



The Regional Municipality of Durham  
Report to: The Joint Works and Finance & Administration  
Committees  
From: C.R. Curtis, Commissioner of Works  
R.J. Clapp, Commissioner of Finance  
Report No.: 2007-J-13  
Date: April 17, 2007

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**SUBJECT:**

Durham Region Energy From Waste (EFW) Project - Preliminary Business Case and Financial Impact Assessment

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**RECOMMENDATIONS:**

THAT the Works and Finance and Administration Committees recommend to Regional Council that:

1. Regional Council receive the results of the preliminary business case assessment conducted by Deloitte and Touche LLP (provided as Attachment 1) with recognition that EFW will cost under a best case scenario approximately 55% to 90% higher on a per unit basis than current Michigan landfill disposal costs, subject to a confirmation of service delivery/ownership, tonnage commitments, location, sizing, capacity utilization, electricity revenues and other factors noted herein.
2. Regional Council advance the EFW project to the Request for Qualifications (RFQ) stage of procurement, subject to approval of the recommendations of Report 2007-J-14, with the understanding that a more detailed project-specific analysis will be conducted as part of the RFP process approval, once tonnage supply commitments, power purchase agreement, service delivery/ownership, location, sizing and utilization of the facility are confirmed;
3. The thermal treatment of residual waste be formally recognized as a viable potential option to secure a future long-term local solution for Durham residual waste disposal, subject to Recommendation 2, and successful negotiations to secure a power purchase agreement (PPA) with the Province/Ontario Power Authority.

4. The Regional Chair be authorized to send a letter to the Ontario Premier the Honourable Dalton McGuinty, copying the Honourable Dwight Duncan, Minister of Energy, the Honourable Laurel Broten, Minister of Environment, and the Honourable Sandra Pupatello, Minister of Economic Development and Trade, to request that the Minister of Energy immediately send a directive to the Ontario Power Authority regarding the following resolution to be endorsed by Durham Regional Council:

*Whereas the Region of Durham has been shipping its municipal solid waste to Michigan, under a competitive contract, which has options for extensions to 2020 at continued low relative disposal rates;*

*and,*

*Whereas, the Durham Regional Council has nevertheless, recently passed a resolution to stand behind the Minister of the Environment's agreement with Michigan Senators to halt the shipment of waste by Ontario municipalities to Michigan after 2010;*

*and,*

*Whereas, in honouring this agreement made by the Minister on behalf of Ontario municipalities, Durham is facing operational and financial risk, due to lack of available landfill disposal capacity and anticipated higher future disposal costs (landfill or EFW) and uncertainty around the ability to attain a Power Purchase Agreement which is deemed necessary to make the EFW Project a viable economic option by 2011;*

*Therefore, given the above, and given the environmental benefits of establishing a more localized Durham/York EFW, which meets A-7 or better environmental air emission standards, as a potential solution to the garbage crisis, the Province be requested to issue a Minister of Energy Directive requiring the Ontario Power Authority to immediately commence negotiations with York and Durham Regional staff to establish a Power Purchase Agreement for the proposed EFW facility, recognizing that a PPA must be attained prior to issuance of a Request for Proposals, currently scheduled for late 2007/early 2008.*

## **REPORT**

### **1.0 BACKGROUND**

- The Region's *Long-term Waste Management Strategy Plan: 2000 to 2020* included the goal of "...considering an "energy from waste" type facility for the disposal of residual garbage waste."
- On June 29, 2005 Regional Council adopted Report No. 2005-WR-10 of the Commissioner of Works to enter into an agreement with the Regional Municipality of York (York) for the Durham/York Residual Waste Management Environment Assessment Study.
- Report 2005 J-8, "*The Annual Solid Waste Management Servicing and Financing Study, the Proposed 2005 Business Plans and Budget and Related Financing,*" as well as subsequent Waste Management Studies noted that "...consideration around the construction of such a large-scale facility would include a business case analysis, with full consideration of alternatives, including potential for a privately contracted service, and the potential for public-private partnerships..."
- Deloitte & Touche LLP (Deloitte) also conducted an "*Analysis of Private Sector Involvement for an Energy from Waste Facility*" for the Regions of York and Durham, which is considered in companion Report 2007-J-14 (included in this agenda). This analysis involved the review of service delivery options with varying degrees of private sector involvement and provided an assessment of cost differences due specifically to changes in the service delivery model and varying degrees of private sector involvement (capital and operating assumptions were held constant). The report also provided a risk assessment for each option.
- As per Regional Council direction (Report 2007-WR-6), Deloitte & Touche LLP (Deloitte) was retained in 2006 to provide consulting services for the preparation of a business case model to assess the various options available for the development and operation of an EFW facility.
- This business model, specific to Durham Region, allow a full consideration of alternatives for waste disposal for comparison to the EFW project. The "Preliminary Assessment of Waste Management Options for Durham" executive summary is included in Attachment #1 to this report.

