



Circular Economy in Action

Circular Innovators Knowledge Series #2
June 27, 2023

Facilitated by Shirley Ouellette, Membership Manager

BACKGROUND

- Originally established in 1978, Circular Innovation Council (CIC) is an independent environmental organization.
- CIC has a deep history of working with its members and stakeholders, supporting policy development, research and market programs that accelerates Canada's transition to a circular economy.
- We have a unique membership that spans entire value and supply chains:
 - Governments at all levels; industry producers, collectors, processors; educators, academia, researchers; corporations, SMEs and start-ups.
- Our pillars of focus include:
 - Policy and Advocacy | Resources and Services | Programs and Pilots





We Invite you to Join Us
info@circularinnovation.ca



MEMBERSHIP

- Multi-sectoral perspectives on current issues as we bring together representatives from entire value chains.
- Access to resources, tools and best practices from CIC. programs to support CE ambitions and net zero commitment.
- Stay informed on the advancement of circular economy around the globe with a focus on Canada.
- Network with other likeminded organizations.
- Access to learnings from CIC various pilot projects and research.
- Subscription to the Daily News Headlines, e-Newsletters, and Member Bulletins.
- Reduced rates to attend forums, workshops, seminars, and special events hosted by us and some of our members.



About the Circular Innovators Knowledge Series

- This virtual series highlights a range of avenues propelling Canada towards a Circular Economy. Sessions reflect the diversity of outcomes, markets-based solution, and broad works of CIC.
- Subjects include cross-cutting measures; policy, procurement, finance as well as sectors (construction, food service, plastics, textiles)
- Opportunity to profile CIC member initiatives and other Canadian case studies – focusing on innovative solutions, business models and unique partnership.



Circular Food Systems: Innovating IC&I Food Rescue and Organics Diversion

Katie Motta, Project Manager, IC&I Food Recovery and Waste Diversion Pilot, Circular Innovation Council



Das Soligo, Manager of Solid Waste Services, County of Wellington



Peter Uppal, VP of Sales and Business Development, Superfy



Diana Aquino, Municipal Relations Manager, Strategic Business Development, Walker Industries



Guelph- Wellington Pilot

OPERATIONAL PARTNER



PILOT Hosts



Sponsors and Partners



Accolades and awards



The Problem

Over



of all food wasted in Canada

1 in 6 Canadians



suffer food insecurity

5M Tonnes



IC&I waste Canada/yr

Sources: Nikkel, L., Maguire, M., Gooch, M., et al. (2019) The Avoidable Crisis of Food Waste: Roadmap; Second Harvest and Value Chain Management International
Tarasuk V, Li T, Fafard St-Germain AA. (2022) Household food insecurity in Canada. Toronto: Research to identify policy options to reduce food insecurity (PROOF).

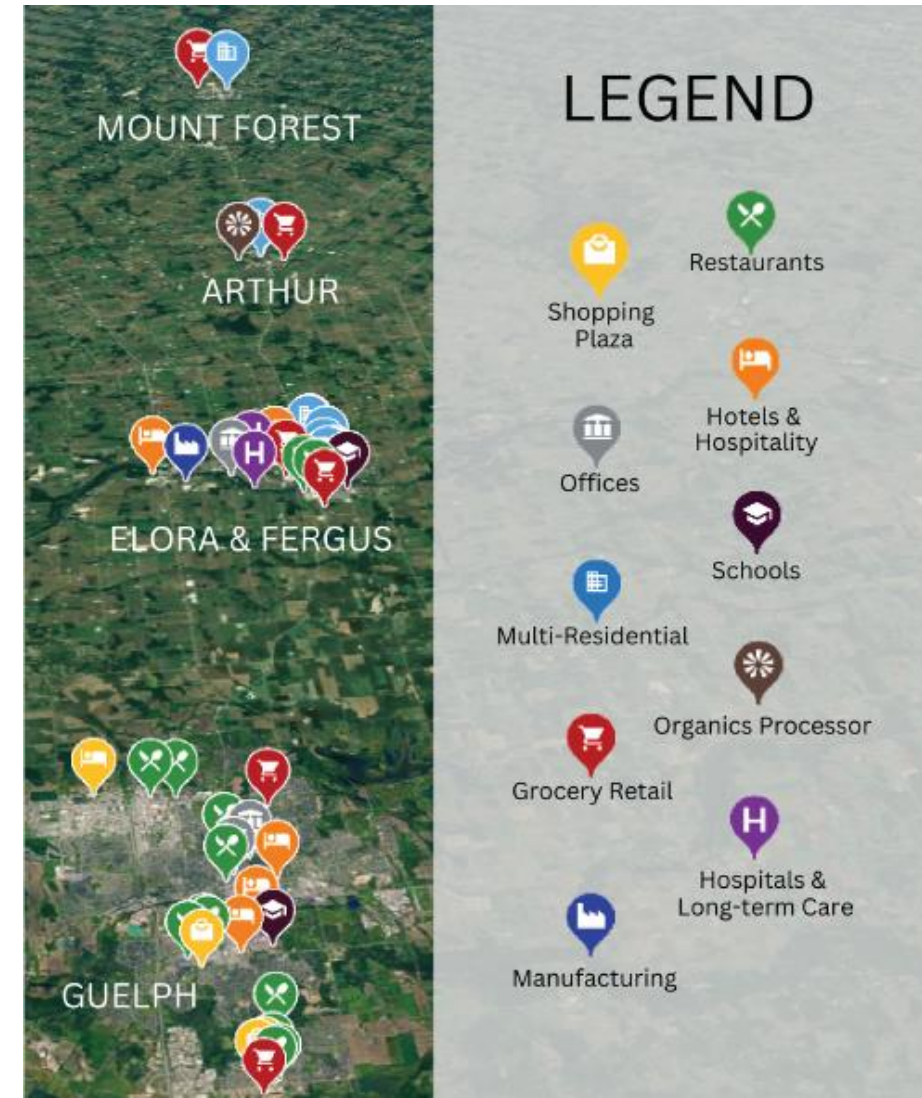
PILOT BACKGROUND

The Collective IC&I Challenge:

