

Emergence of Residual Waste Processing Technology in Ontario

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April 15, 2008



Overview of Presentation



- ④ Reflect on a period of time in Ontario where ‘technology’ has emerged as a serious contender to the age old practice of landfilling residual or ‘post-diversion’ materials.
- ④ Overview of several studies undertaken by the municipal sector since 2002 – all with a common theme but each with a different outcome.
- ④ Finally, highlight a few private sector emerging technology initiatives that have risen from the sidelines while municipalities continue to struggle with Provincial ‘process’..

Greg Vogt, Managing Director, ISWA – December 2007



“Within the USA, when a typical teenager hears the command ‘take out the trash!’ he or she is likely to know how to respond. Nonetheless, it is remarkable that this command can evoke such a variety of interpretations when heard by other stakeholders in our society.....

An advocate of zero waste principles might respond ‘I don’t see any trash’. A dedicated recycler – or for that matter a dedicated landfiller – might query which bag should be taken. A diversionist would ask where to take the waste and someone devoted to the waste hierarchy would comment ‘let’s take three or four other steps before we do that’ The position of the ‘actor’ has a significant bearing on the management strategy that is chosen.”

It started in the Niagara Region



- ④ End of 2002 – Region was approaching a landfill capacity ‘situation’ and several of the area municipalities were digging in ready to battle expansion of their landfills to become Regional facilities.
- ④ Region commissioned a long-term disposal planning study (LTDPS) which would look at alternative technologies to manage those wastes that could not be recycled or composted.

Initial Ground Rules or Principles going into Niagara study

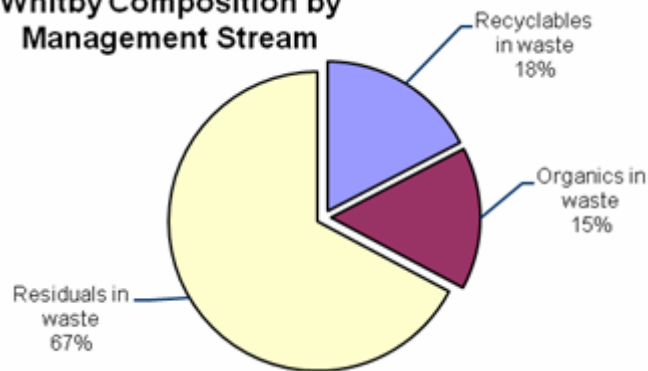


- ④ The study and any recommended technologies coming out of the study would only consider 35-40% of materials remaining or residual after recycling and composting.
- ④ One of the first in Ontario, Niagara had initiated its source separated household organics collection program to compliment its 'Blue Box' recycling program along with other diversion initiatives.
- ④ **Paramount** – LT DPS would not conflict with higher priority diversion initiatives.

