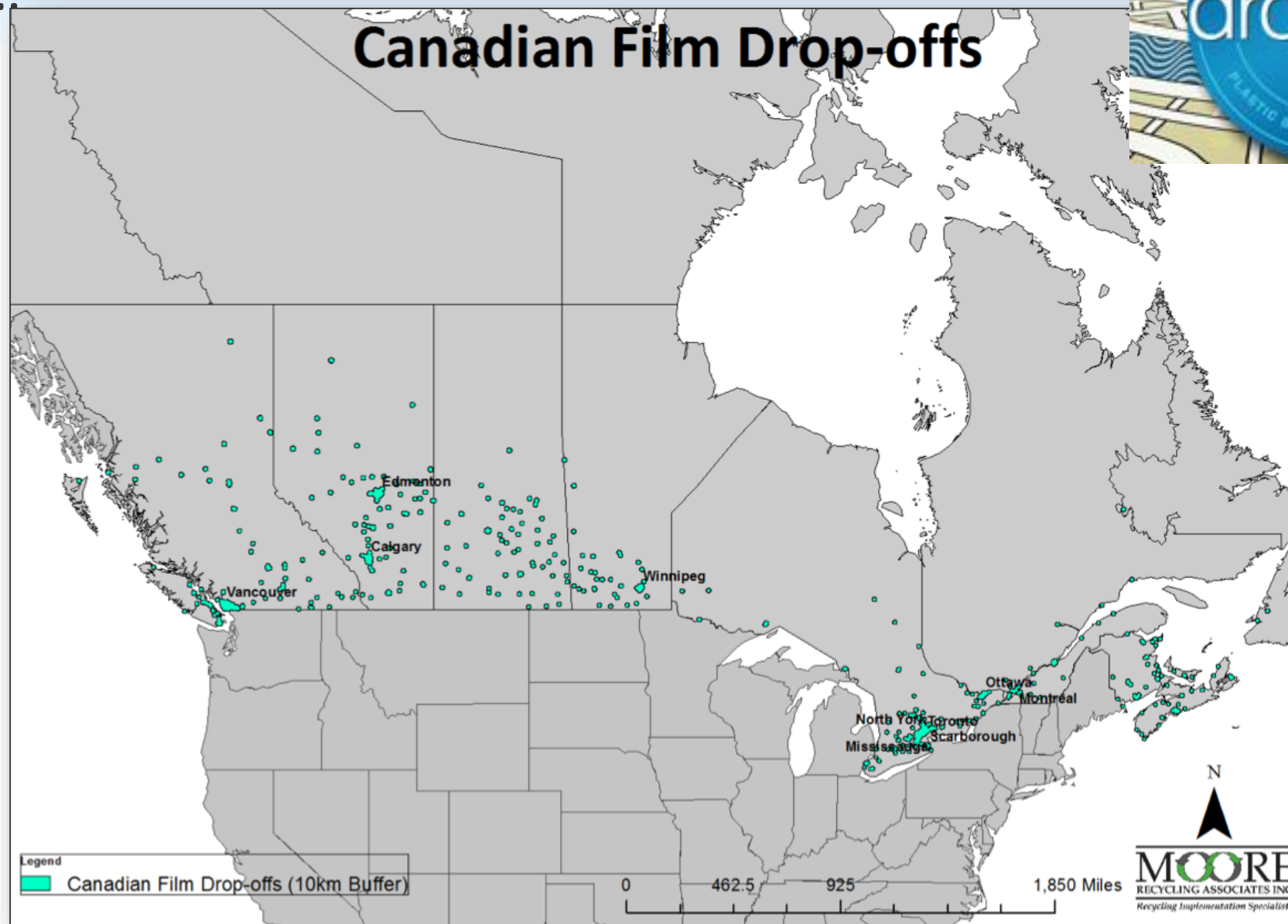
18,000 drop-off locations
>90% recycling access