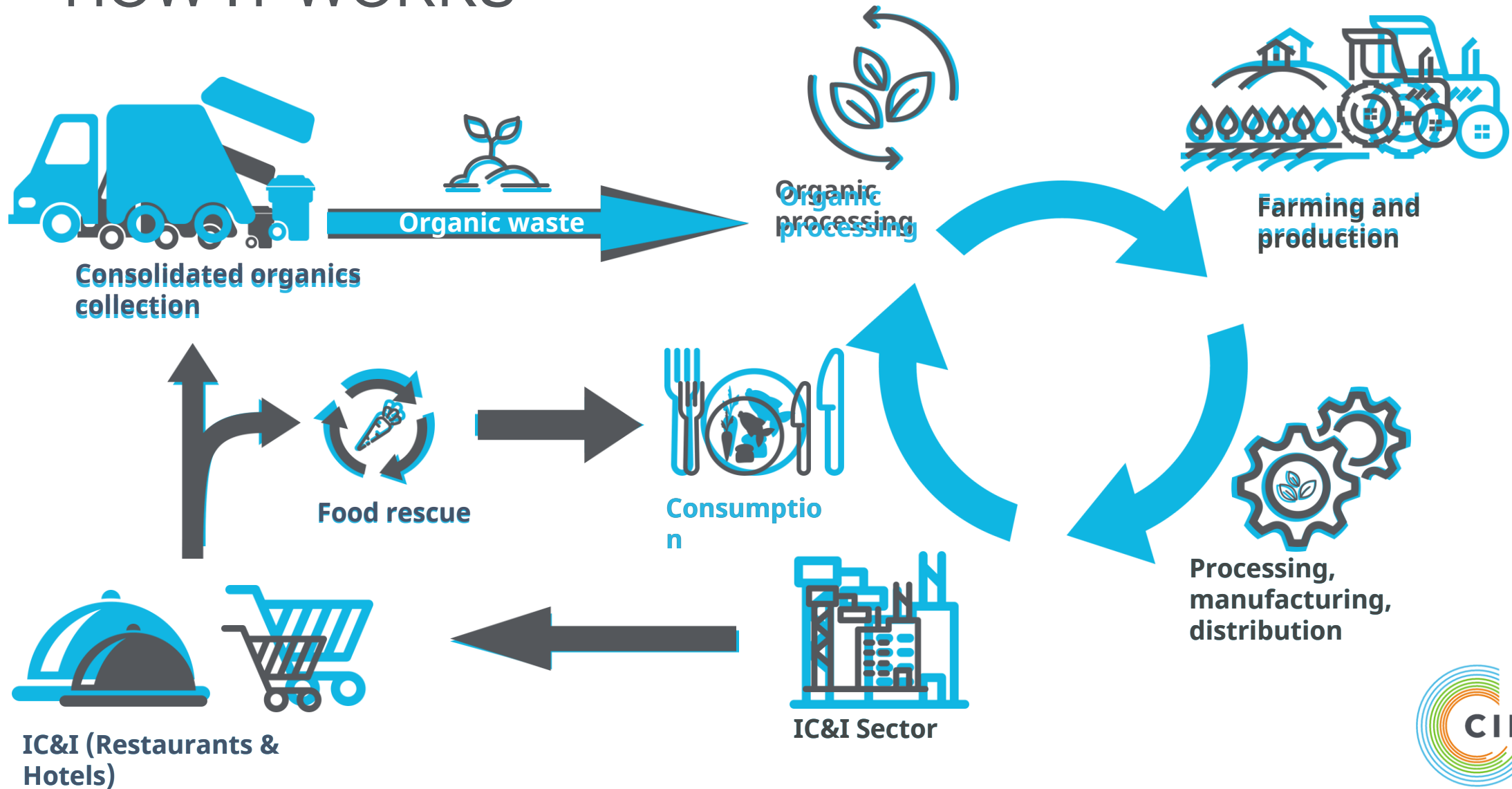
- IC&I sector generates more food waste than the residential sector.
- Disaggregated IC&I organics collection limits collection efficiencies or standardized services
- How to make food waste diversion affordable and equitable for businesses and institutions of all sizes?
- How to simplify leftover food donations for businesses and institutions of all sizes to retain high value of edible food while reducing amount and cost of diverting wasted food

Our Solution:

Pilot groups neighbouring businesses together -- mimic the efficiencies and regional collection model of residential programs – to consolidate food rescue and food waste collections amongst businesses and institutions of all sizes



HOW IT WORKS



INNOVATION

Logistical and business model innovations:

- Holistic
- Consolidated collection
- Collective procurement
- Equitable pricing
- Real-time organic waste data



KEY LEARNINGS

Consolidated Route Economics

- Standardized collection service model effective for vast majority of IC&I
- Target 10-12 totes/hour
- Can achieve 30 - 40% cost reduction (below average regional cost per tote) by optimizing efficiency

Cost Reduction:

- Consolidated efficient collection
- Processing options (region dependent)
- Leverage scale to capture savings through collective RFP

IC&I Surplus Food Volume

- Grocery retailers generate the largest amounts of edible food for rescue.
- Keeping edible food at its highest value through food rescue may reduce costs of food waste diversion by up to 30%

IC&I Surplus Food - Challenges

- Restaurants, hospitality, and catering businesses need additional food rescue support and guidance to work through barriers such as high staff turnover (retraining), small volumes vs. logistical cost of collections



FOODLAND

“We are pleased to see the **savings**
in our garbage collection
costs

from diverting organics. Engaging with
local food rescue agencies with the
support of Second Harvest was worth
it. **We’ve now achieved ~30%**
reductions in the overall
volume of food waste.”

- Tom Gorecki, Foodland Arthur





“Waste haulers were asking me to pay \$30-40/cart for organics collection, making it a challenge for us to divert food waste. The pilot has created a space for small businesses to access these **collections for a price we can afford.**

We also enjoy supporting local social enterprise The SEED with their important work improving community food access.”

- Katherine Sowden,
Bella Roma Foods



“Great project - **staff** have all bought in and **are very positive about** participating in the pilot project. They are proud that our organization is contributing to **reducing our environmental impacts** and contributing to a circular food system.”

- Rick Clark, Wellington Terrace

COLLECTIVE IC&I FOOD RESCUE & ORGANIC WASTE DIVERSION



For more information:

www.circularinnovation.ca/foodwastepilots

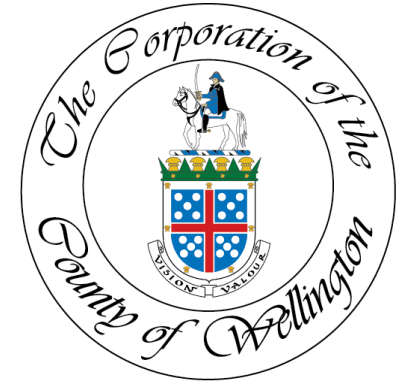
Katie Motta, Project Manager, IC&I Food
Recovery and Waste Diversion Pilot,
Circular Innovation Council
Katie@circularinnovation.ca

COLLECTIVE IC&I FOOD RESCUE AND WASTE DIVERSION PILOT

Circular Innovation Council
Knowledge Series Webinar

Das Soligo

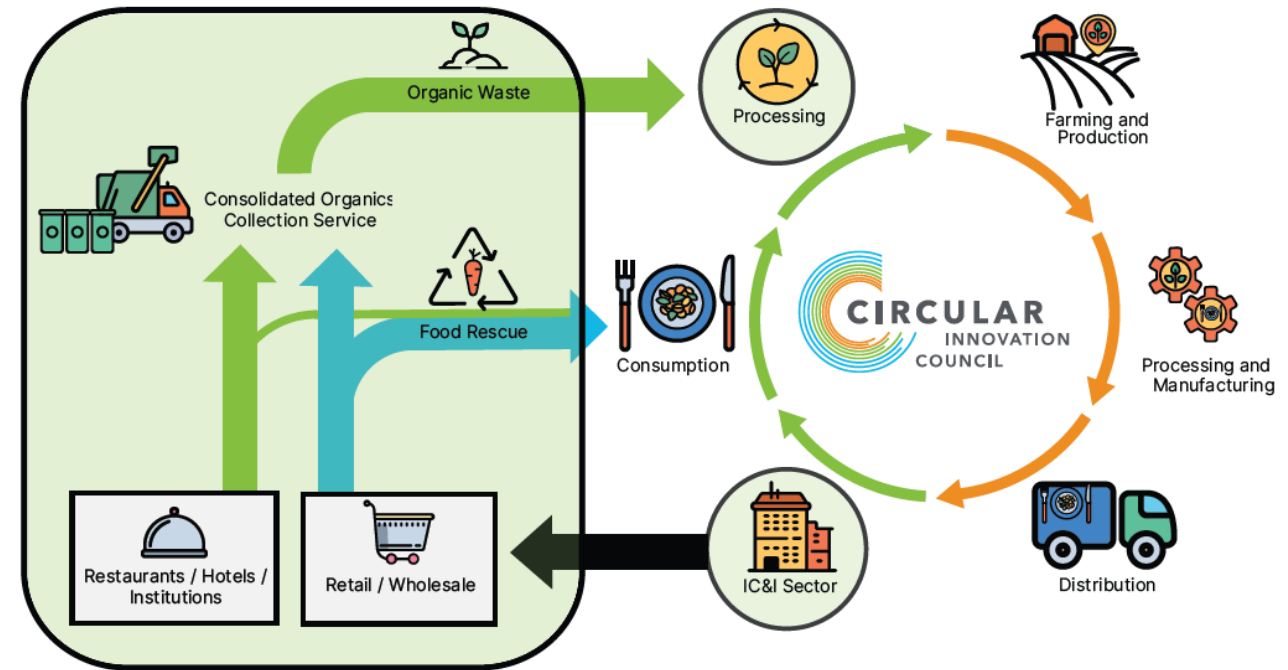
Manager, Solid Waste Services
County of Wellington



