



City of Toronto

Residential Mixed Waste Processing Facility

Open House

Welcome!

Getting from 42% to 70% Waste Diversion

City of Toronto initiatives to increase waste diversion include:

- Source Reduction Initiatives (10,000 t/ +1.2%)
- Green Bin Organics in Apartments/Condos (30,000 t/ +3.5%)
- Enforcement Mandatory Diversion By-law (10,000 t/ +1.2%)
- Volume-based Rate Behaviour Change (43,000 t/ +5.0%)
- New Materials for Recycling (6,000 t/ +0.7%)
- Improved Recycling Capacity (15,000 t/ +1.7%)
- Reuse/Disassembly and Recycling of Household Durable Goods (44,000 t/ +5.1%)
- Curbside Townhouse Collection (16,000 t/ +1.9%)
- Mixed Waste Processing Facility (75,000 t/ +8.0%)

Residential Mixed Waste Processing is one component of Toronto's 70% Diversion Plan

What is being Proposed?

A Residential Mixed Waste Processing Facility

- Facility recovers any re-usable recyclables and organics from mixed residential waste
- Facility generates Compost-Like-Output (CLO)
- Anything left after this process is “true garbage” and is sent to landfill
- Process reduces amount of material going to landfill
- Facility developed at approximately 150,000 tonnes per year, projected to divert 75,000 tones per year

Residential Mixed Waste

- Portion of waste remaining after residents separate materials for recycling and composting. Mixed waste also includes materials that have not been separated (i.e. materials not captured, recyclables and compostables incorrectly placed in garbage, diversion program not fully implemented, etc.).

Where Will the Facility be Located?

Factors in Site Selection

- City of Toronto owns site (within or outside City boundaries)
- Site qualifies for Ministry of the Environment Certificate of Approval
- Land needed between 3 to 12 hectares
- Land uses for site and surrounding area are suitable for this type of facility
- Site easy to access
- Site has access to water, wastewater treatment and energy

Preferred site on land adjacent to Green Lane Landfill

- Green Lane Resources interim name to identify the proposed facility

Screening Considerations and Results

- 12 City of Toronto-owned potential sites considered
- Nine located within the City of Toronto
- Two of the Toronto sites already selected as the locations for new organics processing facilities
- Site screening process excluded all sites except for lands adjacent to Green Lane Landfill
- Only site with the property to accommodate the size of the facility

Technology Selection

- Seven technology scenarios were considered and evaluated against seven screening criteria

Technology Scenarios	Screening Criteria
Mechanical Separation	Ability to divert 75,000 tpy of waste from landfill
MBT with Biostabilization (CLO diverted)	Ability to conform with MOE Policy Statement
MBT with Biostabilization (CLO landfilled)	Realistic ability to market recovered materials
MBT with RDF Production	Ability for markets to meet Ontario Standards
Mechanical Separation with RDF production	Ability to dispose of residual material to Green Lane Landfill
Thermal Treatment with Energy Production	Technology has proven operating history
Steam Classification	Ability to have facility under construction by 2010

- Recommended: **Mechanical Biological Treatment (MBT)** with
 - Aerobic Composting
 - or
 - Anaerobic Digestion (AD)

MBT – Mechanical Biological Treatment
CLO – Compost-Like-Output
RDF – Refuse Derived Fuel
MOE – Ministry of the Environment
AD – Anaerobic Digestion

MBT with Aerobic Composting

Aerobic – with oxygen

- Pre-processing (removal of large objects, size separation, recovery of recyclables);
- Active composting in a controlled aerobic process;
- Aeration and moisture is controlled to promote decomposition;
- Material curing for further maturation; and
- Possible screening of compost product/Compost-Like-Output to remove oversize materials.



MBT with Anaerobic Digestion

Anaerobic – without oxygen. Anaerobic digestion produces two main products: digestate/Compost-Like-Output and biogas.

