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RECOMMENDED RESIDUAL WASTE TECHNOLOGY

(Regional Council at its meeting on June 22, 2006, Council had before it an e-mail (June 21, 2006) from Regional Councillor Heath and also heard deputations from Councillors Erin Shapero, Town of Markham and Elio Di Iorio, Town of Richmond Hill.

Council adopted the recommendation of the Solid Waste Management Committee and also requested that staff make a presentation at the next Solid Waste Management Committee on a zero-waste strategy and include the City of Vancouver's experience in the presentation.)

The Solid Waste Management Committee recommends the following:

1. The presentation by Andrew Campbell, Director, Solid Waste Management, be received;
2. The recommendations contained in the following report, June 6, 2006, from the Commissioner of Transportation and Works, be adopted; and
3. The communication from Regional Councillor Jack Heath, June 7, 2006, be received and referred to staff, and that staff be requested to:
 - (a) develop a strategy on the ways and means that consultation, education and communication with the public and interested groups can be increased regarding the Environmental Assessment process and related issues under discussion, for implementation in early September 2006 with the approval of the Regional Chair, Committee Chair and Vice Chair;
 - (b) provide comments and recommendations regarding the development of a Memorandum of Community Agreement;
 - (c) prepare a resolution requesting changes and improvements to legislation to ensure the success of the Durham/York joint venture, if implementation is recommended, to be sent to the provincial and federal governments;

and report back to Committee in September regarding these items.

1. RECOMMENDATIONS

It is recommended that:

1. Council approve that the preferred system to manage the post diversion residual wastes be Option 2a – Thermal Treatment of Municipal Solid Waste and Recovery of Energy Followed by the Recovery of Materials from the Ash/Char as described in the Environmental Assessment Study report “*Evaluation of ‘Alternatives to’ and Identification of the Preferred Residuals Processing System*”.
2. Council also endorse Option 2b Thermal Treatment of Solid Recovered Fuel as an alternative for further consideration in the upcoming competitive procurement process as new technologies may offer additional benefits.
3. The Staff and Consultant team for the Durham/York Residual Waste Study be directed to proceed with the next step in the Environmental Assessment process which is the evaluation of “Alternative Methods” in accordance with the approved EA Terms of Reference, including (but not limited to):
 - a. Consultation with the public and agencies and confirming the proposed evaluation methodology and criteria to be used throughout the evaluation of “Alternative Methods”
 - b. Determination of the optimal facility size and throughput and resulting site size requirements
 - c. Identification and evaluation of siting alternatives for a processing facility
 - d. Evaluation of implementation methods, including ownership options, public-private partnerships and system financing
 - e. Initiation of a formal competitive procurement process as part of evaluation of “Alternative Methods” of implementing the preferred undertaking.
4. Council acknowledge the effort and diligence of the Joint Waste Management Group for the York Durham Residual Waste Environmental Assessment on the development of their recommendations for the preferred technology as presented in Attachment 2.

2. PURPOSE

The purpose of this report is for Council to review the recommendation of the Joint Waste Management Group for the York Durham Residual Waste Environmental Assessment Study and to select a preferred waste processing technology.

3. BACKGROUND

On June 23, 2005, Council adopted Clause 1 of Report No. 4 of the Commissioner of Transportation and Works recommending a partnership with Durham Region to undertake an individual Environmental Assessment to study residual waste management for the two Regions. A Joint Waste Management Group (JWMG) was established with representation from both York and Durham Region Councils and citizens to serve as a Steering Committee for the initiative. On March 31, 2006, the Ministry of the Environment approved the Terms of Reference for the Environmental Assessment Study.

On May 25, 2006, Council received Clause 1 of Report No. 3 of the Commissioner of Transportation and Works describing the technology review and draft recommendation of the Consultants for the selection of a long-term waste processing system to minimize our landfill needs as part of the Durham/York Residual Waste Environmental Assessment (EA). The draft recommendation was to use a thermal process (i.e. energy from waste, incineration or gasification). This draft recommendation was circulated for public comment to over 400 government and non-government organizations, was discussed at public information sessions on May 9, 10 and 11 and was the subject of deputations to the Solid Waste Management Committee and JWMG on May 17, 2006. In addition a telephone poll was conducted by Ipsos Reid regarding the preferred alternative during the week of May 15, 2006.

On May 25, 2006, Council also adopted Clause 3 of Report No. 3 of the Commissioner of Transportation and Works on a Waste Diversion Strategy for the Region and local municipalities setting out a target of 65% waste diversion by 2008 which is a slight increase over earlier projections. The strategy also contemplates a higher diversion rate of 75% in the longer term.

