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Winds of Change **Developing a 21st Century Energy from Waste Facility in Ontario**

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Background

Currently, over 70% of the non-hazardous solid waste generated in Ontario is disposed of in landfills. Approximately 45% of Ontario's waste is disposed of in landfills located in Michigan. Disposal of residual waste in Ontario is undergoing a major shift. Pursuant to agreements made in 2006 between Ontario municipalities and federal and state representatives of Michigan, waste from Ontario municipalities will no longer be disposed in Michigan landfills post 2010. That has put enormous pressure on Ontario municipalities to seek alternative disposal solutions for the waste remaining after they reduce, reuse and recycle.

Municipalities within Ontario have taken different approaches to meeting this pending sea change in managing their long-term solid waste management needs. Toronto, for example, purchased a remote landfill to meet its residual disposal requirements. The Regions of Durham and York, on the other hand, are looking to implement a locally-based solution to their residual waste management requirements. In 2004, the Regions began the planning process that culminated in 2007 with the issuance of a Request for Qualifications (RFQ) for vendors to design, build and operate an Energy from Waste Facility under a long-term agreement. That was followed with the issuance in August, 2008 of a Request for Proposals (RFP) to the five (5) prequalified Proposers (Covanta, Green Conversion, Urbaser, Veolia and Wheelabrator) to design,

build and operate a 140,000 tonne per year Energy from Waste state-of-the-art facility (Facility).

The focus of this presentation is on how the final strategic recommendation of the Region's Waste Management Plan, "to consider an energy-from-waste type facility for residential residual waste after maximized recycling and composting" has been addressed.

History

Under the Region of Durham's mandate, the Region is responsible for the transportation and processing of all residential waste materials within its borders. The Region also provides residential collection services to six (6) of the eight (8) municipalities under its jurisdiction.

The Region had historically managed its residual waste stream via landfilling. As local landfills filled up, it became increasingly clear that alternatives were needed. In 1999, Durham adopted a "Long Term Waste Management Strategy Plan: 2000 to 2020" to investigate technically feasible waste reduction and waste disposal opportunities in an environmentally and financially responsible manner.

The main goals of the waste plan were:

- To commit to divert residential waste from disposal;
- To secure an alternate source for the disposal of residential waste;
- To implement an integrated residential waste management system for the collection, processing and disposal of:
 - Blue Box recyclables;
 - Food and yard waste compostables;
 - Residual garbage wastes; and
 - Special wastes.
- To consider an EFW facility for the disposal of residual waste.

Based on the directives of the Region's Council during approval in 1999 of the Region's "Long Term Waste Management Strategy Plan: 2000 to 2020", the Region initiated several aggressive strategies to achieve maximized diversion of residential waste including:

- Increased markets for material accepted in its blue box recycling program,
- Implementation of curbside organics (food waste) collection and processing,
- Increased diversion of waste collected at its public transfer stations,
- Construction of a state-of-the-art materials recovery facility, and
- Initiation of an Environmental Assessment (EA) study to address residual residential waste after maximized recycling and composting.

As a result of implementing this plan over the past decade, the Region currently has a state-of-the-art award winning materials recovery facility, transfer stations, and a household hazardous waste station. The Durham Region opened its SWANA Award winning Materials Recovery Facility in January 2008, which permitted the continuing efforts to optimize the successful Blue Box program. In 2007, Durham achieved 50% diversion through Blue Box, Green Bin, compost, and reuse programs. Approximately 2% of the residential waste is reused, 23% recycled and the organic fraction (~ 25%) diverted, leaving approximately 50% residuals. The Region has a current diversion target rate of 70% by 2010 for residential waste.

Energy From Waste

The closure of local landfills during the 90's caused the Region to look at alternative disposal solutions. In evaluating various options to deal with the residual waste, the Region made the determination, detailed in the final recommendation of the Region's Waste Management Plan, "... to consider an energy-

from-waste type facility for residential residual waste after maximized recycling and composting".

That proved to be a wise move. As local landfills continued to close, the Region began to export waste to Michigan in 2003. That option came under significant fire. In response to potential U.S. 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, the York Region, the Region of Peel and the City of Toronto, agreed to stop shipping waste to Michigan by the end of 2010. Clearly, an alternative waste management solution was needed.

In October 2004, Durham Region initiated an Environmental Assessment study to further investigate alternative methods to landfill for residual residential waste.

The study required that any new methodology would recover resources — both energy and materials — in an environmentally-responsible way after maximized recycling and composting initiatives at the residential level. Consideration of methods included only those approaches that would meet or exceed all regulatory requirements.

The Region took a phased approach to the study to ensure that all requirements under the Environmental Assessment Act would be addressed.

- Durham partnered with the York Region to find a joint solution that helps them meet Ontario's public policy objectives, which include reducing long-term dependence on 3rd parties for waste disposal through reduction, diversion and re-use of waste;
- Provide a stable and viable long-term solution that:
 - Is cost-effective, reliable and fiscally sustainable / predictable;
 - Provides a long-term (25 to 50 years) solution;
 - Minimizes impacts to health, safety and the environment;
 - Is local, publicly-owned and controlled;
 - Fosters multi-government partnerships and co-operation;
 - Promotes local responsibility and community sustainability; and
 - Provides a clean, reliable, local and renewable source of energy.