June 27, 2023

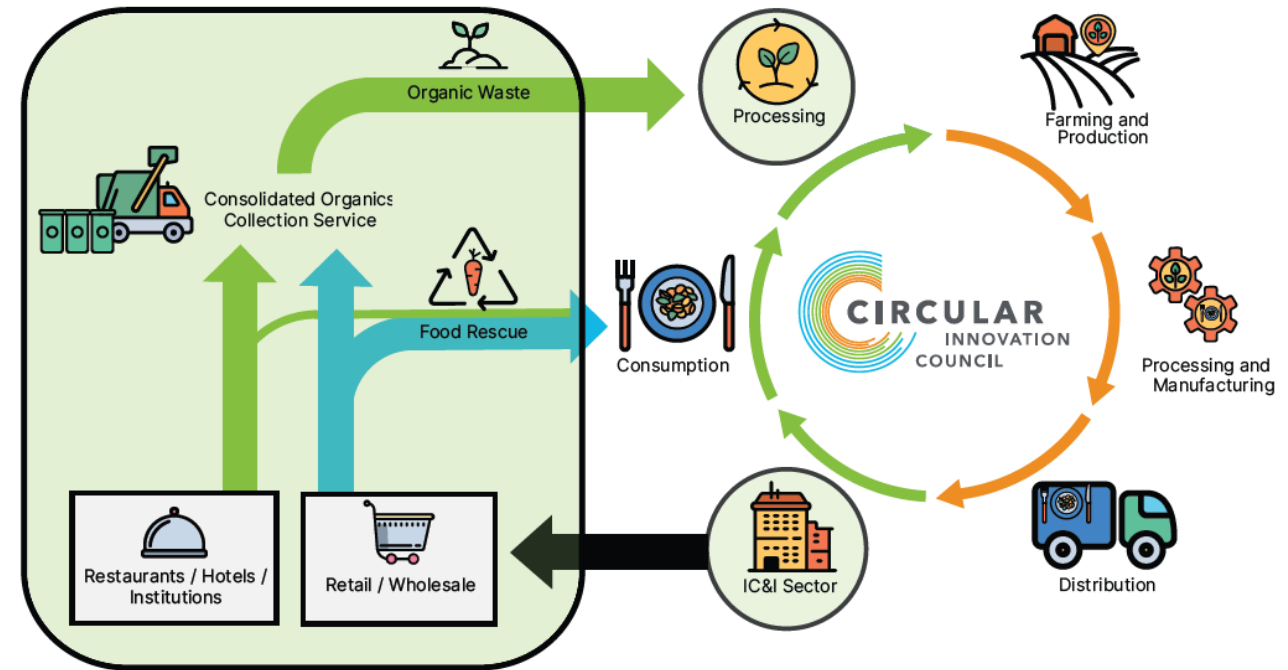
The Pilot

- ▶ An organics collection and food waste rescue programme for the IC&I sector
- ▶ Replicating residential curbside collection service with efficiencies – economies of scale
- ▶ Initially free for businesses to participate
- ▶ Funded through grants and in-kind contributions from service providers



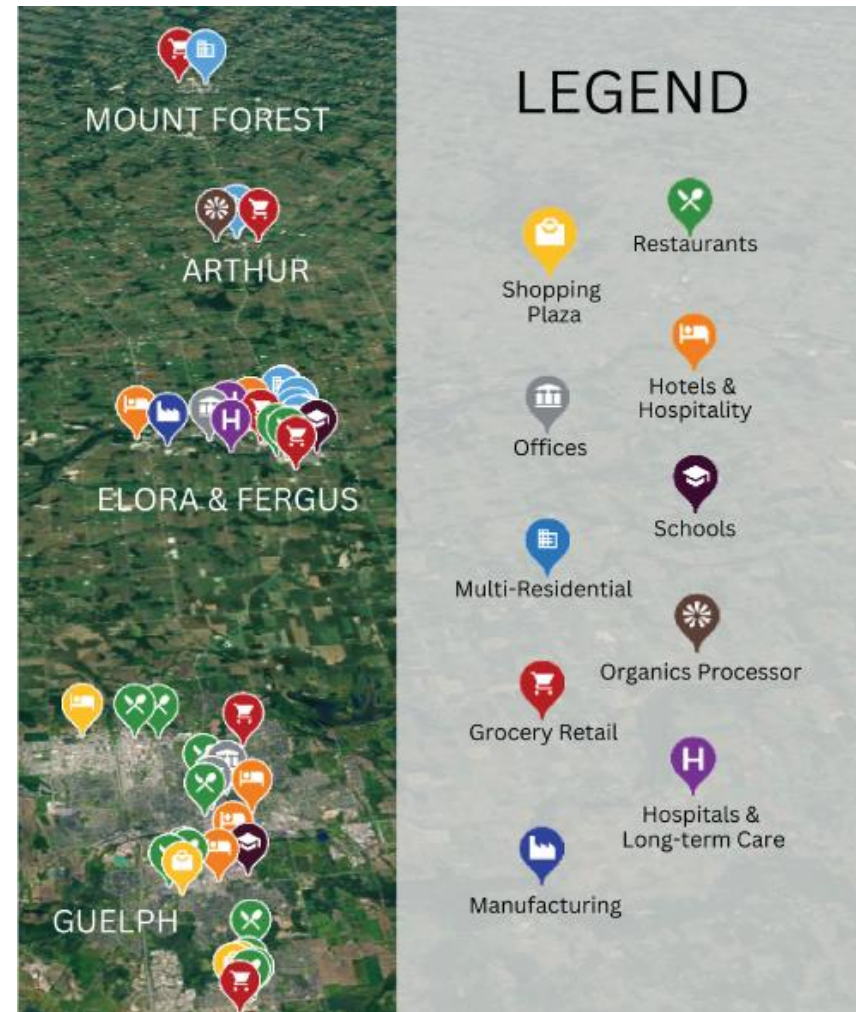
County of Wellington host role

- ▶ Pilot Ambassador
- ▶ Advisory Committee:
 - ▶ Share knowledge of current status of IC&I collections, collection models
 - ▶ Support selection of consolidated collection boundary
 - ▶ Support business model discussions
- ▶ Facilitate introductions
 - ▶ Potential collection and processing partners
 - ▶ IC&I prospects (e.g. through economic development)
- ▶ Support strategic communications to raise awareness and support IC&I recruitment
- ▶ Funding top-up



Pilot value to municipalities

- ▶ Extend landfill life
- ▶ Improve waste diversion rates
- ▶ Reduce GHG emissions and meet climate change mitigation goals
- ▶ Support measures to address food insecurity
- ▶ Organic waste weight data across 9 IC&I subsectors
 - ▶ Organics processing facility planning



Pilot value to municipalities... Cont'd

- ▶ Identify organics collection model that works effectively for most sizes and types of ICI
- ▶ Determine costing for ICI organics collection
- ▶ Identify potential cost-recovery model options for ICI organics collection
- ▶ Assess how the model can be extended to post-EPR IC&I recycling service
- ▶ Prepare community for future organics policy & champion a practical circular economy solution



Pilot impact: 18 month Results

Environmental



303

TONNES OF ORGANIC WASTE COLLECTED AND DIVERTED



3,098

TONNES OF CO₂e EMISSIONS AVOIDED: ORGANIC WASTE



22,317

WEIGHT (KG) OF EDIBLE FOOD RESCUED



228

TONNES OF CO₂e EMISSIONS AVOIDED: EDIBLE FOOD

Social



22,317

WEIGHT (KG) OF EDIBLE FOOD RESCUED



48,134

MEALS RECOVERED



13

PARTICIPATING FOOD REDISTRIBUTION CHARITIES

Economic



53

PARTICIPATING IC&I GENERATORS



\$160,900

VALUE OF EDIBLE FOOD RECOVERED



94

CUBIC YARDS OF COMPOST GENERATED FROM ORGANIC WASTE

Implications for IC&I blue box collections - post EPR

- Producers will not provide blue box collection for IC&I sector
- Model is an example for post-EPR IC&I recycling services
- Fill the gap that the legislation has created
- Continuity of blue box collections for IC&I sector
- Help support a community based solution



Questions? And Contact Info:



Das Soligo
Manager of Solid Waste Services
County of Wellington

dass@wellington.ca





Food Waste Program

June 2023



Superfy and TELUS **now** deliver sustainable smart waste management solutions **transforming cities** & Infrastructure for a Sustainable Future.