4. ANALYSIS AND OPTIONS

The project consultants, MacViro Consultants Inc. and Jacques Whitford Limited (jointly referred to as the Consultant) presented their final recommendation for the preferred technology to process York and Durham Region's residual waste to the JWMG on May 30, 2006. The details of the analysis are outlined in their final report "Evaluation of "Alternatives To" and Identification of the Preferred Residuals Processing System" (see Attachment 1). All of the study documentation including the detailed Annexes can be found on the project website www.durhamyorkwaste.ca.

The following activities were undertaken prior to preparation of this final report on the identification of the preferred long-term residuals processing system:

- The draft report was released to the public and government review agencies for a period of 30 days starting on April 19th, 2006 and ending on May 19, 2006.

- Notification was issued of the availability of the draft report by way of direct contact with the established public and government review agency list and by way of the website and local media for the general public.
- Copies of the draft documentation were forwarded to the public and government agencies in the established contact lists and copies were placed in the local libraries, municipal offices and on the study website for public review.
- Concurrent Public Information Sessions were held in both Durham and York during the evening of May 9, 10 and 11, 2006. These sessions were attended by a total of 303 individuals, and 110 attendees completed and returned a questionnaire providing input on the draft report. The majority of attendees indicated that they strongly or somewhat agreed with the recommended residuals processing system.
- A telephone poll was conducted by Ipsos Reid during the week of May 15th, 2006, reaching 200 individuals in Durham and 200 individuals in York to determine their support for the recommended residuals processing approach. The results of the survey indicated that approximately 78% of the residents of Durham and York agree with building a Thermal Treatment Facility.
- The Joint Waste Management Group scheduled, advertised and held concurrent special meetings in both Durham and York during the day and evening of May 17th, 2006 to receive delegations from interested parties on the draft report and its results. A total of 18 delegations were received in Durham and 16 in York. The majority of delegations supported the recommended residuals processing system, and those that did not were highly supportive of increased diversion efforts in both municipalities.
- Comments received during the draft report review period were documented and included in the final report as “Annex F”. Comments received were considered and addressed, as appropriate, during finalization of the report.

4.1 Public Consultation Results

The results of the consultative process indicate that:

- A significant majority of the public (approximately 80%) that participated in the consultative process agreed with the consultants’ recommendation the preferred system is *System 2(a) – Thermal Treatment of MSW and Recovery of Energy followed by Recovery of Materials from the Ash/Char*. It was recognized, however, that new technologies categorized in *System 2(b) – Thermal Treatment of Solid Recovered Fuel* may ultimately offer important benefits and as a result the competitive process used during the evaluation of “Alternative Methods” should allow for the submission of proposals to implement both System 2(a) and System 2(b), with the final decision on the technologies used to implement the preferred residuals processing system being based on the results of this competitive process.
- The majority (57%) of those who did not agree (10% of the total individuals surveyed) with the recommended preferred system generally supported increased

diversion activities, including extended producer responsibility and expansion of the municipal diversion system. It is recommended that Durham and York continue to support a hierarchy of waste management practices whereby diversion is the priority and continues to manage an increasing percentage of the municipal waste stream over time with a diversion target of 60% at the beginning of the planning period escalating to 75% towards the latter end of the planning period.

A minority (29%) of those who did not agree (5% of the total individuals surveyed) with the recommended system, preferred to continue to export waste to landfill sites outside of the Regions.

The Consultant has posted on the project website all of the comments received as well as responses (over 150 pages of material). These issues are summarized in Section 4.2.

4.2 Key Issues Identified during the Public Consultation

4.2.1 Support for “Additional Diversion”

The Residual Waste Study is very clear that both Durham and York are planning on an initial goal of 60% waste diversion by 2011 and a goal of 75% in the future. York Council recently adopted a draft policy to achieve 65% diversion by 2008. The majority of those participating in the consultative process supported these goals although a minority expressed concerns about the ability of the two Regions’ to achieve them.

The implications of the report on the evaluation of “Alternatives to” are that both Durham and York adopt a formal hierarchy for their integrated waste management systems to reflect the purpose of the undertaking for the EA Study, as follows:

- At-source diversion
- Thermal treatment (including energy and materials recovery)
- Landfill disposal of the treatment residue.

4.2.2 Support for “Thermal Treatment”

The majority of participants in the consultative process were supportive of “Thermal Treatment” although many had a clear preference for a specific thermal treatment technology such as conventional combustion or plasma gasification. There was significant support for the recognition that while the preferred system was *System 2(a) - Thermal Treatment of Mixed Solid Waste and Recovery of Energy followed by Recovery of Materials from Ash/Char*, that new technologies categorized in System 2(b) – Thermal Treatment of Solid Recovered Fuel may ultimately offer important benefits.