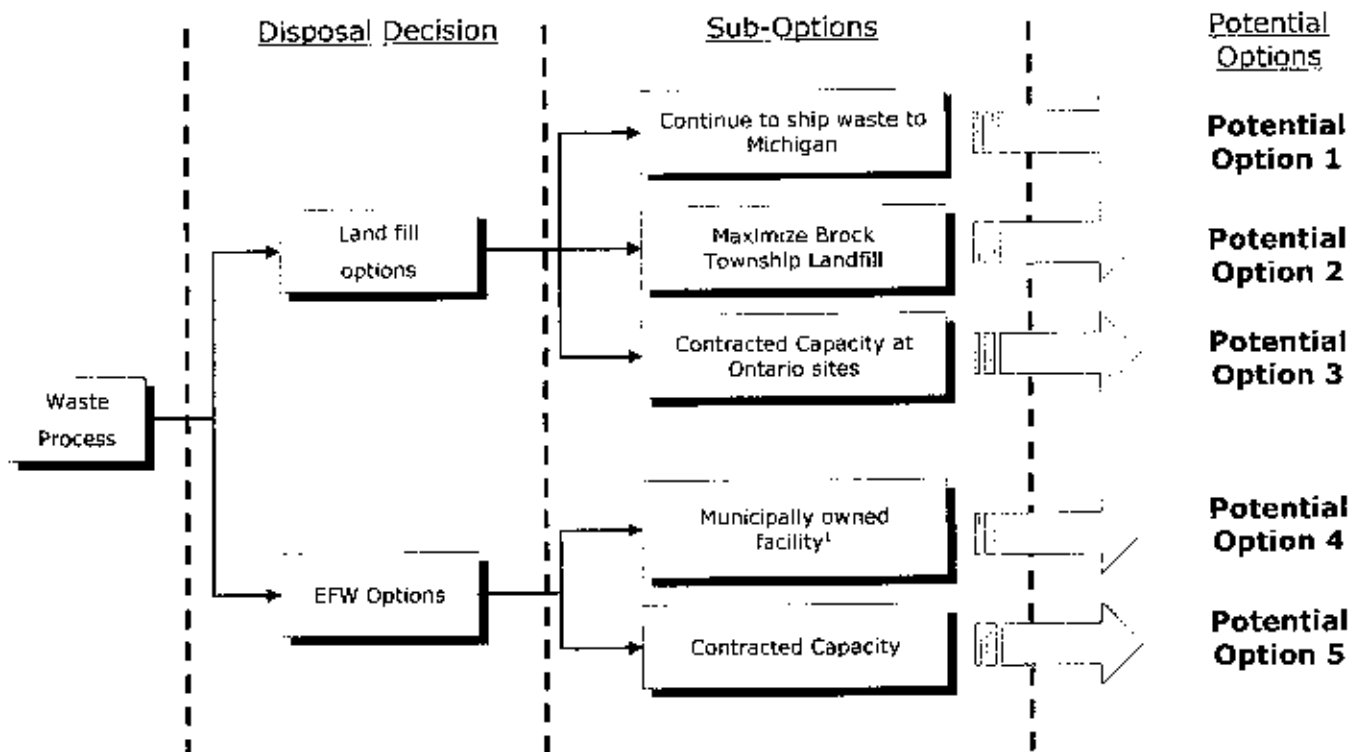
- However, even a preliminary business case analysis is difficult at this point in time in the absence of:
  - i) Firm tonnage commitments;
  - ii) An indication from the Province that they are willing to engage the Region in a Power Purchase Agreement; and,
  - iii) Determination of facility size, location and capacity utilization.