As part of the ongoing process, representatives of the Region looked to others who had addressed this issue previously. The European experience was of particular note because of the role that EFW plays in the overall solid waste management hierarchy. The EU approach incorporates a comprehensive policy framework that:

- Promotes high levels of diversion;
- Regulates product packaging;
- Restricts the use of landfill through legislation; and
- Sets out a waste hierarchy, which sets out a priority for waste management activities.

This comprehensive policy framework ensures that a range of options are examined and utilized to manage waste, with a key focus being to divert as much of the waste stream as possible from landfill. Throughout the EU, 50 million tonnes of municipal waste are treated in 420 EFW facilities. This represents 24% of the residual municipal waste processed annually. Germany, Denmark, Sweden, France and Belgium are the largest users of EFW. Countries where recycling levels are amongst the highest in Europe are also the countries with high levels of EFW, and low dependence on landfills. High usage of EFW is the result of strict EU legislation that limits the use of landfills and applies stringent health and environmental standards for EFW. As a result, dozens of new EFW facilities are under construction or in advanced planning stages. The Region has drawn on the European experience in setting its requirements, including establishing emission limits for the proposed Facility that reflect stringent EU standards.

Bringing the Dream to Reality — Implementation of the EFW

Assembling the Key Ingredients

Putting together a successful energy from waste facility project is a multi-year Herculean effort. Bringing together the environmental, financial, technical and contractual elements of this public private partnership has been likened to trying to put socks on an octopus.

To successfully site an energy from waste facility requires that several key elements be addressed as part of the process. These include

- A site
- Waste
- Permits
- Energy Market
- Ash/Bypass Disposal Capacity and
- A Facility

The Site

Following an extensive evaluation process that considered several alternative locations, the Clarington 01 Site was selected as the preferred site. It consists of over 12 hectares with good road access located between Courtice Road and Osbourne Road in the Municipality of Clarington. It is located in the Clarington Energy Business Park. A key element of the process is direct involvement of the public throughout the process. Since its inception, the Region has actively and aggressively assured that

the public is involved. There have been over 40 public consultation meetings, workshops and information sessions, totaling over 1,400 attendees. There is also a Site Liaison Committee in place.

Waste

The Regions of Durham and York are committing to deliver 140,000 tonnes per year of residual MSW to the Facility. That amount represents the residual waste remaining after the Regions reduce, reuse and recycle upwards of 70% of the waste being generated in the Regions.

Permits

The permitting process is well underway. The process began in the fall of 2004, with the start of the Environmental Assessment process. In March of 2006, the Ministry of the Environment approved the EA terms of reference. Since that time, the Region has been working on various elements of the EA. The Region anticipates submitting the final Environmental Assessment in the summer of 2009. Obtaining the Certificate of Approval (C of A) from the Ministry of the Environment will follow. The Regions have established emission limits in the RFP that will serve as the basis for the C of A. The emission limits reflect the Regions’ goal of meeting or exceeding the more stringent of the Province of Ontario Air Emission Requirements and the European emission standards

Energy Agreement

Energy from Waste provides a valuable source of local renewable non-fossil fuel-based energy. A long-term stable energy sales agreement is key to a successful project.

The Regions have received support from the Ministry of Energy to enter into a long-term sales agreement with Ontario Power Authority based on firm pricing and are in the process of negotiating the key terms of the Power Purchase agreement.

Ash/Bypass Disposal Access

Energy from Waste Facilities generate residue materials in the form of ash, process rejects and bypass. Proposers are being required to provide that capability as part of meeting the Regions’ processing and disposal requirements.

The Facility

The Facility is being procured as a DESIGN/BUILD/OPERATE (DBO) PROJECT. The preferred vendor will perform all three major tasks. The initial operating contract is 20 years with two (2) five-year renewal options. The contract will contain performance incentives for reducing emission limits; performance incentives for innovation; and financial penalties for lack of performance.

In establishing the proposed contractual relationships with the preferred vendor, the Region has addressed construction and operational key project risks. These include technology; waste

supply; escalation schedule; emissions; throughput; output; cost controls; facility condition and change in law/force majeure. Construction-related risks during the construction period include key provisions related to the design process (including design reviews and managing change orders); the site (including condition); utilities; responsibility for obtaining local, provincial and federal approvals; cost control (including established escalation factors) and cost control mechanisms; schedule control; completion; acceptance and related performance guarantees. During operations, the key provisions include performance guarantees for emissions, throughput, availability, energy recovery, ash quality/quantity, and reagent/utilities utilization; facility maintenance and capital replacement/refurbishment; costs including payment structure, pass-through costs and revenue sharing; changes in law/force majeure; and end of term related issues, including terms, condition assessment, and handover obligations, including licenses.

Next steps

The Regions are in the process of receiving responses to the RFP from the prequalified vendors. The current schedule is to complete the review and selection process in 2009.

Conclusion:

The Durham Region has been the leader in the development of proactive and innovative ways of managing residential waste collection and disposal in the Province of Ontario. It has done so by implementing efficient and cost-effective programs to capture wastes that can be diverted from landfilling to be recycled, composted, reused or recovered in an environmentally responsible manner.

The Durham Region continues to set benchmarks as well as offering a learning strategy for reference.