This strongly supports the recommendation that, the competitive process used during the evaluation of “Alternative Methods” allow for the submission of proposals to implement both System 2(a) and System 2(b), and that the final decision on the technologies used to implement the preferred residuals processing system be based on the results of this competitive process.

As part of the consultation process, a considerable amount of public education was also completed to convey the message that the alternatives being considered are “state-of-the-art” and do not include older technologies that have given rise to the negative connotations once associated with “Incineration”.

4.2.3 References to European Experience with Thermal Treatment

The “European Experience” with thermal treatment approaches was consistently referred to during the public consultation sessions, with specific requests that those responsible for selecting and approving the preferred residual waste processing system for Durham and York become very familiar with the “state-of-the-art” approaches used to manage waste in European nations. Recent European facility delegations involving elected officials from both Regions, municipal staff and the consulting team were designed to address the concern that in order to be able to make an effective and educated decision, some first-hand experience with these European examples, including the technology, political and policy environment, etc. would be advisable.

4.2.4 Implement Extended Producer Responsibility

There was broad support for product stewardship and extended producer responsibility (EPR) from both those that did not agree with the preferred residuals waste processing system, and from those that did support the system but that recognized the diversion benefits of EPR.

In Annex C-1, a report entitled *Additional At-Source Diversion*, the current status of extended producer responsibility in Ontario is noted. The report concludes that as the existing system, under the auspices of Waste Diversion Ontario (WDO), is primarily a funding mechanism, no significant effect on diversion would be associated with continued WDO programs. Extensive lobbying from all sectors will be needed in Ontario and federally, to achieve any real progress on EPR where the responsibility for end-of-life products would be solely the responsibility of the generator of the product. The participation of Durham and York in municipal lobbying efforts is expected to continue and will be necessary to demonstrate the commitment of both municipalities to diversion being the first priority for the management of waste.

4.2.5 Preference for Other Alternatives Based on the Selective Application of Various Criteria

A number of participants in the consultative process expressed a clear preference for other alternatives based on the selective application of a few of the criteria used in the Study for comparative analysis of the alternative systems. For example, some participants selected System 1 as their preferred system, based on the consideration of emissions to air including greenhouse gas emissions and greater feasibility, with the large landfill component, to accommodate diversion rates beyond 75%.

Under the Environmental Assessment Act (EA Act), the ‘environment’ is very broadly defined to include the natural, social and economic environment in both a local and global context. The evaluation criteria that were developed and applied to select the

preferred system were formulated to address the need to examine all aspects of the environment to meet the need of the EA Act.

The formulation of the evaluation criteria was undertaken with public and agency input during both the preparation of the EA Terms of Reference and early in the process of evaluating alternative systems. The EA Terms of Reference, including the proposed evaluation criteria were approved by the Minister of the Environment.

It would not be acceptable or good EA practice to choose the preferred “Alternative to” based on applying only a select few of the comparative criteria, and to do so would not comply with the approved EA Terms of Reference.

4.2.6 Concern that a Thermal Treatment Facility will Hinder Future Diversion Efforts

It has been claimed that any thermal treatment facility will compete for materials in the waste stream and hinder efforts to achieve higher diversion rates. It is essential to reinforce that both Durham and York are committed to an immediate goal of 60% waste diversion by 2011 and a goal of 75% in the future.

Diversion was studied in detail as part of the consideration of “Alternatives to” including consideration of what is being achieved worldwide in the area of diversion and the potential to divert additional materials from the Durham/York waste stream. No comparable municipality – including both single and multi family housing - in North America has achieved a diversion rate much beyond 50 percent. Some jurisdictions in Europe have achieved higher diversion rates and the majority of these also use thermal treatment to dispose of the residues that remain after diversion. The subsequent use of thermal treatment ash or char can add significantly to diversion rates.

If a thermal treatment facility with capacity for the approximately 250,000 annual tonnes of residual waste projected for Durham and York began operating in 2011 and continued to operate at that capacity through to the end of the study planning period (35 years), then increased diversion will be required to offset population growth. An overall diversion rate in excess of 75% would be required to continue to address the study area residual waste management needs.

Thermal treatment facilities are not a barrier to diversion when they are sized and operated appropriately. For example, the Region of Peel has achieved very high diversion rates and thermally processes most of its residual wastes. In practice, it is generally jurisdictions with high cost disposal facilities such as thermal facilities that have high diversion rates while jurisdictions with abundant low-cost landfill disposal facilities generally have lower diversion rates.

