

Thank you to our Sponsors!



This event was made sustainable:



Embracing Zero Waste: Adding Organics Diversion in the ICI Sector

- | | |
|---|---|
| 1:00 – 1:15 PM Opening Remarks
<i>Christina Seidel, RCA</i>
<i>Len Sereda, University of Alberta</i> | 3:00 – 3:30 PM Overcoming User Challenges
<i>Janet Robins, Robins Environmental</i> |
| 1:15 – 1:30 PM Introduction & Overview of Issues
<i>Dr. Daryl McCartney, EWMCE</i>
<i>Kentson Yan, EWMCE</i> | 3:30 – 4:15 PM Large Institution Innovations & Best Practices
<i>Tamara Shulman, Tetra Tech</i>
<i>Shawn Kaminski, ARAMARK</i> |
| 1:30 – 2:00 PM Managing Contamination of Organic Waste
<i>Bob Spencer, Environmental Planning Consultant</i> | 4:15 – 4:30 PM Q&A and Wrap Up |
| 2:00 – 2:30 PM Addressing Service Operations Issues
<i>Bert Monesmith, Tetra Tech</i> | 4:30 – 5:30 PM Networking & Refreshments |
| 2:30 – 3:00 PM Networking & Refreshments | |

Following the Question and Answers there will be light hors d'oeuvres served.



Introduction & Overview of Issues



Daryl McCartney, Ph.D., P.Eng.

Professor, Civil & Environmental Engineering, University of Alberta
Executive Director & Director of Research, EWMCE

&

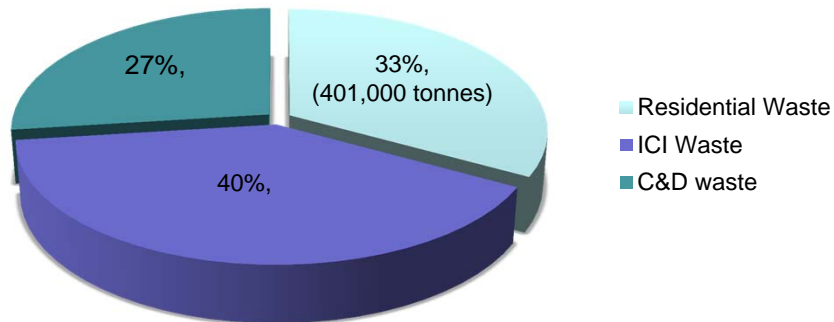
Kentson Yan, EIT

Ph.D. Student, Civil & Environmental Engineering, University of Alberta
Research Engineer Intern, EWMCE



ICI Waste Generation Estimates – Edmonton Capital Region

In 2010:



(Office of the City Auditor, 2011)

No. of employees: 640,000
(Government of Alberta, 2012)



ICI waste generation rate:
(760 kg per employee per year)

What type of waste in that 40%?
**Descriptive Statistics of
 14 ICI Composition Studies**

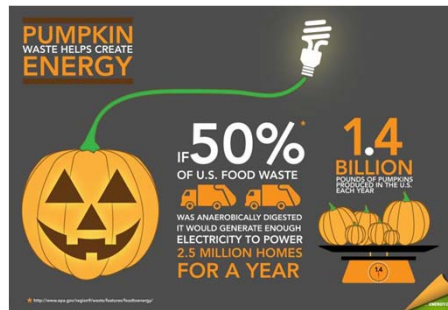
	Organic Material Composition (%)		
	Food/ Organics	Paper	Wood
Min	11.8	16.1	6.1
Max	41.7	46.0	23.0
Mean	24.4	27.3	9.9
Median	27.9	28.4	8.0
Relative SD (%)	38.5	29.4	66.0

So, about 121,500 tonnes of ICI food waste generated in ECR each year.

Background

Why divert this material from landfills?

- Produce valuable products (energy, soil conditioners).
- Reduce GHG emissions.
- Offset fertilizer & pesticide needs.
- To meet waste diversion targets.