## 2.0 **ISSUING A REQUEST FOR QUALIFICATIONS BASED ON THE PRELIMINARY BUSINESS CASE ANALYSIS**

- It is important for decision makers to understand the magnitude of financial impacts and/or risks in carrying out an EFW facility, to ensure an informed decision.
- **A final decision on whether to follow through with the EFW project will be made prior to issuance of a Request for Proposal (RFP), with the benefit of a more detailed project-specific business case. However, a comfort level with potential financial implications is needed prior to engaging the market through the RFQ process. Market credibility, and a corresponding favourable market response, rests in part on the degree of detail, surety and confidence displayed by the issuer through the RFQ document. It is not prudent to issue an RFQ based on a service delivery model for which commitments have not yet been received, and for which changes are likely prior to issuance of the RFP.**
- Deloitte was engaged by Durham to assess a set of Durham specific waste management options, analyze and compare these options, and make recommendations in the corporate and financial interests of Durham Region.
- Three categories of analysis were utilized to assess five defined waste management options faced by Durham. Deloitte's analysis builds upon preliminary work already completed by MacViro Consultants through the EA process. Deloitte also engaged peers to review assumptions around project costs, including North American and European specialists in EFW.
- The firm's previous work on service delivery and private sector involvement completed for Durham and York also served as an input to the preliminary assessment of waste management options for Durham Region (see Report 2007-J-14).

- The chart below demonstrates the options available to Durham, including potential landfill and EFW alternatives. It is recognized that the first two sub-options are not likely to be considered feasible from a Regional policy perspective, but nevertheless these are included as comparators.

### Durham Region Solid Waste Disposal Options



**\*\* Note 1: This EFW option for a municipally owned facility includes a review of a Durham only facility. A separate analysis was conducted by Deloitte for both Regions for a Durham/York facility. It is assumed in calculating the per unit cost that no transfer or haulage costs will be incurred. If the facility is sited in York, the cost should be adjusted upwards by an estimated \$35 to \$55 per tonne, with further analysis required.**

- Each of the five options were analyzed by Deloitte utilizing three categories of criteria:
  - Financial
    - The cost per tonne (or tipping fee) and the net present value (NPV) of each option were analyzed from the perspective of Durham Region, with all project costs and potential transfer and haulage costs included (option 4 is not assumed to have transfer and haulage costs).

## 2) Control/Ownership

- Deloitte provided an assessment/comparison of the degree of control offered by each option. It is Deloitte's conclusion that control is greatest where there is municipal ownership of the facility which allows Durham to react to its waste management needs with the least amount of outside influence.

## 3) Lifecycle of the Asset

- Refers to the risks, issues and benefits that accrue over the time frame of the analysis. The Deloitte analysis was performed over a 25-year operating period consistent with the EA Terms of Reference and proposed contract. However it is clear that Durham's waste management challenges will extend beyond this timeframe.

### 3.0 DELOITTE'S FINDINGS

- Deloitte's main findings around Durham's solid waste disposal options can be summarized as follows:

#### 3.1 Landfill Options

- Given the loss of the option for Michigan landfill, the cheapest option would be Regional landfill disposal at the existing Brock Township landfill, estimated to cost approximately \$76 per tonne in 2011, but increasing to approximately \$190 per tonne in 2021 upon landfill closure.
- This option, even without consideration of current political issues and Regional policies, could only be considered a short-term solution - one where the Region would find itself in a decade facing the same disposal capacity constraints it faces today.
- The second highest cost disposal option for Durham Region is contracting alternate landfill capacity within the future Ontario marketplace, estimated by Deloitte at \$137 per tonne in 2011. This option given the effective elimination of the Michigan State alternative is deemed comparable in 2011 to EFW, although Deloitte recommends the option be revisited and sensitivity performed as part of the detailed business case prior to RFP issuance.