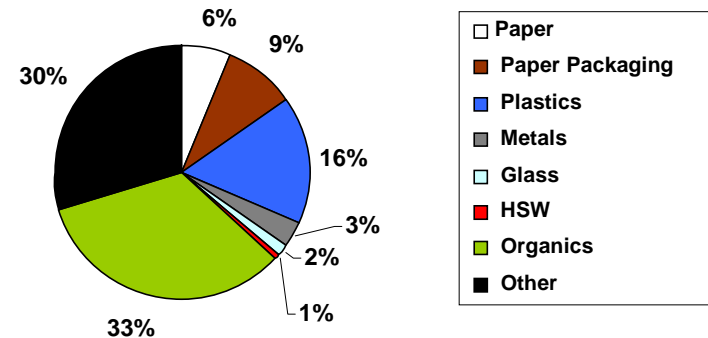
Characteristics of Residual Waste



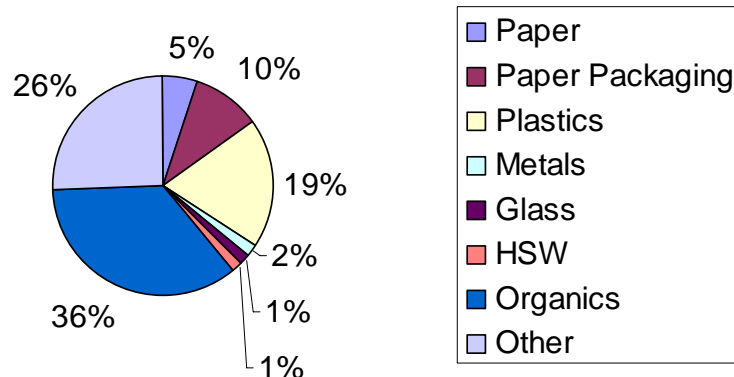
Whitby Composition by Management Stream



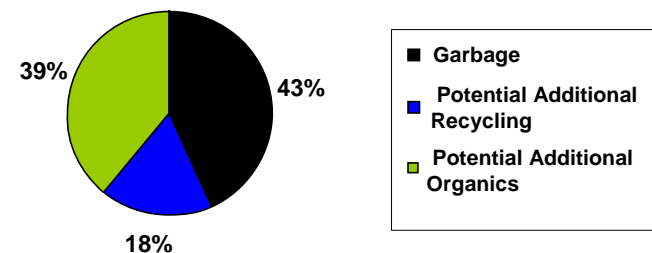
Markham Garbage Composition By Material Type



Waste Composition by Major Material Type



Markham Composition by Management Stream



Characteristics of 'Other' Materials



Diapers and Sanitary Products	3.21	11.46	1.96	16.63	16.63
Textiles	5.01	1.50	6.96	13.47	13.47
Carpeting				0.00	0.00
Construction & Renovation	4.41	1.10	21.53	27.04	27.04
Computer / IT Equipment				0.00	0.00
Telecom Equipment				0.00	0.00
TV & Audio Equipment		0.02		0.02	0.02
Small Kitchen Appliances		1.97		1.97	1.97
Other Electronics			2.10	2.10	2.10
Tires and Other Rubber				0.00	0.00
Ceramics		1.43		1.43	1.43
Furniture				0.00	0.00
Mattresses				0.00	0.00
Other Large Bulky Items				0.00	0.00
Other Waste				0.00	0.00
Total Other Materials	12.63	17.48	32.55	62.66	62.66

...Along came Hamilton



- ④ Neighboring municipality to Niagara with a population of approximately 500,000.
- ④ Updated Solid Waste Management Master Plan in 2001 with target of 65% waste diversion.
- ④ 2001 to 2004 - Full commitment and implementation of curbside recycling and source separated household organics collection.
- ④ Investment in new state-of-the-art composting facility – 3P with Maple Reinders