From www.epa.gov

What is potential value of ICI sector organics?
Edmonton Capital Region Energy Potential

	Energy potential (GJ; X10³)	Energy potential (GJ wet t⁻¹)	Energy saving (household equivalents)
Anaerobic digester	3,523	17.80	27,100

¹ Energy consumption = 106 (GJ hh⁻¹ y⁻¹; AB, 2007)

Total households in the City of Edmonton= 324,000 (2010)

7

What is potential value of ICI sector organics?
Reduction of GHG in Alberta

Material	Residential	ICI
Leaf & yardwaste ¹ (wet t per y)	390,200	108,500
Food waste ² (wet t per y)	287,600	278,700
Total generation (wet t per y)	677,800	387,200
Potential amount @ 61% ³ diversion (wet t per y)	413,500	236,200
GHG reductions ⁴ (t CO _{2e} per y)	454,900	259,800
Social cost of carbon @ \$US37 ⁵ per t CO _{2e} (\$US per y)	16.8M	9.6M

Notes: ¹ CH2MHill (2010); ² Arab & McCartney (2012); ³ NS; ⁴ 1.1 t per t; ⁵ Economist (2013)

8

"Live" Case Study University of Alberta (UA) Organics Diversion Program

- Waste audits:
 - Quantities & composition.
- Processing options:
 - Composting, anaerobic digestion, & thermal conversion.
- Collection program:
 - Design & implementation.

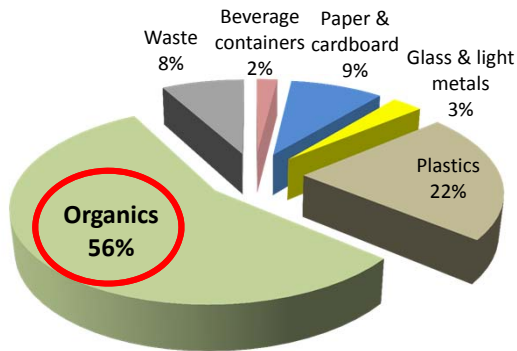


UA Case Study Audit(s): General Approach

- "Activities-area" based approach.
- Direct-waste analysis:
 - Landfill-bound stream
 - CCME standard approaches

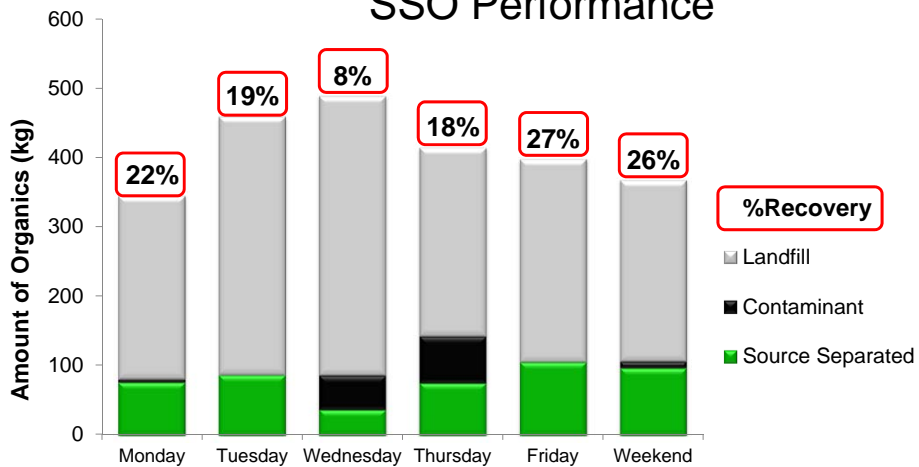


UA Case Study Audit(s): Typical Findings



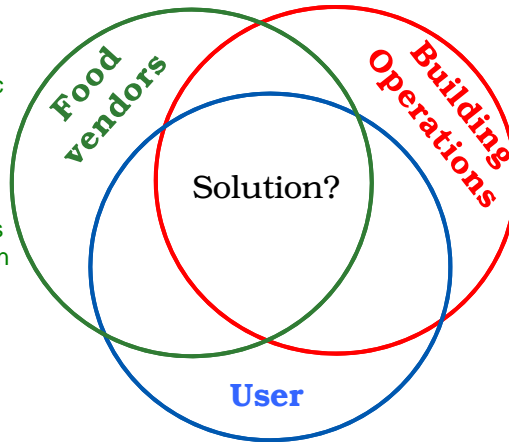
UA 2011 Landfill-bound Waste Composition
(by weight, wb)

UA Case Study: Audit(s) 2012 SUB Food Service Area: SSO Performance



ICI Organics Diversion: Implementation

- Storage/space
- Sorting/handling
- Awareness/education
- Cost/time
- Agreements
- Impacts vendors (food preparation and service)



- Storage/space
- Collection
- Education
- Time/cost
- Contracts
- Impacts custodial staff, property management, haulers, processors

- Sorting requirements; ease of use/understanding, convenience, messaging, attitude/behaviour.
- Impacts customer, residents/tenants etc.