

SOLID WASTE MASTER PLAN WASTE TO ENERGY THINGS TO THINK ABOUT COUNCILLOR BRIEFING

March 26, 2025



PRESENTATION OUTLINE

- Things to think about
- Waste management hierarchy
- Context / current state of play
- Residuals management – mixed waste processing; landfill; incineration
- Alternatives for action and key questions

THINGS TO THINK ABOUT

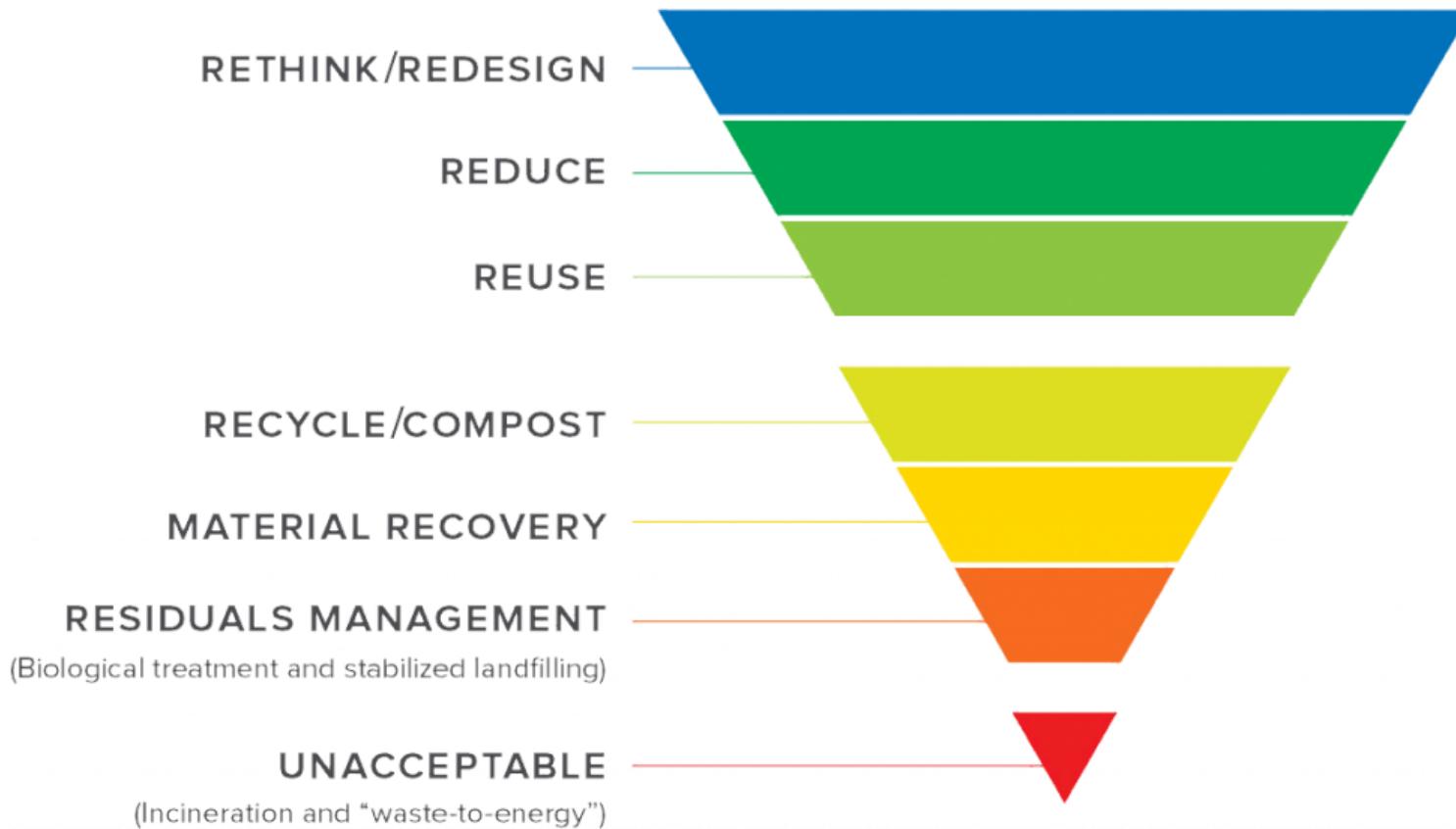
- The City's Solid Waste Master Plan (SWMP) commitment to the waste hierarchy
- Timing of decision on residuals management
- Options impact on generation / reduction / diversion
- Almost 50% of what is in garbage should either be in the blue or black box or the green bin
- Options cost/tonne; capital and operations
- Environmental impacts