- Pre-processing (removal of large objects, size separation, recovery of recyclables);
- Digestion (conversion of organic material by fermentation into biogas and digestate);
- Energy production (the biogas can be used to produce energy);
- Composting the solid digestate; and
- Final curing of the solid digestate takes place aerobically in outdoor windrows.



Conceptual Drawing of Proposed Facility



Health Impact Assessment (HIA)

What is an HIA?

A process used to assess or predict the health effects of a project or policy; inform or influence the decision-making process; and mitigate any health consequences of a decision. Toronto Public Health uses the determinants of health as indicators in this process.

Determinants of Health include:

- Environmental Factors
- Access to Services Factors
- Lifestyle Factors
- Equality Factors
- Social-Economic Factors

Health Impact Assessment continued...

Golder Consultants in collaboration with Toronto Public Health, Solid Waste Management Services and the Residual Waste Working Group evaluated the technology and siting options using an HIA.

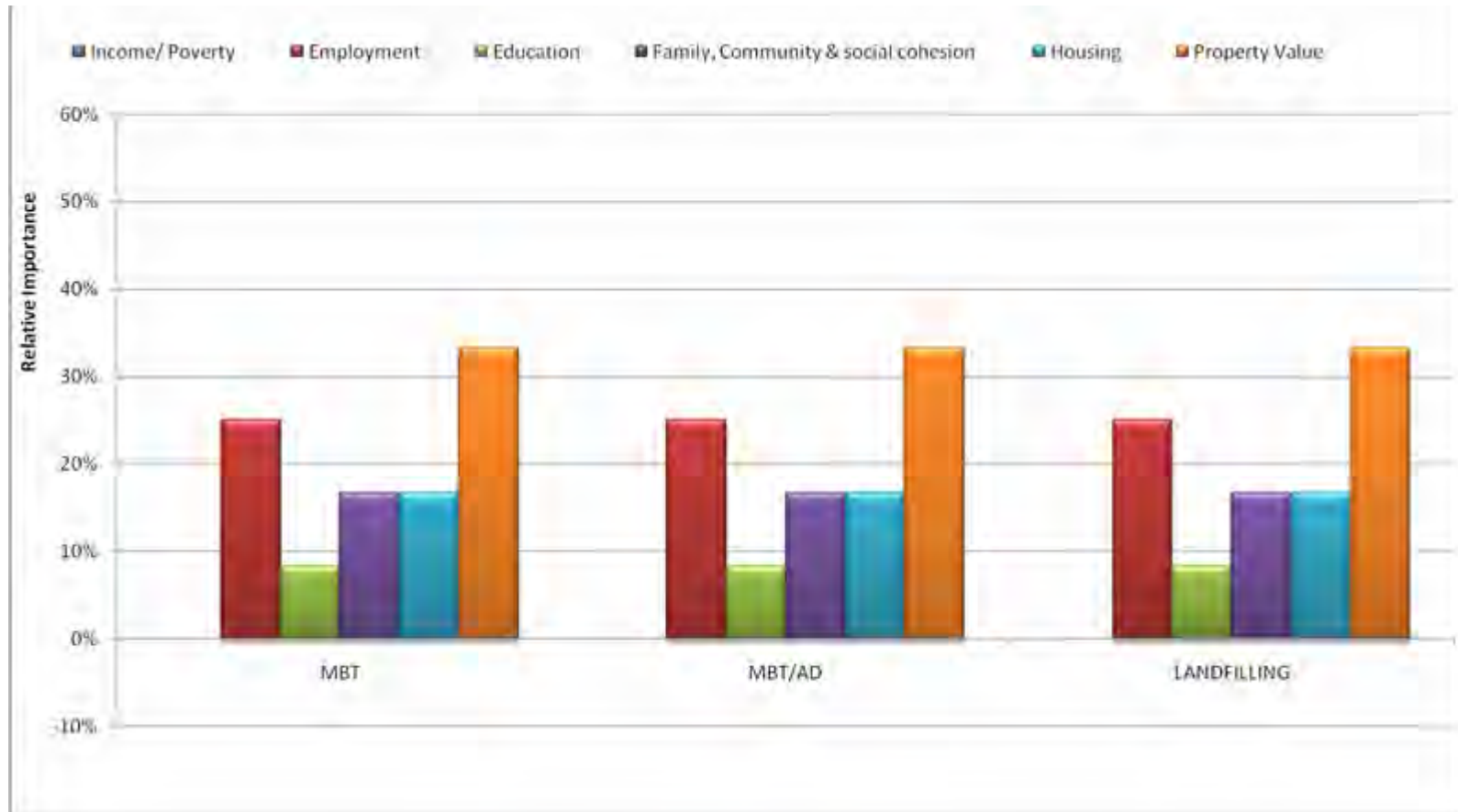
Environmental Factors were the most useful at distinguishing between technology options for this particular study.