Quebec City | Montreal | Toronto | Regina | Winnipeg | Edmonton | Calgary | Vancouver

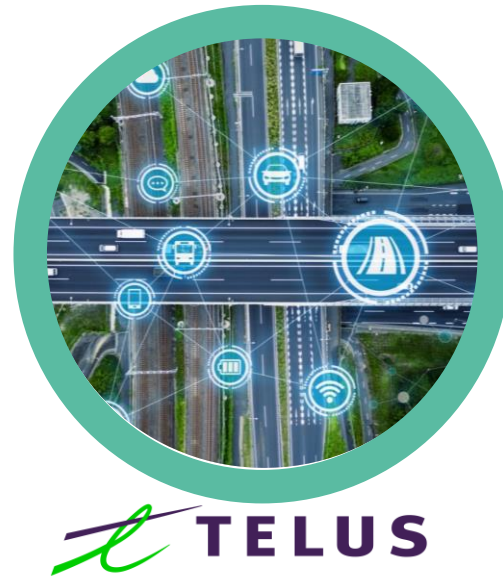


Welcome to a new era in Waste Management.

Telus Smart Waste Insights Program.



IOT SENSORS



CONNECTIVITY



WASTE INSIGHTS PLATFORM



NAVIGATOR



What If We Made Cities, Campuses & Organizations Smarter?

Increase operational efficiencies of labor & resources helping cities, campuses & organizations save money

Reduce collections & meet CO2 reduction targets with substantially fewer trucks on the streets.

Reduce overflowing bins and citizen complaints & contamination

To optimize urban planning initiatives & **support recycling measures**



Superfy Hardware



A Data-Driven Urban Future

Connect and **start** collecting value data on...



Asset utilization

Asset management data in real-time to understand your waste infrastructure life-cycle and asset utilization for informed urban planning



Bin fill levels & fill rates

Real time data on bin fill levels and rates allowing city manager to reduce noise pollution & traffic with reduced collections based on optimized pick-ups



Bin type and size

Generating detailed & accurate bin inventory in a central database



Optimized collection routes

Significantly cutting fuel costs & CO2 emissions through automated scheduling of collection routes while optimizing use of resources (FTE, vehicle etc.)



Bin distribution & Control

Data-driven control over bin capacity and bin distribution



Historical data

Analyse historical trends to make future urban waste development decisions & increase citizen satisfaction with results



Vehicles loads and frequencies

Optimize vehicle loads & frequency data for planning and scheduling purposes



Temperature

Generating temperature readings cross multiple city locations providing urban planners with valuable data

NB-IoT ■ CatM1 ■ LoRa



How it Works

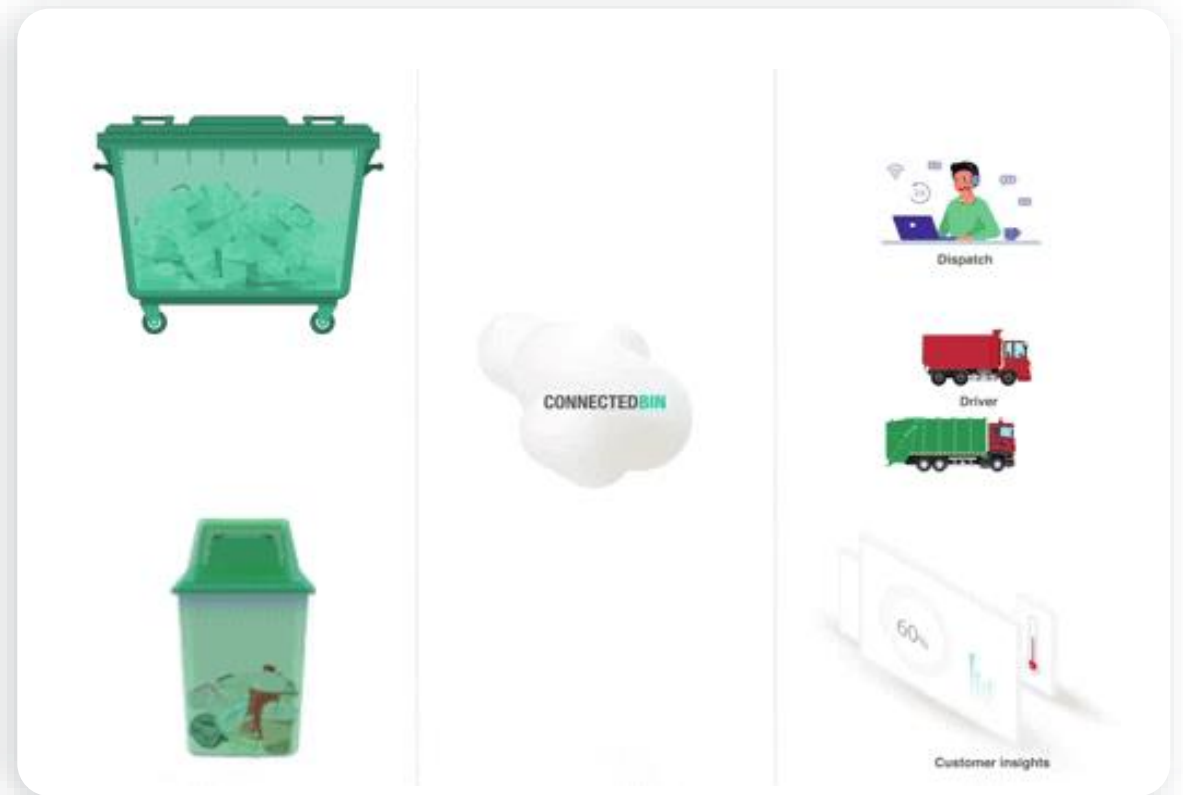
A fill-level sensor is placed in the bin.

The sensor transmits data hourly to the cloud.

The sensor measures fill levels (& other data points) sending alerts for pick up at predetermined levels.

The data is analyzed in the cloud & provides the user with actionable insights.

Additionally, a mobile route optimization application is included.