- Most people in the U.S. don't know
 - Plastic wraps can be recycled
 - Plastic bags & film generally should NOT be in curbside bins

bag
plasticfilmrecycling.org
wrap

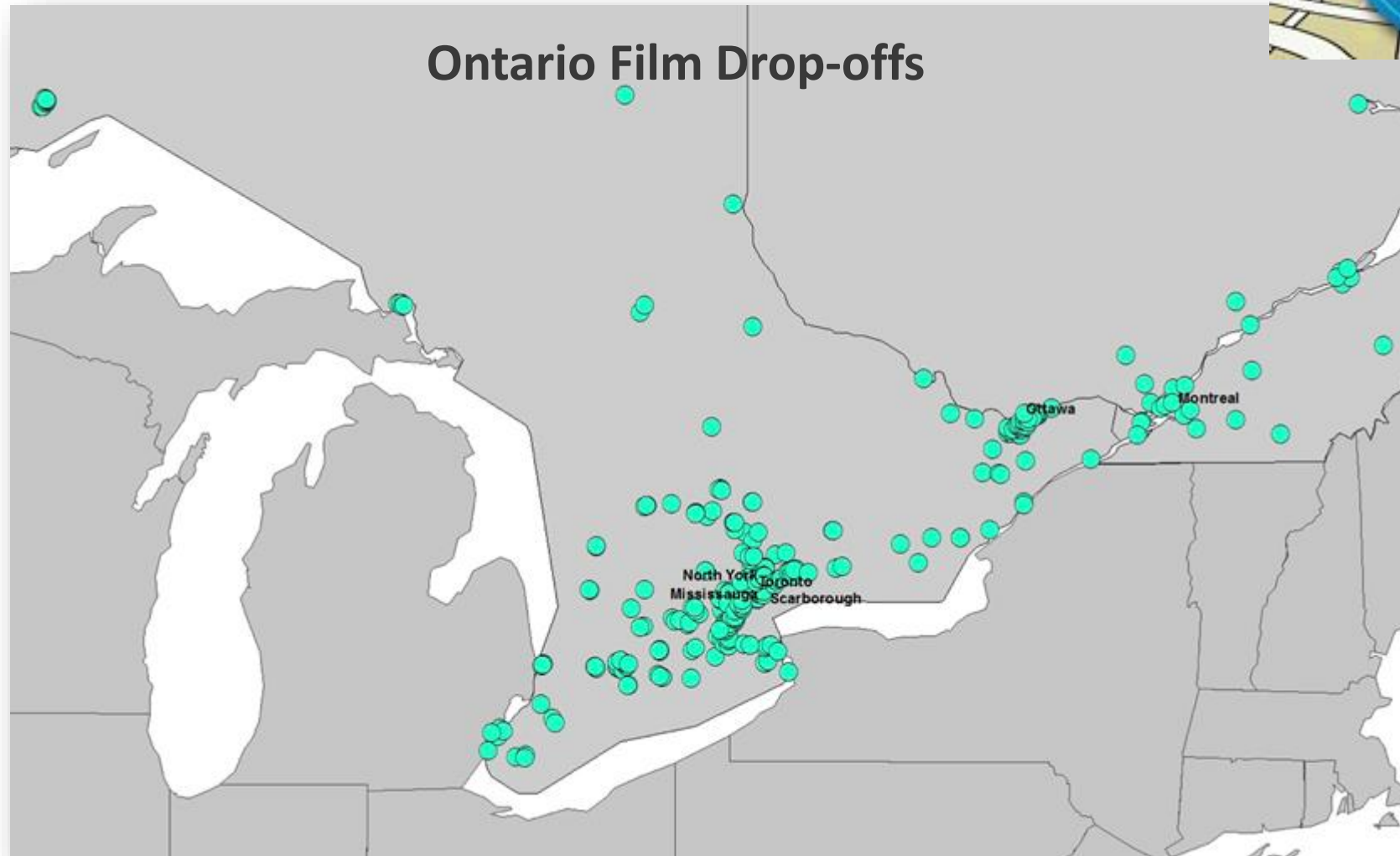


In Canada...*



**Partial list only;
Canadian listings in
Drop-off Directory
are new*

In Ontario





Brands, SPC -
How2Recycle Label

State & Local
Gov't Outreach

WRAP & How it Works



Recyclers,
APR

Retail Collection -