### **3.2 EFW Contracted Capacity**

- Deloitte estimates that contracting capacity at a private EFW facility would cost approximately \$97 per tonne depending upon the availability of a fully amortized facility with sufficient capacity for Durham (which may not exist). Cost components include transfer station fee, haulage and tipping fee, however, Deloitte notes that the tipping fee is subjective as there are currently limited facilities available, and the option may not be feasible.
- Over time, the contract would become increasingly expensive due to inflationary adjustments. Haulage and fuel costs will also be a factor, depending upon the location of the facility and haulage distance.
- Durham Region would also have no control over a facility owned by another municipality or the private sector.

### **3.3 Municipally Owned EFW Facility Located in Durham (150,000 to 250,000 tonnes per year)**

- The option of a municipally owned EFW facility sized at between 150,000 to 250,000 tonnes per year is estimated to cost between \$139 per tonne and \$115 per tonne, including capital, operating and financing costs. No transfer and haulage costs are assumed since the facility under this option is assumed to be located in Durham Region. It is also assumed the municipality would earn revenue from the sale of electricity generated at the facility through a power purchase agreement with the Province of Ontario. Under this option, the municipality will retain control over the facility and will assume the associated risks (depending on the agreed upon service delivery model, and subject to continuing negotiations).
- An EFW Facility can provide the municipality with a long-term waste management solution. Tipping fees would be higher than landfill under this option at least until such time as the project's debt is repaid.

### **3.4 Deloitte Recommendations**

- **Based on the application of the evaluation criteria, the preliminary results demonstrate that the preferred waste management option for the Region of Durham is 'Option 4 - Municipally owned EFW Facility.'** Option 4 - Municipally owned EFW Facility provides the highest benefit to the Region of Durham specifically as related to:

Financial: in the short term, this Option is more costly than the landfill waste management options. However, in the long-term, specifically as the debt incurred to construct the facility is paid off, Durham will see a significant reduction in the cost per tonne of disposing waste at the EFW facility;

Control: Durham would own the EFW facility and as such would retain ownership and control of the facility to meet its needs; and

Longevity: the highest benefit to Durham will be in the long term. An EFW facility will be able to meet the waste needs of the Region for a longer period of time as compared to landfill options. The Region will have the ability to expand the facility should it be required, subject to the terms of the EA.

- Deloitte recommends as next steps that the Region of Durham should:
  - Confirm the level of participation by York Region;
  - Confirm other sources of municipal waste supply on a "put or pay" basis;
  - Enter into negotiations with the Province to confirm pricing on power purchase agreement;
  - Determine the cost to Region based on above factors; and,
  - Confirm the role of the private sector.

#### 4.0 CONCLUSIONS AND NEXT STEPS

- This report and attachment provides only an assessment of the magnitude of costs that can be anticipated with the proposed EFW project as compared to other waste alternatives. The cost range estimated by Deloitte on behalf of Durham can be seen as a best case scenario at \$115 to \$139 per tonne (excluding haulage should the facility be sited in York). It assumes successful negotiation of a power purchase agreement with the Province and a Durham sited facility.
- **The magnitude of EFW project costs could change significantly if the underlying assumptions are less favourable.** Finance staff will ensure Regional Council is kept informed if cost assumptions change.
- A final and detailed business case analysis is also recommended for Council approval prior to issuance of an RFP for an EFW project.



- Senior Durham and York staff intend to negotiate outstanding issues important to the release of the RFQ by Durham Region to short-list potential vendors, as per recommendations within companion Report 2007-J-14.
- Issues under negotiation with York include those specifically recommended as next steps by Deloitte, including:
  - Confirming York Region's level of participation; and,
  - Confirming York Region's waste supply commitment on a put-or-pay basis;
- These issues are considered key to issuance of the RFQ. Other next steps as recommended by Deloitte will need to be carried out prior to issuance of the RFP scheduled for later this year, including power purchase negotiations, which are so important to the economics of this project.
- The financial implications for the Region of Durham of proceeding with an EFW project are dependent upon a number of factors which at the present time are unknown or uncertain. These significant cost driving factors include but are not limited to:
  - 1) The ultimate capacity sizing of the facility and resulting capital cost;
  - 2) The cost of debt capital financing and term of the financing;
  - 3) The cost of capital improvements to maintain the facility over its life;
  - 4) The potential revenues generated from a Power Purchase Agreement and or steam utilization opportunities;
  - 5) Location of the facility and the potential requirements for transfer and haulage costs; and,
  - 6) Capacity utilization rates.
- The eventual cost of the EFW project also relates to the comprehensiveness and adequacy of the commercial agreements developed as part of this complex project. Negotiations with the Province to maximize electricity revenues and development of a sufficient and "air tight" contract agreement, to be completed in time for RFP issuance, will be paramount to the financial success of the project.