WASTE MANAGEMENT HIERARCHY

ZERO WASTE INTERNATIONAL / ZERO WASTE CANADA / (SWMP)

THE ZERO WASTE HIERARCHY 8.0

For detailed version visit www.zwia.org/zwh



CURRENT CONTEXT

SWMP KEY OUTCOMES / ISSUES

- Extension of Trail Road capacity and life expectancy
- Current limited focus on reduction and diversion
 - Strategizing and planning in the short and medium run
 - Delayed / slow roll out of new diversion programs e.g. parks recycling pilot program since 2017 – action in 2026; green bin multi-res roll out another 4 years
 - No planned action on problematic materials / products such as textiles and mattresses
 - Budget for enhanced promotion / education?
- 3 item collection limit to divert recyclables and organics from garbage

CURRENT CONTEXT

TRAIL ROAD CAPACITY / LIFE EXPECTANCY

- New lift within existing footprint planned – subject to Ontario MECP approval but technical feasibility apparently confirmed
- Re-direction of 60,000 tonnes/year residential waste to private landfill sites
- Banning commercial / non-residential waste 2025
- Planned Trail Facility closure date extension from 2034 to 2048

CURRENT CONTEXT

TRAIL OPTIMIZATION ENVIRONMENTAL ASSESSMENT NOTICE OF COMMENCEMENT

- “This Environmental Assessment process pertains to the expansion of the TWF landfill. For the proposed expansion, the target additional airspace is 5.5 million cubic metres over a corresponding target extended operating period of 15 years (2034 through 2048)”
- First public open house – March 19

(Public Liaison Committee Trail Facility February / March, 2025)

CURRENT CONTEXT

FINANCIAL SITUATION

- Solid waste \$25 m capital budget deficit – not in black until 2034
- Progressive increase of household solid waste rates 2025 – 2034 (no longer tax supported)
- Shift to Individual (Extended) Producer Responsibility for recycling – full change over by Jan 1, 2026 – City savings?
- Capital spending focus on Trail and anaerobic digestion for green bin organics at 2030 end of Convertus composting contract
- Apparently little money in short or medium term for new reduction / diversion initiatives - textiles, mattresses, enhanced promotion . . .

WTE AND MWP (LANDFILL) FEASIBILITY STUDY

TERMS OF REFERENCE

- Introduction states that WTE and MWP “come at high cost compared to landfilling”
- Review options
 - status quo and 3rd party disposal (private landfill);
 - waste to energy WTE; proven at scale in N.America (no “Plascos”)
 - mixed waste processing MWP;
 - WTE with MWP;
 - new landfill
- Background technical memos: technologies, siting, approvals, funding
- Review of: financial viability; environmental and social impacts; ease of implementation
- Development of a business case: need, options, economics, risk, implementation

FEASIBILITY STUDY

STUDY TIMING

- Originally scheduled as part of SWMP in 2026
- Decision to advance study to 2025 facilitated by new \$500k in 2024
- Draft due February 2025 – HDR Consultants
- T of R calls for final report to Council Q2 2025
- Consultant training session / video presentation for councillors – available week of March 10

FEASIBILITY STUDY

LANDFILL

- Status quo - Trail landfill optimization
 - New cell, new lift, diversion of residential waste, ban on I/C/I waste, new agreement for landfill gas recovery
 - Planned extension of life expectancy to 2048
- Other options
 - New landfill – within or possibly outside City boundaries
 - “3rd party disposal” – a contract with a private operator / site - e.g. Taggart- Miller Boundary Road landfill?
 - Purchase of a private landfill