CIC Food Waste Pilot





Circular Innovation Council



Today | Friday 20th | Overcast clouds

1°



Collection Efficiency

35.06%



Bins Not Ready For Collection

11



Bins Ready For Collection

9



Bins Overflowing

2



Bins Not Connected

0

3,000 L

Rubbish Collected

2

Overflow Alerts

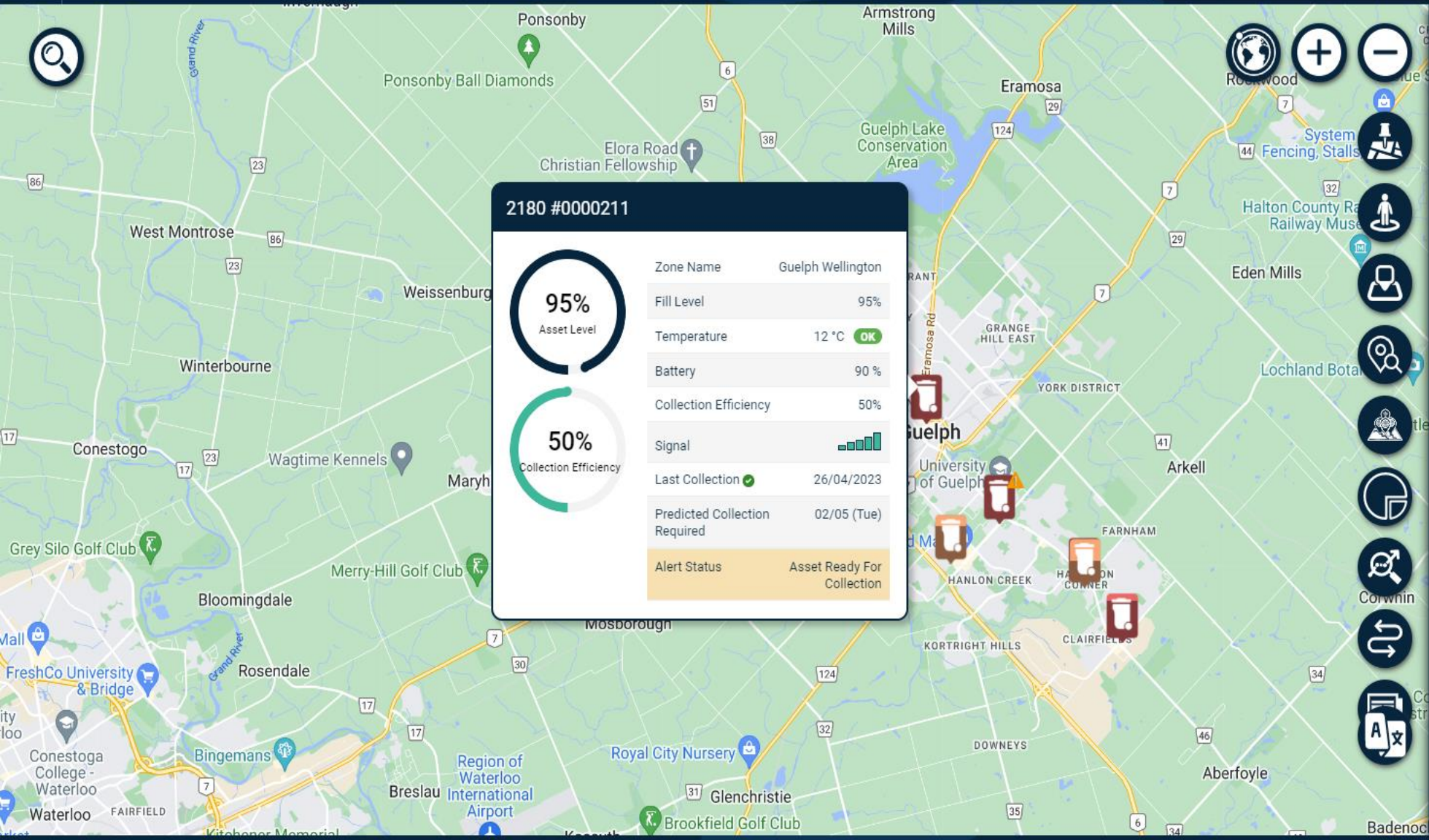
16

Total Collections

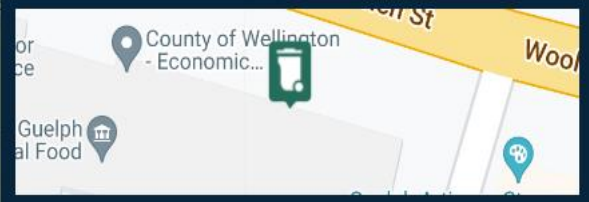
78 %

Average Fill Level



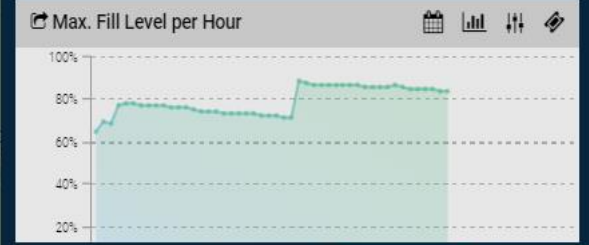


Container Map & Data Container Details Address



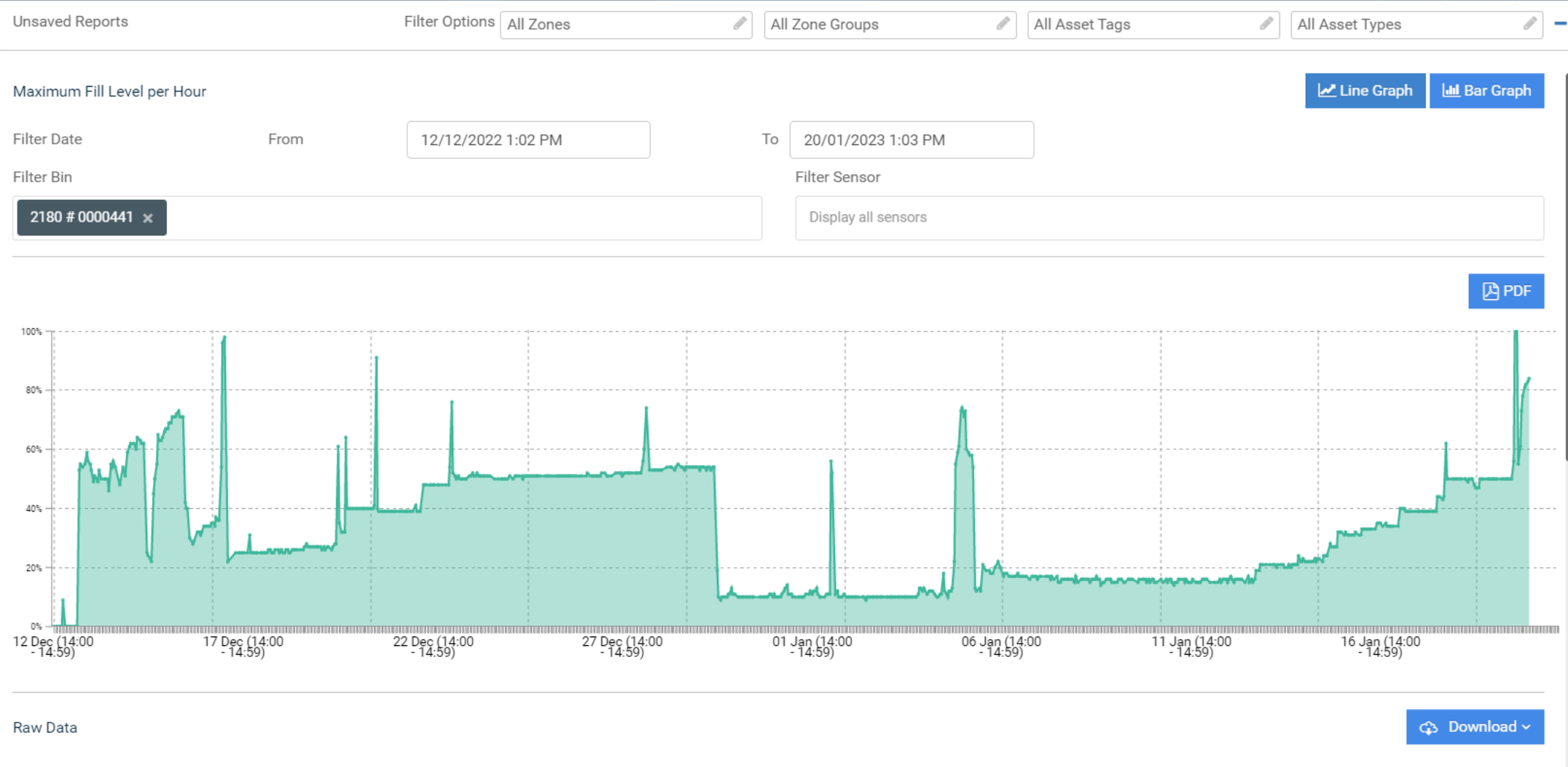
Signal		Last Collection	26/04/2023 07:38 AM
Capacity	240 litres	Last Update	04/05/2023 06:33 AM
Fill Level	95%	Last GPS	Lt: 43.547210693359
Connectivity	CATM1	Lg: -80.247482299805	
		Throughput Score	99.17%