- Accompanying Report 2007-J-14 recommends retaining consultant expertise to mitigate future project cost risk by ensuring business, legal and technical risks are mitigated upfront.

C.R. Curtis, P.Eng. M.B.A  
Commissioner of Works

R.J. Clapp, CA  
Commissioner of Finance

Recommended for Presentation to Committee

G.H. Cubitt, MSW  
Chief Administrative Officer

Attmt.

**Deloitte**

# Preliminary Assessment of Waste Management Options for Durham

Executive Summary

The Joint Works and Finance & Administration Committees

April 17, 2007

Audit • Tax • Consulting • Financial Advisory

# Introduction

- **Deloitte Engagement**

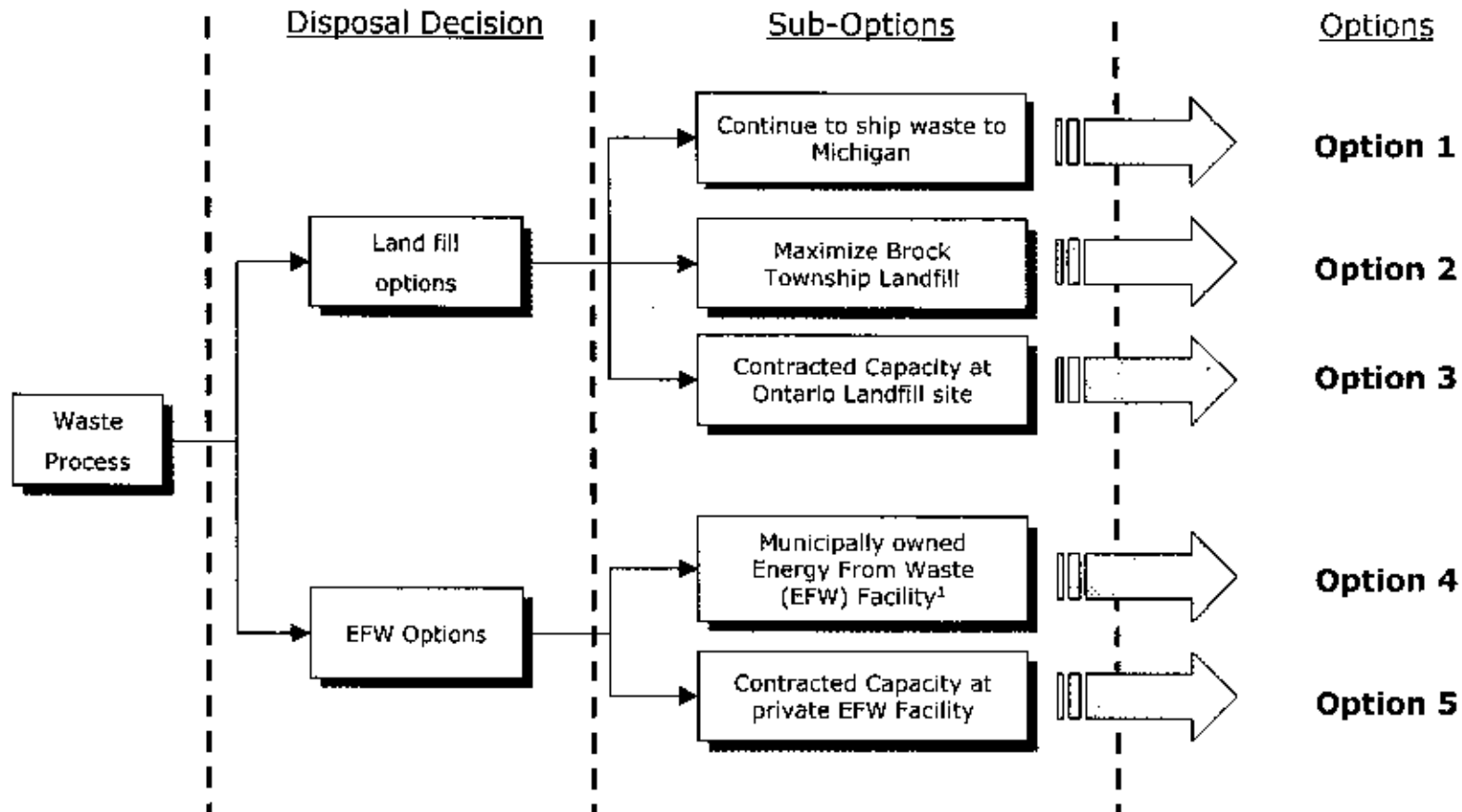
- In response to potential US legislation that would allow the border to the State of Michigan to be closed to waste (with 90 days notice), the Ontario Government, with concurrence from the Region of Durham, York Region, the Region of Peel and the City of Toronto, agreed to stop shipping waste to Michigan by the end of 2010.
- Durham has engaged Deloitte to develop a set of waste management options, analyze these options and recommend a waste management option.
- This presentation presents the findings of our analysis including an identification of the preferred waste management option and the "next steps" required by Durham in order to move forward with the preferred option.