18,000 drop-off
locations

APR
Design™
Guide for
Plastics
Recyclability -
PE Films



Public-
Private
Partnerships

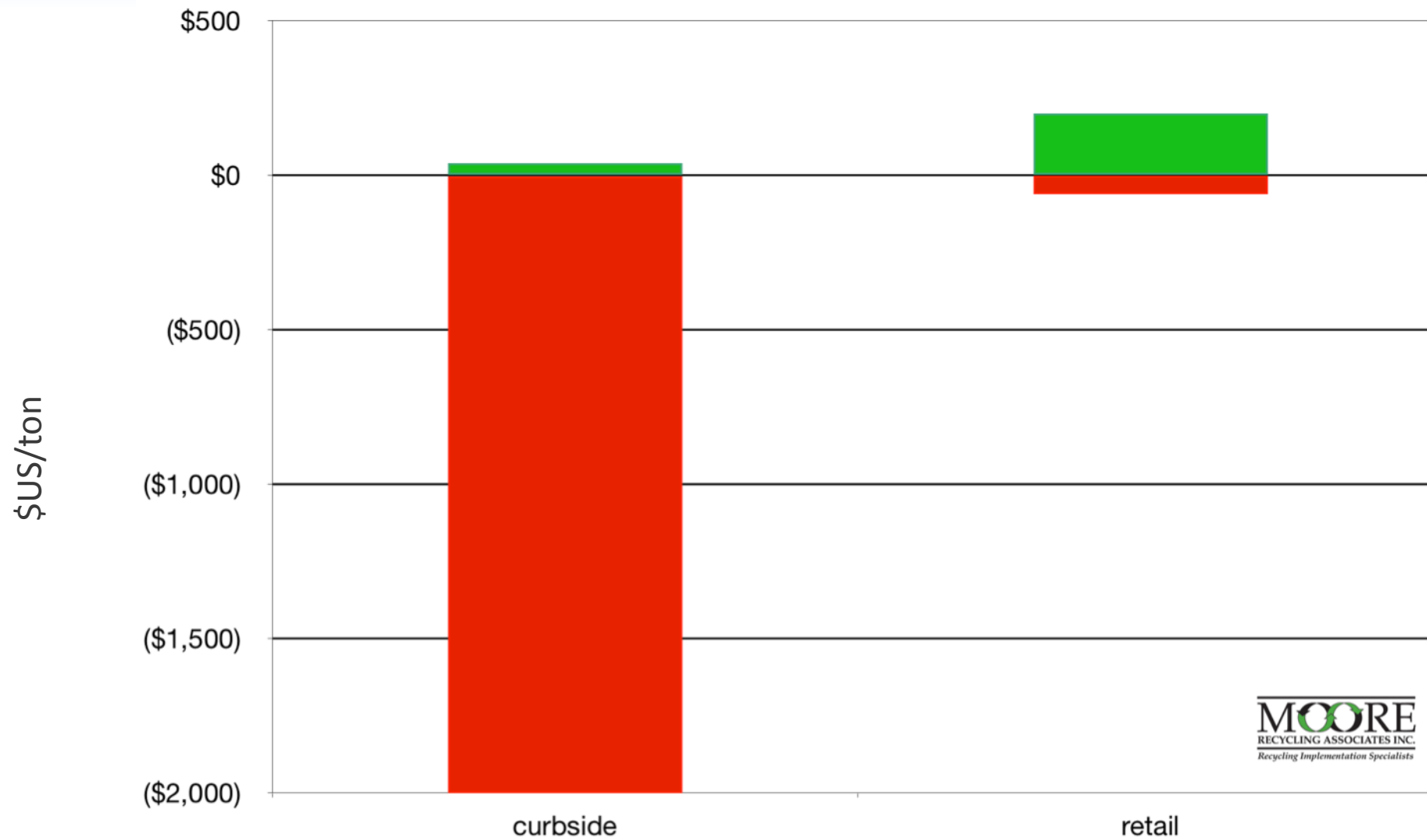


Goals & Impacts

- Program goal: double plastic film recycling to 2B lb. by 2020
- Impacts:
 - Reduce cost for communities & MRFs
 - Increase available supply of high quality film
 - Capture a resource before it's sent landfill or WtE
 - Using PCR - reduce CO² emissions & reducing energy use