Move Pin Images Sensor Allocation



Close Delete Save

- Report Template
- Detailed Analysis
- Current Fill Level
- Average Fill Level (%) at Collection
- Average Time To Fill
- Overflowing Assets (>100%)
- Over Full Asset At Collection
- Fill Level Trend
- Fill Level (%)**
- Distance to Capacity
- Battery Level (%) over Time
- Current Battery Percentage (Pie)
- Signal Strength
- Signal (dBm)
- Temperature (°C)
- Throughput Score
- Laser Diagnostic (Difference)
- Weight (Kg)





- Report Template
- Detailed Analysis
- Current Fill Level
- Average Fill Level (%) at Collection
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- Laser Diagnostic (Difference)
- Weight (Kg)

Unsaved Reports

Filter Options All Zones

All Zone Groups

All Asset Tags

All Asset Types

Maximum Fill Level per Hour

Line Graph Bar Graph

Filter Date

From

12/12/2022 1:02 PM

To

20/01/2023 1:03 PM

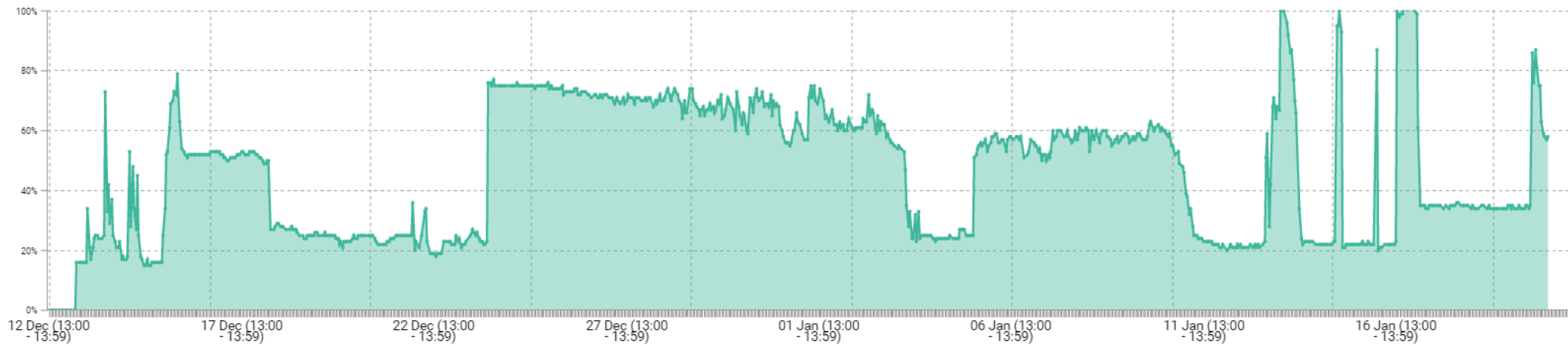
Filter Bin

2180 #0000446

Filter Sensor

Display all sensors

PDF



Raw Data

Download













Superfy Service & Participants

Manage your apps, modules, and integrations to support your business.

Regional Municipality

Guelph Wellington

-  Shopping Plaza
-  Hotels & Hospitality
-  Offices
-  **Restaurant (Dine-In)**
-  Multi-Residential
-  Schools
-  Grocery Retail
-  Organic Processor
-  Manufacturing
-  Hospitals & Long-term Care

Restaurant (Dine-In)

Jan 6, 2023 – Jan 13, 2023

Filters



Total Organic Waste Diverted

Current weight

55 Tonnes

↑ 2.0



Emissions Reduced

Current weight

57 Tonnes

↑ 2.0

Organic Wasted Produced (sector totals)

Download



Average Organic Waste Produced

/100ft² / week



↑ 10%

Food Waste Calculator

Estimate your food waste

Your Establishment ft²

120

Your Establishment #seats

40

Calculate



150 kg

Organic Waste per week



1.5

Large Carts per week

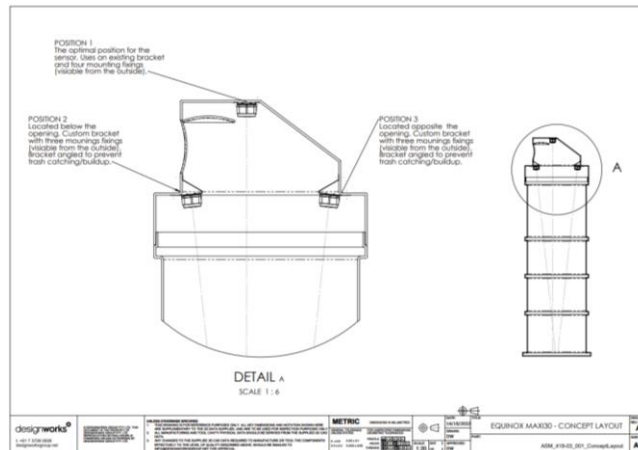


Use Cases: Municipal and Enterprise



City of Windsor | Equinox Bins

15x Waste Bin pilot | Downtown Windsor



For this use case we engaged the bin manufacturer, Equinox, and worked with them to establish a successful install on a single bin before executing on the pilot with CoW.

The bins are mostly (8') underground with no way to know when they are ready for pickup. With a successful pilot they will optimize schedules with a reduction in the amount of collections needed leading to reduction in operation costs.

- Reduce Operational Costs
- Reduced Environmental Impact
- Acquire Deep Insights and Analytics

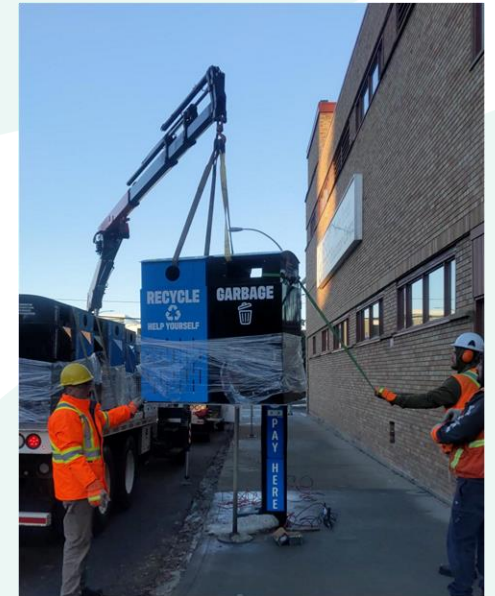
Edmonton Downtown Business Assoc. | Street Recycling Bins

10x Waste Bin Pilot | Downtown Edmonton

EDBA use case includes 10X bins with a focus on the data. They want to understand the impact of the new bins and establish a baseline for moving forward with sensors for ALL public space bins. (waste & recycle)

City of Edmonton are also evaluating progress. They will be providing commercial pickups for the entire city of Edmonton in 2024.

- Optimize Operational Costs
- Reduce Infrastructure Costs
- Reduced Environmental Impact
- Acquire Deep Insights and Analytics



Strathcona County | Front Load Bins

20x Waste Bin Pilot | Strathcona County (Alberta)

Strathcona County use case includes 20X bins with a focus on collecting data for their commercial waste containers located in various school districts. They want to better understand fill rates with the goal to reduce pick ups across the county. This pilot is a part of a larger RFP request where they will require whoever is awarded the next waste contract to work with our sensors.

- Optimize Operational Costs
- Reduce Infrastructure Costs
- Reduced Environmental Impact
- Acquire Deep Insights and Analytics

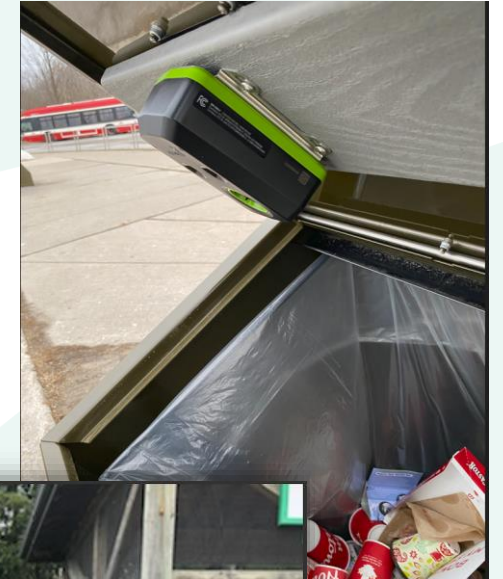


Toronto Zoo | Public Bin 2 Stream

18x Waste Bin Pilot | Toronto Zoo

Toronto Zoo use case includes 18X bins with a focus on collecting data across several different zones in the zoo. They want to better understand fill rates with the goal to reduce pick ups as well as using the date to better understand foot traffic across zones.