Environmental Factors

- Odour
- Noise
- Built Environment
- Groundwater Quality
- Air Quality
- Surface Water Quality

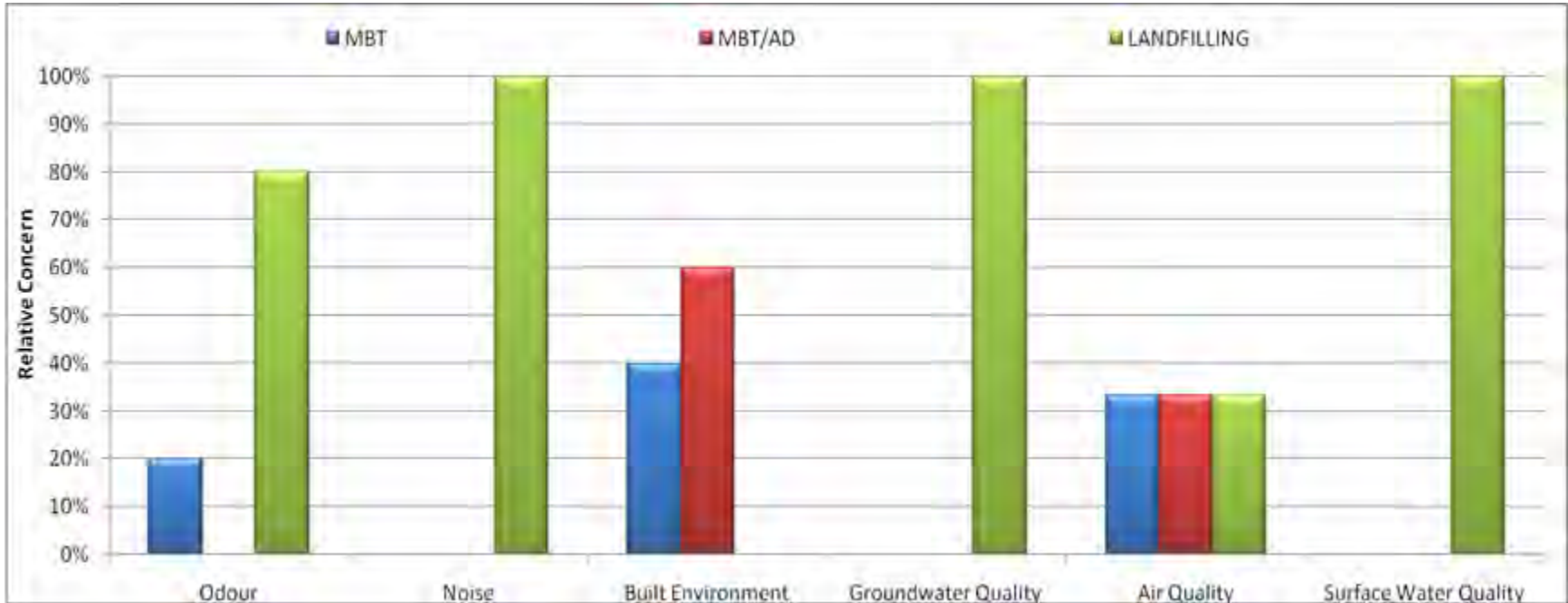
Social-Economic Decision Factor Summary

This figure shows the range of relative importance for the social-economic factors, and shows that the social-economic factors were of equal concern for all technology options.