FEASIBILITY STUDY

MIXED WASTE PROCESSING

- A process to recover recyclables and/or organics and/or reusable materials from garbage – a “dirty” MRF
- Programs that have curbside diversion programs for recyclables and organics have less recoverable material in the garbage
- Toronto 2023 MWP study conclusions:
 - A MWP “would be unlikely to meet target outcomes of resource recovery and waste diversion, while being less cost-effective than current waste diversion program efforts.”
 - “City initiatives focused on source separation, such as the Green and Blue Bin programs and community-based programs, are more effective”

FEASIBILITY STUDY

WASTE TO ENERGY (1)

- Review of only proven at scale technologies in North America
 - “The focus will be on technologies which have attained full scale implementation within North America”
 - “The City is not considering pilot technologies at this time”
 - Technologies with a track record of reliable and continuous operation for MSW
- (Feasibility study T of R)
- Conventional mass burn technology such as the Durham York incinerator (Covanta)
- Conventional WTE facilities can operate in conjunction with MWP and produce steam that can be used to generate electricity

FEASIBILITY STUDY

WASTE TO ENERGY (2)

- Mass burn WTE – very high costs
 - “WTE and MWP come at high cost compared to landfilling” (Feasibility Study T of R)
- SWMP capital construction est. June 2024 – around \$500 m
- Operational costs are not covered by power revenues
 - Durham York incinerator revenues cover only 50% of operating costs (DYE website FAQs)
- New large scale renewable energy projects will make WTE relatively more expensive
- Put or pay contract – guarantees delivered waste tonnage (similar to Convertus composting contract) – disincentive for enhanced / new reduction and diversion strategies or technologies
- WTE facilities do exist in high waste diversion jurisdictions in Europe

FEASIBILITY STUDY

WASTE TO ENERGY (3)

- Air emissions
 - Concerns about dioxins, furans, NOx, heavy metals
- Canadian Association of Physicians for the Environment (CAPE) B.C.
 - opposes new investment in Burnaby incinerator citing health concerns
 - Environment Climate Change Canada states that the largest sources of dioxins in Canada are from burning municipal waste

(CBC Vancouver March 9, 2025 Dr. Melissa Lim, CAPE)

FEASIBILITY STUDY

WASTE TO ENERGY (4)

- Incinerators don't destroy all waste – approximately 30% by weight remains – residuals contain toxins and require disposal
- Management of flue gas from stack / bottom ash from furnace
 - Concerns about heavy metals – including lead, mercury, cadmium
 - Both require special treatment and disposal including in hazardous waste facilities
 - Questions about claims / ability to “stabilize” heavy metals
 - Significant additional disposal / transportation costs
- Monitoring and reporting
 - Concerns about how rigorous or up to date standards are
 - Concerns about monitoring and reporting protocols and reporting periods

RESIDUALS MANAGEMENT

GHGs (1)

- Waste is the 3rd largest category among Ottawa's corporate and community sources - 9% of total
- The claim that incinerators are better from a GHG standpoint relies mainly on not counting biogenic materials
 - International CC calculator is based on neutral balance between green plants absorbing Co2 during life and releasing Co2 at end of life
 - Issue is whether burning is comparable to slow organics degradation
 - Organics in landfill produce methane - a big GHG generator – not all landfill gas is collected – Ottawa states 89% at Trail (Ottawa 2020 GHG inventory)

RESIDUALS MANAGEMENT

GHGs (2)

- Incineration GHG emissions will increase as more organics are diverted from waste to composting or anaerobic digestion
 - Arise from the higher proportion of plastics and other higher carbon wastes
 - Incinerators produce more GHGs than green renewable electricity sources
- As hydro / electric grids increasingly de-carbonize and renewables increase, the relative impact of GHGs from incineration will increase
 - Admittedly less of an issue in Ontario