- Optimize Operational Costs
- Reduce Infrastructure Costs
- Reduced Environmental Impact
- Acquire Deep Insights and Analytics



CONTACT US

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CIRCULAR INNOVATION COUNCIL

Putting Circular Economy Concepts Into Action

+1.416.566.1265

<https://circularinnovation.ca/foodwastepilots/>





All Treat Farms - Compost Facility

Diana Aquino: Municipal Relations Manager

Phone: (905)-329-4285

Email: daquino@walkerind.com

Website: walkerind.com

1

Who We Are and What We Do

2

All Treat Farms Process

3

Why Our Products

4

Circular Economy and ICI Organics

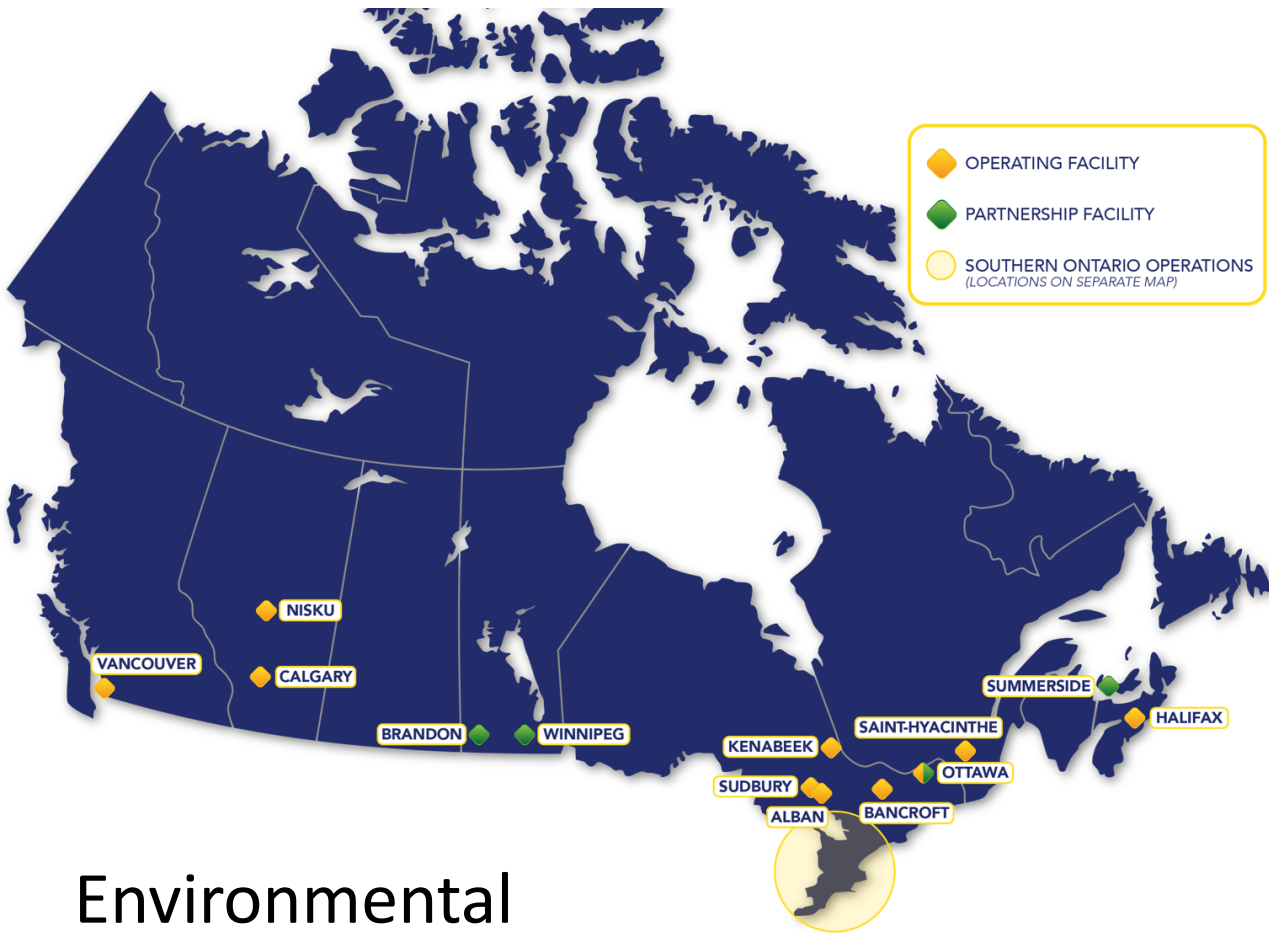
5

The Future

6

Questions

Presentation Overview



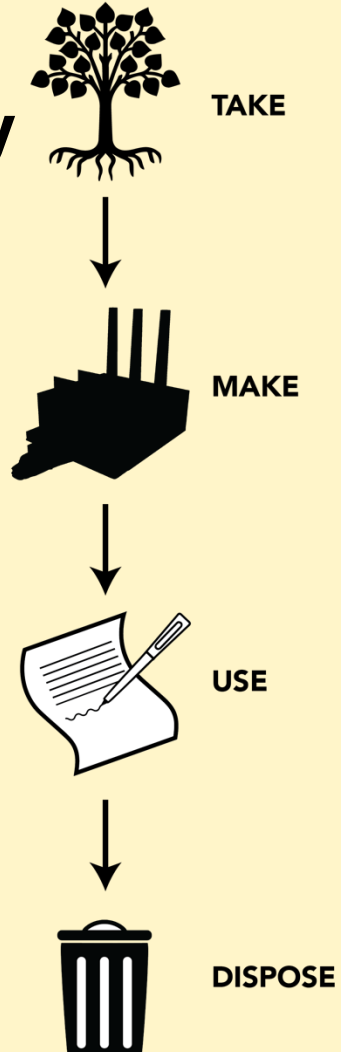
Environmental Locations across Canada

Facility Locations across Southern Ontario

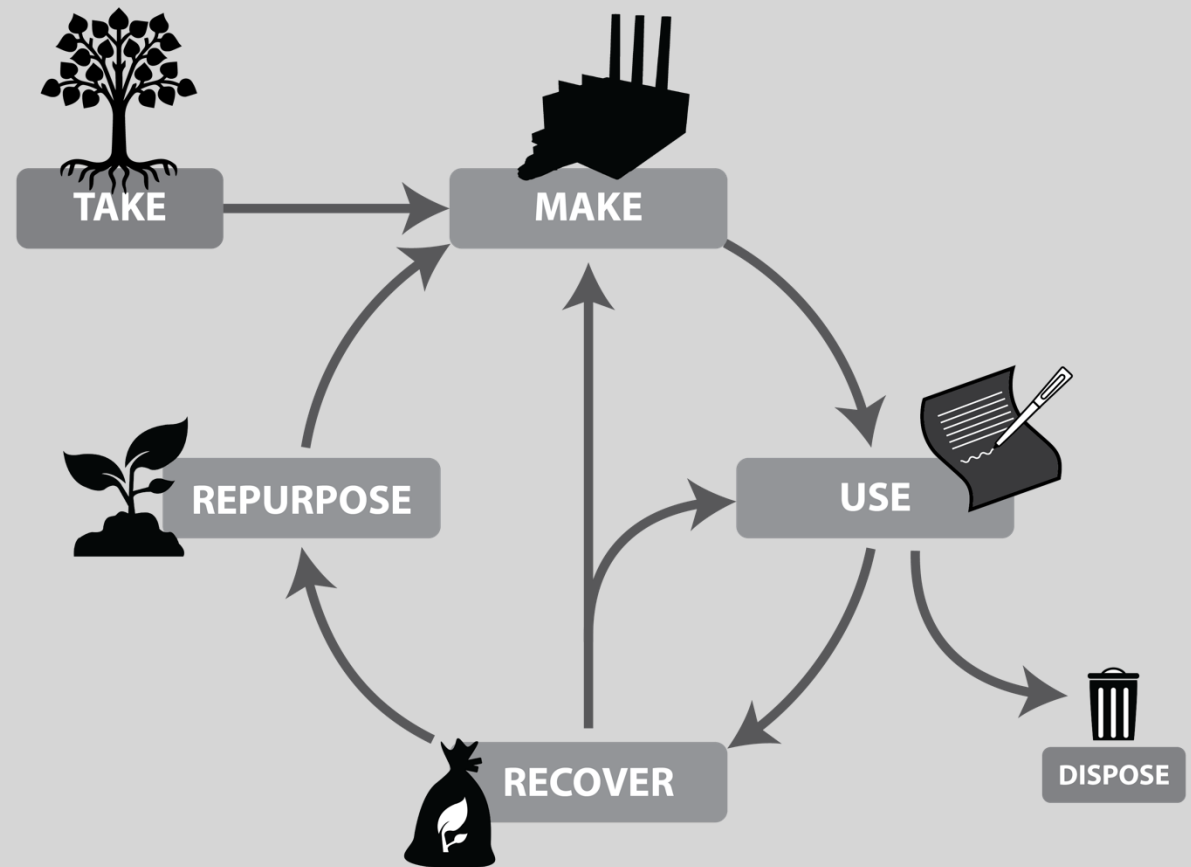


GENERATIONAL THINKING

Linear Economy Model



Our Approach – Circular Economy Model



History of All Treat Farms

- 1955-composting manure
- 1990s- composting municipal leaf and yard waste



A WALKER ENVIRONMENTAL COMPANY

- 2000s- composting food waste
- 2016 -Purchased by Walker Industries



Process Overview

Leaf Process

outdoor windrow

Wedge Process

static pile

GORE® Cover Process*

in vessel technology



Quality Assurance Quality Control



There are three categories of compost quality (AA, A, B)