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# Summary of Waste Management Options Analyzed

- The following options were developed and agreed upon for the purposes of this assessment.
- Option 1 is the status quo and will be used as a proxy for comparison only.

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<sup>1</sup> This option includes a review of a Durham only EFW Facility, a separate analysis was performed for the Regions of York and Durham on a Durham / York facility.

# High Level Description of Waste Management Options

**Option 1 – Continue to ship to Michigan:** Only used as a benchmark – it is not feasible since the border to Michigan will be closed by the end of 2010. Only to serve as a proxy for benchmarking comparison.

**Option 2 – Maximize Brock Township landfill:** Assumes maximizing the Brock Township landfill (currently owned by Durham) would provide sufficient capacity to meet the needs of the Region until the year 2020. After that point, the waste would then be sent to another Ontario landfill site.

**Option 3 – Contracted Capacity at Ontario landfill site:** Assumes that waste is disposed at an existing landfill site in Ontario within one days drive of Durham (return).

**Option 4 – Municipally owned Energy From Waste (EFW) facility:** Under this option, the facility is assumed to be located in Durham Region (no transfer or haulage costs assumed) and costs are based upon favourable electricity revenues, confirmed supply commitments and high utilization rates for the facility. If the EFW were to be located in York Region, transfer and haulage costs would be additional. The facility is assumed to be municipally owned and funded EFW facility with private sector design-build and operation of the facility, and sized in the range of 150,000 to 250,000 tonnes.

**Option 5 – Contracted capacity at an existing EFW facility:** Assumes that waste can be disposed of at an existing EFW facility within one days drive (return) of Durham.

## Key Assumptions

- **All:** The term of our analysis is 25 years and debt is amortized over this period at an assumed rate of 5.5%.
- **Options 1,2,3 and 5:** All non-diverted waste would be brought to the transfer station and that the cost assumptions would begin at that point (i.e. with a transfer station fee and then haulage cost to the location of the option).

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# Evaluation Criteria

Three criteria were used to assess the waste management options:

- **Financial:** The cost per tonne (or tipping fee) under each Option.
- **Control/Ownership:** Refers to the degree to which Durham will control the waste management process. Control is greatest where Durham owns the landfill or facility and also where they are able to react to their waste management needs with the least amount of outside influence.
- **Lifecycle of the asset:** Refers to the benefits that might accrue over the long-term. Our analysis was performed over a 25 year period however it is clear that Durham's waste management challenges will extend beyond this timeframe.

These criteria are in **draft form** pending final approval from the Region.