RESIDUALS MANAGEMENT

CANADIAN INCINERATION EXPERIENCE

- 75 WTE facilities in North America
- 5 in Canada – 3 mass burn - Quebec City, Burnaby B.C., Durham York Energy Centre
- Charlottetown and Brampton – modular combustion facilities
- Chester, Nova Scotia Sustane facility – MWP with pyrolysis
- Edmonton MWP – associated Enerkem waste to fuel plant closed
- Controversial \$100 m proposed refurbishment / expansion of Burnaby incinerator
- Proposed large expansion / new incinerator in Brampton, Ontario - Emerald

RESIDUALS MANAGEMENT

DURHAM YORK ENERGY CENTRE (1)

- Decision to proceed 2005 – commenced operations 2015
- Est. capital \$197.62 M; actual cost \$296 M (2015 \$)
 - Durham used federal gas tax money to pay 78.6% of costs - \$213.1 M (program no longer available)
 - also funded by Ontario subsidy of 8¢ per kw/hr for energy (program no longer available)
 - 2024 Durham York net operating cost \$11 M
- DYEC annual reports from 2016 to 2023 on ambient air monitoring show there have been exceedances every year – contaminants include Benzo(a)pyrene and/or Sulphur Dioxide and/or particulates.
- Significant GHG emissions: in 2021, 174,544 tonnes of CO²eq for 140,103 tonnes of waste received

(Ontario Zero Waste Coalition)

RESIDUALS MANAGEMENT

DURHAM YORK ENERGY CENTRE (2)

- 2023 Soil Testing Report revealed 114% increase in dioxin levels – an accumulation within 8 years that was more than what was predicted over a 30-year period.
- Stack testing emissions
 - covers less than 0.5% of actual operational time
 - many contaminants not tested for – PFAs, furans . . .
 - testing done 1x a year under “normal” operating conditions (exceedances more likely during upset conditions /startup / shutdowns),
 - concerns about stack testing operations / data transparency
 - Ontario MECP A-7 incineration guidelines outdated and need revision – especially regarding human health protection
- 2023 Annual DYEC Report shows from a total of 142,487 tonnes processed, 36,219 tonnes ash was shipped - 25,087 of bottom ash (landfilled in N.Y. State) and 11,132 tonnes of “stabilized” fly ash (landfilled in Thorold, ON)

(Ontario Zero Waste Coalition)

RESIDUALS MANAGEMENT

SOME COMPARATIVE COSTS

- Mass burn WTE DYEC incinerator
 - 2015 \$296 million capital cost
 - 2025 with inflation = \$384 million capital cost @ \$2,742 / tonne
 - Ottawa 200,000 tpy @ \$2,742 / tonne = \$548 million
- MWP Toronto study
 - Capital cost \$1,100 / tonne for planned 279,000 tpy plant
 - Ottawa 100,000 typ @ \$1,100 / tonne = \$110 million
- Landfill – Ottawa SWMP
 - Ottawa garbage est. 2025 200,000 tpy; 2034 225,000 tpy
 - Ottawa SWMP est. \$300 - \$400 million capital cost
(SWMP EA Process for Trail Road, November 2023)

ALTERNATIVES FOR ACTION

- Aggressively target and divert organics
- Focus attention on recyclables / problematic materials not covered by the blue / black box program – e.g. textiles, mattresses, construction waste
- Get your house in order – e.g. parks recycling / organics, increase promotion and education
- Put in a real user pay program
- Complete Trail Road facility expansion – view it as an irreplaceable / high value asset
- Monitor and report more often / regularly
- Aim for major re-assessment of SWMP and residuals management around 2034

KEY FINAL QUESTIONS

- Given the planned extension of the Trail Facility capacity and life expectancy to 2048 and capital budget challenges
 - Is there a need presently or before 2034 to make a major capital decision on WTE, MWP or a new landfill?
 - Can the City afford very high WTE costs – why select the most expensive option?
 - Is there enough effort being made to divert organics from landfill and into composting or AD?
 - Is the current 3 item collection limit sufficient to drive recyclables and organics out of the waste stream?
 - Is there concern that the 20 year plus extension of Trail capacity could act as a disincentive for enhanced waste reduction and diversion policies and programs? No worry we have lots of time!



THANK YOU



<https://wastewatchottawa.com/>