Environmental Option Comparison Summary

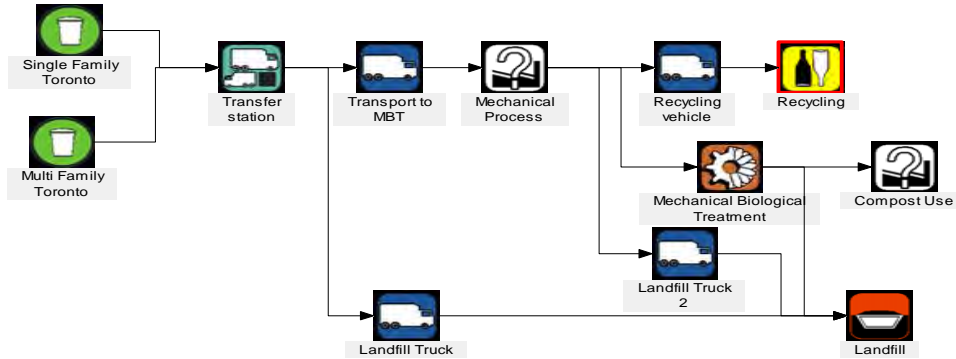
This figure shows which factors were of greatest concern for each option relative to the other option



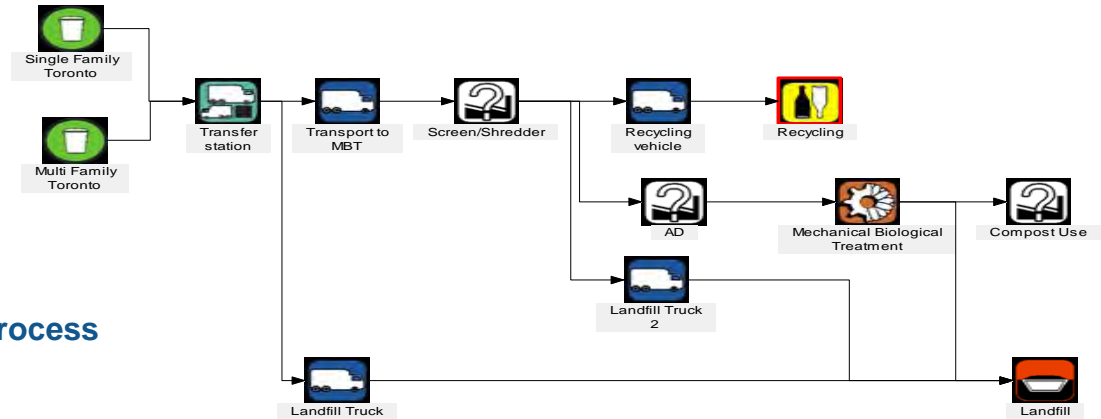
<ul style="list-style-type: none"> •LANDFILL is of greatest relative concern •MBT of little relative concern •MBT/AD is of little relative concern 	<ul style="list-style-type: none"> •LANDFILL is of greatest relative concern •MBT and MBT/AD are of little relative concern 	<ul style="list-style-type: none"> •MBT/AD is of slightly more relative concern than MBT •LANDFILL is of least relative concern 	<ul style="list-style-type: none"> •LANDFILL is of greatest relative concern •MBT and MBT/AD are of least relative concern 	<ul style="list-style-type: none"> •All options are of equal relative concern •Emissions from waste transportation are assumed to be the same •Emissions from curing process for MBT and MBT/AD are assumed to be the same as LANDFILL 	<ul style="list-style-type: none"> •LANDFILL is of greatest relative concern •MBT and MBT/AD are of least relative concern
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Options Evaluated for HIA Screening