- Foreign Matter
- Heavy Metals
- Pathogen Kill
- Maturity
- Maintain $\geq 40\%$ moisture during curing



What the product looks like at the start of the process, when initially brought in

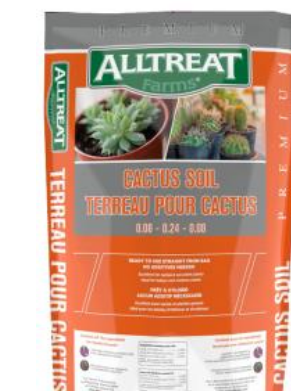


What the product looks like at the end of the process

Compost is then used in our packaging plant to produce finished goods.

We produce Premium and All Purpose Potting Soils and Amendments supplying:

- Wal-Mart
- Metro
- Food Basics
- Loblaw's
- Home Hardware
- Timber Mart
- Peavey Mart
- Orgill
- Garden Centre Group Co-op
- Independent Garden





SOIL FOR FABULOUS
**FLOWERS
& SHRUBS**



SOIL FOR VIBRANT
VEGETABLES



MAGNIFICENT MULCH
HEMLOCK CPM[®]



MAGNIFICENT MULCH
CPM[®] PINE NUGGETS

Diversion from Landfill

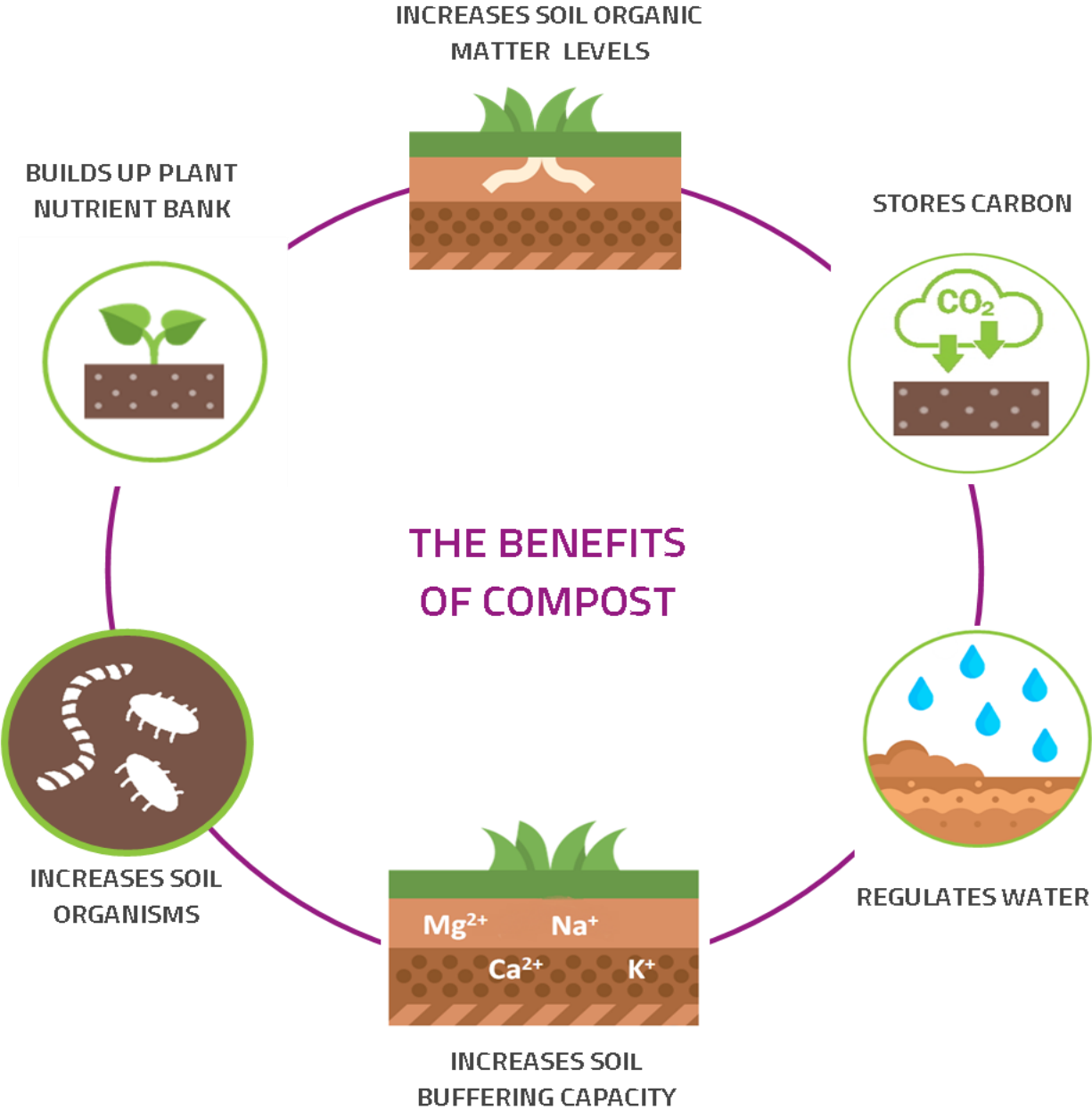
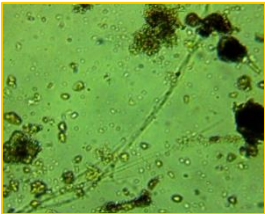
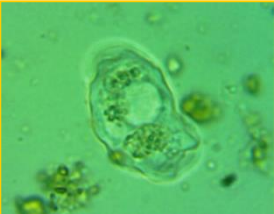
from a waste to a resource

Plant Health

helps plants during extreme weather
natural disease suppression

Soil Health

soil conditioner
adds nutrients
moisture retention



The Future



Packaging Facility Expansion: 120 K Pallets/Year



Greenhouse: Research & Innovation



Doppstadt Overs Equipment: Continue Improving Quality

Thank you!



A WALKER ENVIRONMENTAL COMPANY

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THANK YOU QUESTIONS?

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