# Summary of Waste Management Option Analysis

	Financial Analysis Cost/Tonne - Year 2011	Control/Ownership	Lifecycle
<b>Maximize Brock Township Landfill</b>	<ul style="list-style-type: none"> <li>\$76/tonne in 2011 rising to approximately \$190/tonne in 2021 upon landfill closure</li> <li>Since this is a Durham owned Facility, the cost components include capital, operating and financing costs as well as transfer station fees and haulage costs.</li> </ul>	<ul style="list-style-type: none"> <li>Maximizing Brock Landfill would provide Durham with control during the years that the landfill has the capacity to serve the Region along with the assumption of risk. After the year 2020, when the capacity is expected to run out, the Region would be required to enter into a contract with an Ontario landfill site.</li> </ul>	<ul style="list-style-type: none"> <li>This option is likely to be a short-term solution. The Region may be re-evaluating its waste management options in a decade.</li> </ul>
<b>Contracted Capacity at Ontario Landfill Site</b>	<ul style="list-style-type: none"> <li>\$137/tonne.</li> <li>Cost includes transfer station fee, haulage and tipping fee.</li> <li>Tipping fee is based on market study of Ontario landfill sites.</li> <li>This option, given the closure of the Michigan border, is deemed comparable in cost to the EFW in 2011 although this assumption should be revisited and sensitivity performed as part of the detailed business case prior to RFP Issuance.</li> </ul>	<ul style="list-style-type: none"> <li>Durham would have limited control under this option but will have transferred operational risk.</li> </ul>	<ul style="list-style-type: none"> <li>This option is likely to be a short-term solution. The Region may be revisiting this decision if capacity in area landfills declines or the market prices after the contract expires exceeds other viable options.</li> </ul>
<b>Municipally Owned EFW Facility (150,000 to 250,000 tpy)</b>	<ul style="list-style-type: none"> <li>In the range of \$139/tonne to \$115/tonne.</li> <li>Since this is a Municipally owned facility, the cost components include capital, operating and financing as well.</li> <li>Transfer station and haulage costs are assumed to be nil since the facility site is assumed to be centrally located within Durham.</li> <li>It is also assumed that the municipality will earn revenue from the sale of electricity generated at the Facility through a power purchase agreement with the Province of Ontario.</li> </ul>	<ul style="list-style-type: none"> <li>Under this option, the municipality will retain control over the facility and will assume the associated risks (depending on the delivery model).</li> </ul>	<ul style="list-style-type: none"> <li>An EFW Facility can provide the municipality with a long-term waste management solution.</li> <li>Tipping fees are higher than landfill under this option until the project's debt is repaid.</li> </ul>
<b>Contracted Capacity at private EFW Facility</b>	<ul style="list-style-type: none"> <li>\$97/tonne, depending on the availability of a fully amortized facility with sufficient capacity for Durham (may not exist).</li> <li>Cost components include transfer station fee, haulage and an EFW tipping fee.</li> <li>Tipping fee is subjective as there are currently limited facilities. As a result, this may not be a feasible option.</li> </ul>	<ul style="list-style-type: none"> <li>Region's control will be restricted to its contract although operational risk will have been transferred.</li> </ul>	<ul style="list-style-type: none"> <li>This option has the benefits of a potential long-term solution</li> <li>Not currently known whether any private facility has sufficient available capacity for the Region(s).</li> </ul>

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## Preferred Waste Management Option

- Based on the application of the evaluation criteria, the preliminary results show that the preferred waste management option for the Region of Durham is Option 4 – Municipally owned EFW Facility.
- Option 4 - Municipally owned EFW Facility provides the highest benefit to the Region of Durham specifically as to:
  - **Financial:** in the short term, this Option is more costly than the landfill waste management options. However, in the long-term, specifically as the debt incurred to construct the facility is paid off, Durham will see a significant reduction in the cost per tonne of disposing waste at the EFW facility;
  - **Control:** Durham would own the EFW facility and as such would retain ownership and control of the facility to meet its needs; and
  - **Longevity:** the highest benefit to Durham will be in the long term. An EFW facility will be able to meet the waste needs of the Region for a longer period of time as compared to landfill options. The Region will have the ability to expand the facility should it be required, subject to the terms of the EA.

# Recommendations

1. Confirm York's participation.
2. Confirm other sources of municipal supply on a "put or pay" basis.
3. Enter into negotiations with the Province to confirm pricing on power purchase agreement.
4. Determine cost to Region based on above factors (1 to 3) and confirm the role of the private sector.

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# Deloitte

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