There are a variety of contractual mechanisms that can be used to ensure a thermal treatment facility has sufficient input material for economic operation and does not compete with diversion for material. For example, waste from commercial sources could

be processed under short-term contracts that can be adjusted to accommodate changes in municipal quantities.

4.2.7 Concerns Regarding Air Emissions from a Thermal Treatment Facility and the Impact on Public Health

Thermal Treatment facilities for municipal solid waste are operated safely and are widely accepted around the world, including Europe, the United States and right here in Ontario (Brampton). These facilities have extensive air emissions monitoring programs in place to ensure the safety and protection of humans and the natural environment via compliance with stringent regulatory requirements.

In 1999, the Ministry of the Environment (MOE) released a study assessing the risks associated with incineration to human and ecological health. In this study, the MOE concluded that no significant health effects are likely in a typical suburban community located near an incinerator. They also predicted that water and sediment quality near an incinerator would meet ministry guidelines for the protection of aquatic life. Since the release of this document, even more stringent air emissions regulations have been released and enforced by the Province, further reducing the potential impacts related to the types of facilities studied in 1999.

Following the approval of thermal treatment as the preferred “Alternative to” by Regional Councils, a comprehensive review of the potential human and ecological impacts of thermal treatment, specific to the Durham/York Study area will be undertaken as part of the siting process. Input received from the analysis of the potential for human and ecological health impacts will represent an important component of the siting of a long-term waste processing facility(ies).

4.2.8 Greenhouse Gas Emissions

Concern was expressed by many of those that participated in the consultative process in regards to the greenhouse gas emissions (GHG) from thermal treatment and the need to address climate change. During the consultative period a study was publicly released by Friends of the Earth (FOE) regarding incineration and climate change, and was referred to by some participants in the consultative process. The FOE study determined that while electricity-only incineration was less climate-damaging than landfilling of waste, it was more climate-damaging than systems with aerobic or anaerobic mechanical-biological treatment and landfilling of stabilized residues. Interestingly, aerobic mechanical – biological treatment systems with the use of refuse derived fuel as a coal substitute in cement kilns was found to be relatively equivalent with those systems where the stabilized residue was landfilled. The FOE study also found that the GHG per Kilowatt hour of power emitted from incinerators that recovered combined heat and power (CHP) was relatively equivalent to that emitted from CHP Gas fired power stations.

In the evaluation of alternative residuals processing systems for Durham and York, it was found that System 2a) *Thermal Treatment of Mixed Solid Waste and Recovery of Energy followed by Recovery of Materials from Ash/Char* would have the highest net life-cycle

emissions of GHG, and that System 1 *Mechanical and Biological Treatment with Biogas Recovery* would have the least. The air emissions from the recommended alternative though are well below the standards set by the Ministry of the Environment. Further, it should be noted that for the purpose of evaluating systems it was assumed that with all systems only electrical energy would be recovered. If the recovery of available heat as well as electricity was factored into the analysis, the thermal treatment systems would have the lowest life-cycle emissions of GHG.

The findings of the Durham York Residual Waste Study agree with the FOE conclusion that recycling is better than incineration in terms of climate change, and as a result the highest priority is being placed on the recovery of materials from the waste stream to reach a 60 to 75% diversion target, and the evaluation of systems assumed high recovery rates for materials managed by the municipal blue box program, including the high value plastics in the waste stream.

The composition of the residual waste that would be thermally treated in System 2a or System 2b is largely made of materials that cannot be easily recovered by source separated diversion programs or mechanical treatment and that in the most part are difficult to recycle into new materials/products.

4.2.9 Need for a Larger Facility to Serve Additional Municipalities in the GTA

The purpose of Durham and York undertaking this EA Study is to find a local solution to waste management issues so that they are not as reliant on export alternatives outside their respective municipal boundaries.

Over the course of the study, it may be apparent that opportunities exist to provide excess capacity in the early stages of the planning period to neighbouring municipalities provided it would benefit the proponents and the broader environment. Municipal solid waste originating from outside the Study Area, particularly from smaller neighbouring communities outside the Greater Toronto Area, would offer a potential waste stream that could be managed by surplus capacity incorporated into the undertaking, should this be determined to be beneficial.