Hamilton's Source Separated Organics Composting Facility

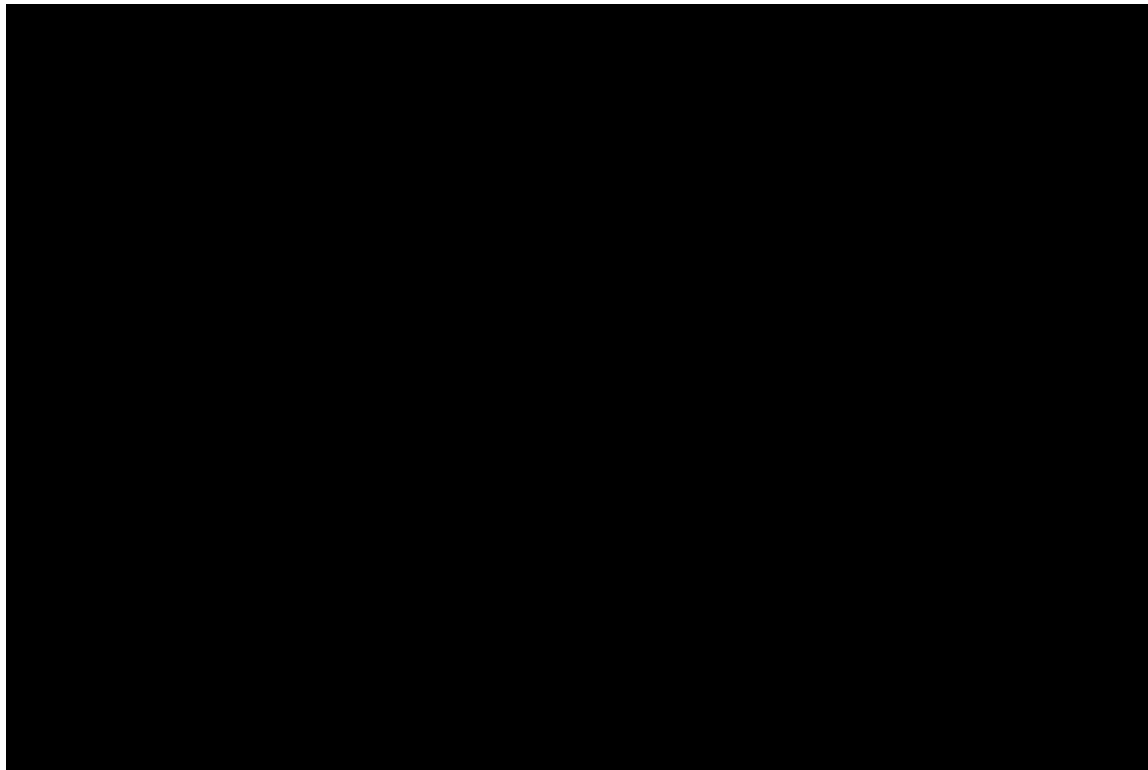


Hamilton's Challenge & Interest in Niagara



- ④ SWARU was modern technology of the day
.....in 1972
- ④ 2006.....30+ years later.....consideration of
upgrades / repairs / replacements which is typical
of most municipal infrastructure.
- ④ 2006.....evolution of pollution control technology
demanded major upgrades at SWARU.
- ④ Decision time.....invest \$2+ million in older
infrastructure / technology or additional diversion /
newer technology.

It was time.....



Hamilton & Niagara Get Together to share common ground...



- ⊗ Approved long term master plans for solid waste
- ⊗ Target of 65% diversion of waste from landfill
- ⊗ Limited landfill space
- ⊗ Desire to manage their own wastes



A Different Perspective.....



- ④ Outputs identified from system components, considered as potentially recoverable resources
- ④ Assessed viability within the current Ontario regulatory and commercial environment
- ④ Considered opportunities for enhancing systems through regulatory change
- ④ Each recovery option and opportunity assessed with regards to efficiency and effectiveness of addressing a problem or providing an asset.

Assessment of Recoverable Resources and Opportunities



Summary of Potentially Viable recoverable resources:

- Recyclable Materials for Markets;
- Stabilized Organic Material for Landfilling;
- Energy Produced from Biogas;
- Energy Produced from an Alternative Fuel;
- Energy Produced from Mixed Waste.

Summary of possible opportunities:

- Recovering/Marketing Low-Grade Compost or Soil Enhancer
- Production and Marketing of Construction Aggregate from Residue
- Off-Site Use of Alternative Fuel Product

Several Residual Waste Processing Systems - LCA



- ④ Mechanical, Biological Treatment with Recovery of Biogas
- ④ Thermal Treatment of MSW & Recovery of Materials from Ash/Char
- ④ Thermal Treatment of Solid Recovered Fuel
- ④ Thermal Treatment of Solid Recovered Fuel with Biogas Recovery
- ④ Mechanical, Biological Treatment with Landfilling of Residue ('Stabilized Landfill')

Others Started to Become Interested....



- 🌐 Region of Durham – population of 600,000
 - Screened out landfill as an alternative for the disposal of residual MSW
- 🌐 Region of York (population of 900,000) partnered with Durham similar to Niagara-Hamilton relationship
- 🌐 Region of Halton – population of 450,000
- 🌐 City of Toronto – population of 2.5 million

Then.....



**God
Recycles
The Devil
Burns**



The 'Zero Waste' Solution



Patrick Moore.....

Let me conclude by saying the simple fact is that -- despite what environmental extremists would like to see -- civilization is not going to end anytime soon.

That means we're a going to continue producing waste.

I believe that by incorporating an integrated waste management approach into Canada's handling of waste, we can garner significant environmental, economic and community pay-back.

Left Standing.....



- 🌐 Only the Durham and York Region partnership
- 🌐 Have identified a site in the Town of Clarington, Region of Durham
- 🌐 Regions are currently working with the host municipality and neighbours to address issues.
- 🌐 RFQ resulted in the identification of 5 vendors with a potentially viable EFW technology....
RFP scheduled to be released in coming months

While all of this has been happening.....



- ④ There have been a few notable advancements in private sector emerging technology proposals:
- ④ PlascoEnergy Group, Ottawa, Ontario
 - Conversion system using a plasma process produces a syngas fuel for electricity generation
 - No ash but rather a vitrified slag that is stable and non-leachable.

Other Notables...



🌐 Dongara Developments Inc., Region of York, Ontario

- A sorting / recycling / pelletization process
- Removing additional recyclables from residual waste stream as required and producing a high Btu value solid fuel for energy generation.
- Plant under construction in Vaughan, Ontario

🌐 Conporec, Quebec, QC

- Sorel-Tracy Mixed Waste Composting Plant
- Have been working since 1993 using a mechanical sorting / aerobic digester facility to process 35,000 tpy of mixed residential waste into a product by Quebec standards.

Thank You !



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