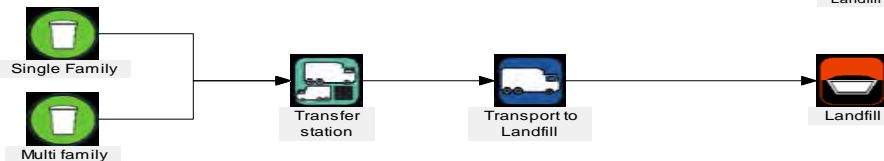
1- Mechanical Biological Treatment (MBT) with Compost-Like-Output (CLO) being diverted for land reclamation



2- MBT with AD and CLO being diverted for land reclamation



3- Landfilling all waste with no mixed waste process



Results of the HIA Screening

- MBT with AD had the lowest impact overall.
- Both MBT options may have an impact on several aspects of health through impacts on the environment.
- The impacts predicted for MBT were much less of a concern than the impact of landfilling residual waste with no pre-treatment.
- Many of the impacts environmental factor impacts can be mitigated/lessened with engineering technologies.
- Local community members should participate in further HIA screening efforts to give their input in early 2010.
- A more in-depth HIA may be done to guide in the assessment of possible mitigation strategies.

Life Cycle Analysis (LCA)

What is an LCA?

- A Life Cycle Analysis determines the type, amount and environmental impact of the resources used and emissions produced and released into the environment.
- Identifies opportunities to improve current environmental practices and quantifies inputs and outputs from 'cradle to grave'.
- A computer model was developed to analyse the environmental costs and benefits.
- An LCA was performed to evaluate the environmental impacts of three options to treat and dispose of residential mixed solid waste.

Results of Life Cycle Assessment (LCA)

- LCA examined the following environmental impact categories: abiotic resource depletion, acidification, global warming, eutrofication, freshwater ecotoxicity and human toxicity.
- LCA results indicated the largest environmental benefits are from Mechanical Biological Treatment with Anaerobic Digestion for the majority of the impact categories.

Potential Concerns/Impacts

- Odours
- Noise
- Traffic
- Construction Impacts

Mitigation measures will be part of the final design to lessen potential impacts.

Community Input

- Discussions with Public Liaison Committee (Green Lane Landfill Community)
- Meetings with First Nation Liaison Committee in the Green Lane Landfill area
- Briefing with local Mayor and Councillors
- Southwold Township open houses for site neighbours and public
- Web site www.toronto.ca/garbage/mwp - detailed information and study reports
- Your comments will assist the project team in moving forward. Please submit your comments by October 15, 2009

Who is the Residual Waste Working Group?

- City of Toronto citizen Advisory Group, comprised of eight (8) members.
- Formed to assist the City of Toronto in reaching 70% waste diversion goal.
- Provides input and advice on the management of residual waste, with the current focus on Green Lane Resources.
- Collaborates with City of Toronto Solid Waste Management Services staff and Study Consultant to help find a solution to manage Toronto's residual waste.
- Provided input, advice and feedback on consultant draft reports.
- Plan and participate in public consultation in Toronto related to the study.

Next Steps/Timeline

- Consultation with the community at the proposed Green Lane Resources site, MOE and interested stakeholders –September 2009
- Send in your comments by October 15, 2009
- Issue Request for Expressions of Interest to solicit vendors interested in providing the selected technology – early 2010
- Issue Request for Proposals and evaluate technology submissions – mid to late 2010
- Complete and submit Environmental Protection Act documentation to obtain final approvals and conditions for development and operation of proposed facility – mid 2010 or mid 2011.
- Report recommending contractor to Public Works and Infrastructure Committee and Toronto City Council – early to mid 2011
- Begin constructing the facility – Late 2011