The Wesleyville site owned by Ontario Power Generation (OPG) was suggested but falls outside of the municipal boundaries of the Regions of Durham and York. During the evaluation of "Alternative Methods", as set out in Section 6.2 of the approved EA Terms of Reference, Step 6 *"Prospective vendors of the technology(ies) will be requested to submit their qualifications and may be invited to submit their own alternative site(s) for consideration. Prospective vendor site(s), if submitted, must clear minimum compliance requirements, such as being located in Ontario, to be included on the short list of sites. Public and agency consultation will be undertaken when the short list of alternative sites has been finalized."* Therefore, should OPG wish to have the Wesleyville site included for consideration as a potential short listed site, the EA Terms of Reference does allow for this option.

4.2.10 The Timeframe Provided for Review and Consultation on the Draft Report Regarding the Evaluation of “Alternatives To”

A few requests for extensions to the 30-day commenting period were received from local municipalities in Durham and York.

The 30-day comment period on the Draft Report is a common timeframe used in many EA Studies and by the MOE for documents that are posted publicly in accordance with the Environmental Bill of Rights for review and comment.

All parties including various agencies and the general public are being invited to comment on information issued throughout the EA Study process, which is projected to be complete in 2008. Comments received following the presentation of the recommendations on the preferred residuals processing system to the Joint Waste Management Group on May 30, 2006, will be documented and addressed where appropriate as the report proceeds through committee and Council in both Regions and as the EA Study progresses.

Given the U.S. border closure issue, an extension of the review timeframes for the Draft Report on the evaluation of “Alternatives To” was not considered by the study team, as this study needs to proceed expeditiously. A number of attendees at the public consultation sessions also expressed concern regarding the length of time required to complete the EA Study and implement the preferred alternative and expressed desire that the preferred option be implemented as soon as possible.

4.3 Final Consultant Recommendations

The Consultants considered the input received over the last month. Based on the seven step evaluation methodology and application of the criteria approved in the Terms of Reference approved by the Ministry of the Environment the Consultant recommended:

- The preferred system to manage the post-diversion or residual wastes is System 2(a) – Thermal treatment of municipal solid waste and recovery of energy followed by the recovery of materials from the ash/char.
- Because new technologies may offer additional benefits an alternative for further consideration in the upcoming competitive process is System 2(b) thermal treatment of a solid recovered fuel.

These final recommendations were presented to the Joint Waste Management Group on May 30, 2006.

4.4 Recommendations of the Joint Waste Management Group

On May 30, the Joint Waste Management Group considered the recommendations of the Consultant. The recommendations were approved (*see Attachment 2*) and sent to both Councils of York and Durham for consideration. In addition they recommended the following to both Councils as the next steps in the EA process:

- That the Staff and Consultant team for the Durham/York Residual Waste Study be directed to proceed with the evaluation of “Alternative Methods” in accordance with the approved EA Terms of Reference, including (but not limited to):
 - a. Consult with the public and agencies and confirm the proposed evaluation methodology and criteria to be utilized throughout the evaluation of “Alternative Methods”.
 - b. Determination of optimal facility size and throughput and resulting site size requirements.
 - c. Identify and evaluate siting alternatives for a processing facility;.
 - d. Evaluation and implementation methods, including public-private partnerships and system financing.
 - e. Initiate a formal competitive procurement process as part of evaluation of “Alternative Methods” of implementing the preferred undertaking.

Regional staff support the work completed by the Consultant, the recommendations of the Joint Waste Management Group and recommend Committee and Council adopt the resolutions.

5. FINANCIAL IMPLICATIONS

The Region’s average cost per tonne for waste management processing and disposal are listed in Table 1.

Table 1
Waste Management Processing Fees

Item	Total Tonnes		Cost/tonne (\$2005)
	2005	2021 (est.)	
Landfill	210,000	30,000	\$71
Source Separated Organics	12,000	69,000	150
Blue Box (Net)	65,000	112,000	9
Dongara Pellet Fuel	0	100,000	100
Yard Waste	24,000	44,000	58
Thermal Processing	0	135,000	\$120-\$140

Note: Costs are for processing only (i.e. paid to a contractor) and do not include collection costs.

On a weighted average basis in 2005 dollars the system costs would increase from \$60/tonne to \$88/tonne from 2005 to 2021 based on the values in Table 1.

6. LOCAL MUNICIPAL IMPACT

The siting of a waste facility could impact one municipality in York or Durham Regions. The siting identification and review process is the second part of the EA process and will start in the fall of this year. A short list of sites will be available in early 2007 at which time there will be considerable involvement with the municipalities and public where the potential sites have been identified.

7. CONCLUSION

York and Durham Regions are seeking a long-term solution to landfilling their residual waste. Through the EA process, the consulting team and JWMG has recommended a thermal option as the preferred technology. If approved by Council, the next step in the EA process is to prepare a short list of potential sites and report back early in 2007.

(The attachments referred to in this clause are included with this report.)