Cost/Benefit of Film Recovery



Legend

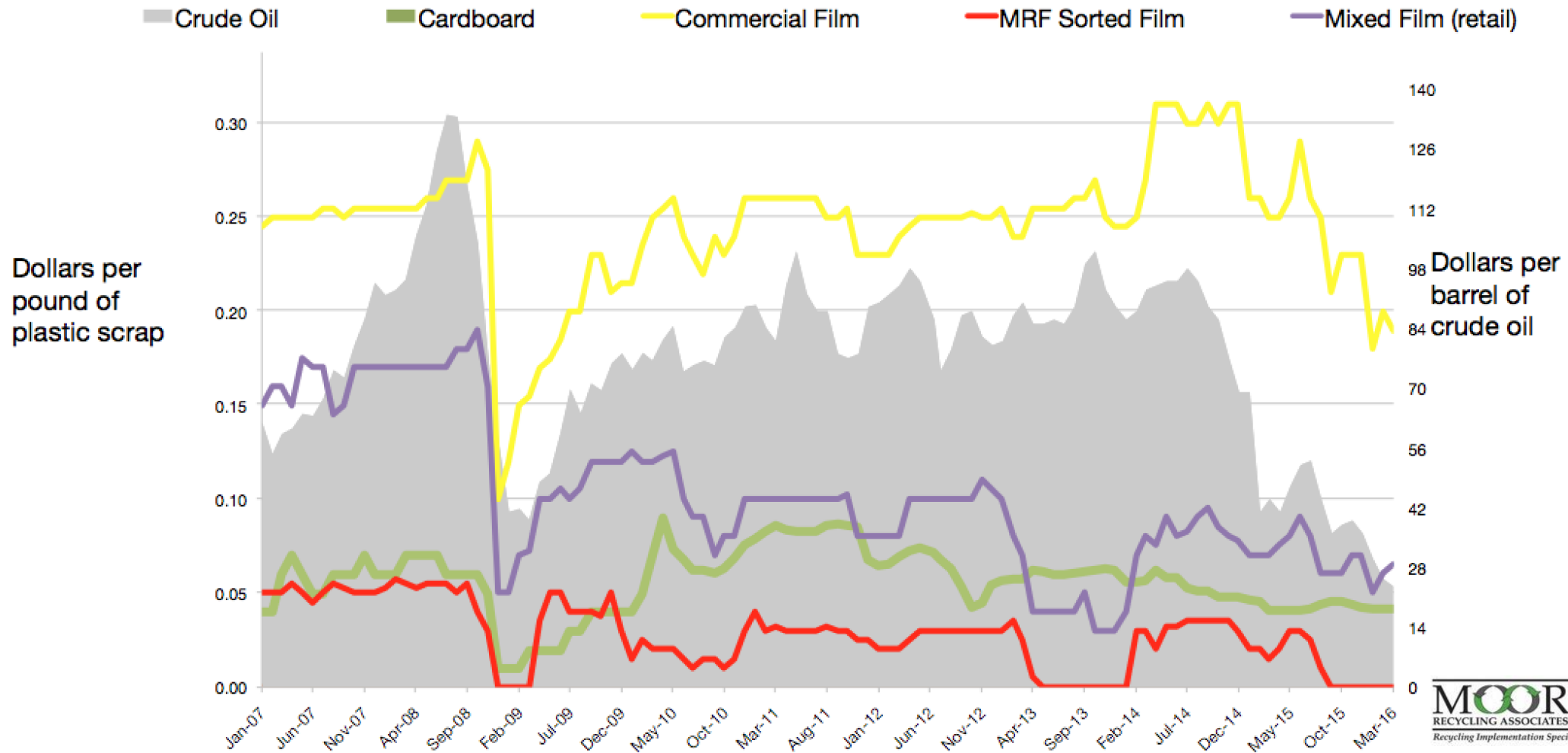


Cost

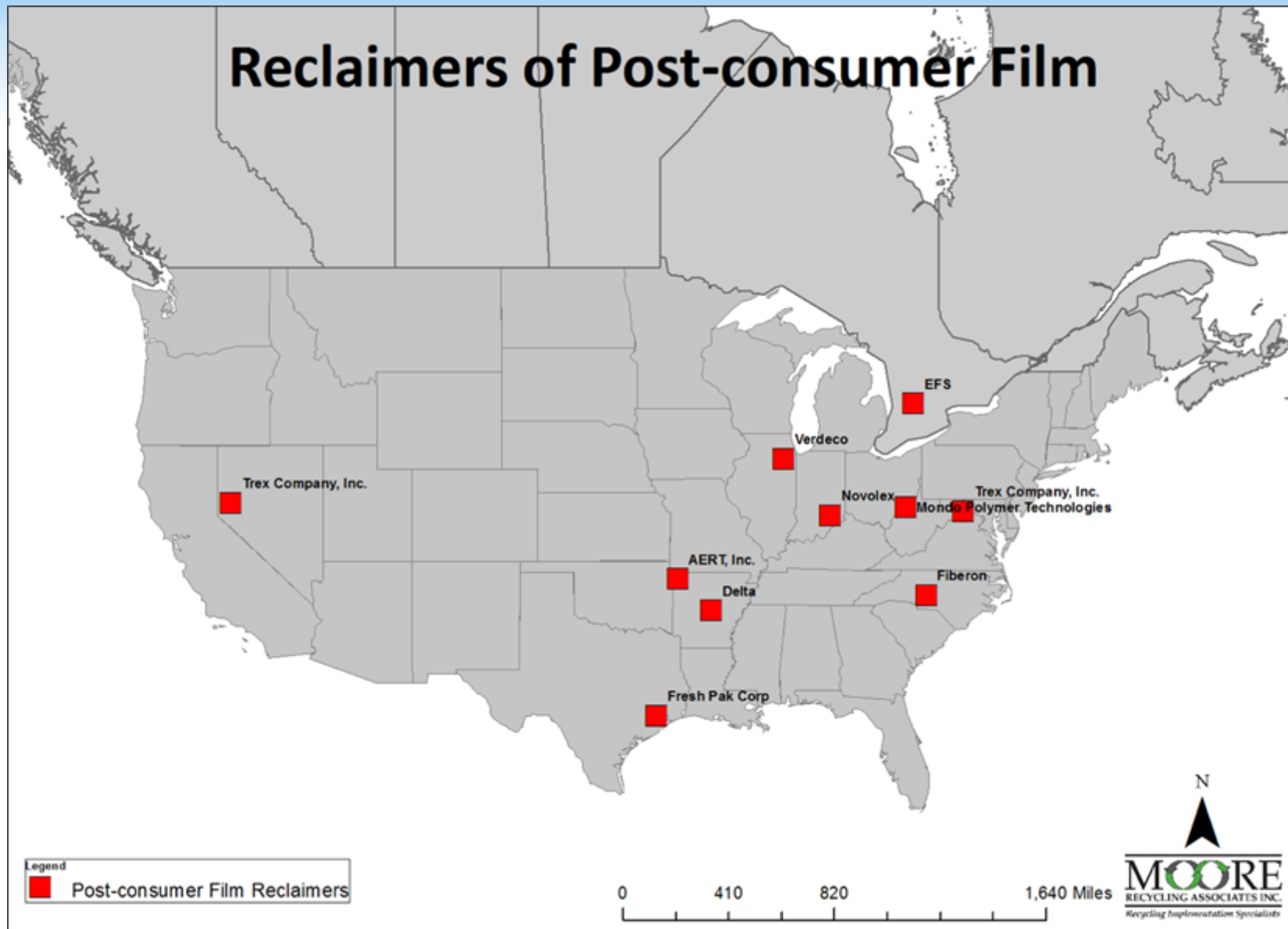


Benefit

Historical Pricing



Reclaimers of Post-consumer Film



WRAP in Action: Public Awareness Campaign



Tools & Technical Support



Learn What's Recyclable

Identify what types of plastic you generate.



Find Recyclers

Find the right recycler to meet your collection program needs.



List In Drop Off Directory

Let consumers know you accept bags and film.



WRAP

Wrap Recycling Action Program



List in Recycler Directory

Recycling service providers that collect film should list here.



PlasticsMarkets.org

Find markets for other recyclable plastics (like bottles).



Calculator

Compare disposal costs to the benefits of recovery.



Bins and Equipment

Learn about bins and balers to meet your needs.



Bale Specifications

Sample bale specs for various grades of film.

Challenges

- Space
- Transportation
- Storage

Success Stories



N.S. Farrington

N.S. Farrington & Co. is a wholesale distributor of industrial laundry and dry cleaning supplies based in Winston-Salem, North Carolina. In 2010, at the request of a dry cleaner owner, they started accepting "bags of bags" for backhaul back to their warehouse. By summer 2014, they were baling 500 pounds of plastic film and bags every week collected from customers around the Southeast. This story highlights the genesis and growth of their program.... [Read More](#)

Organization Types

Recovery Methods

Go

Also See:



[view all >](#)

bag
plasticfilmrecycling.org
wrap

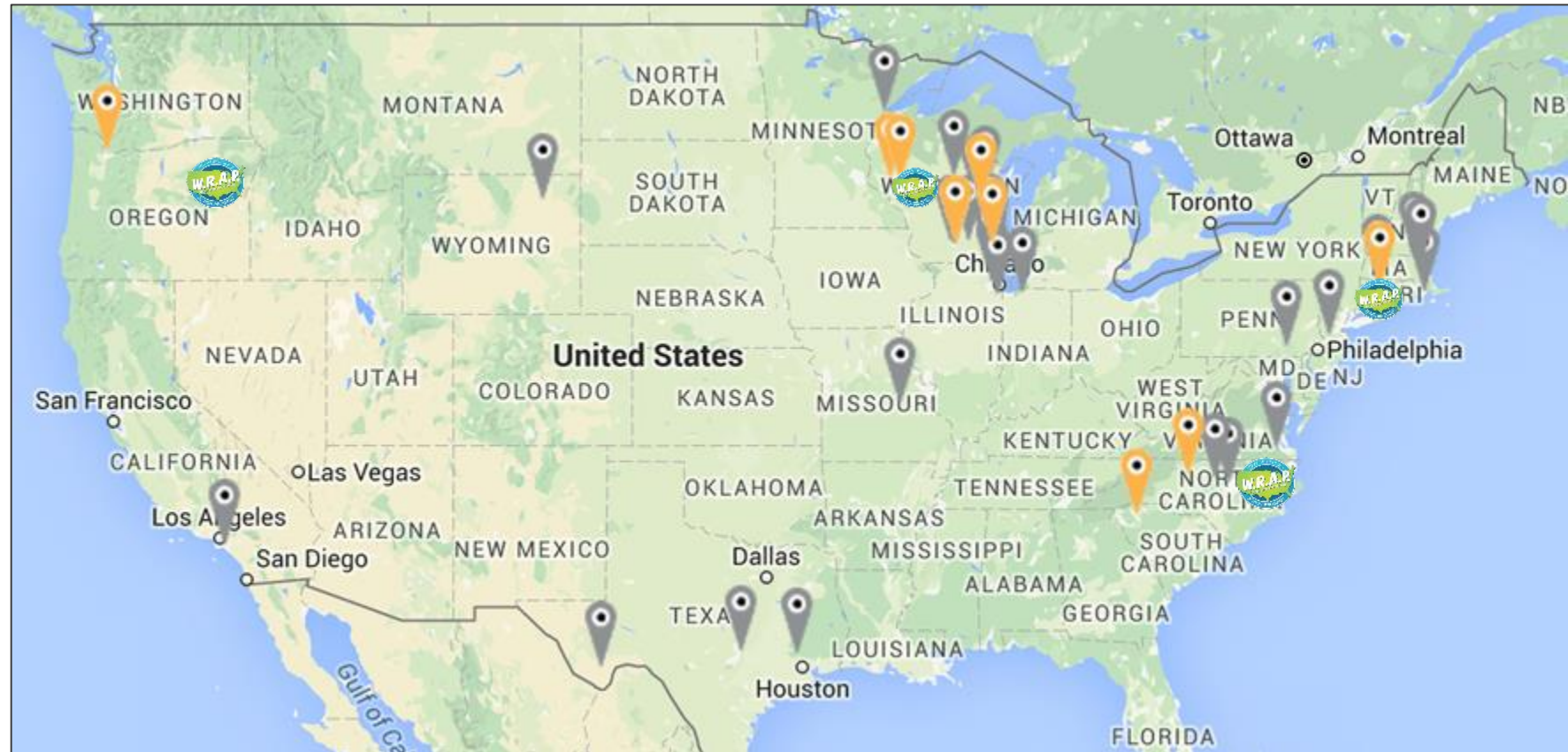
Latest Case Study: Safeway WRAP Campaign (Vancouver, WA)



- **Favorable customer response:**
 - 80% of customers interviewed reported positive impression of stores with bag/film recycling programs.
 - 20% said program makes them more likely to choose the store for their shopping
 - **No contamination issues** (i.e., food residue or vector problems)
- **Reduced MRF Contamination** - Local government benefitted from 75% reduction in film contamination at MRF
- **Film recovery increased** by 125%

Growing List of Champions!

- Retailers = 4
 - Brands = 15
 - State governments = 4
 - Local governments = 63
 - MRFs = 2
- *Other partners pending: EPA, KAB*



Conclusions

Successful plastic film recycling requires:

- Data collection & reporting
- Partnerships
- Resources & tools
- Awareness of the economics!
 - Cost to manage
 - Market availability

THANK YOU!

For more information:

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