



To: **Committee of the Whole**

Agenda Section: Corporate Services
Division: Engineering, Planning and Environment
Department: Solid Waste Management

Item Number: CCW - 17-222

Meeting Date: September 26, 2017

Subject: Environmental Resource Recovery Centre – OPF Preliminary Business Case

Recommendation

That Item CCW 17-222, dated September 26, 2017, regarding the Environmental Resource Recovery Centre – OPF Preliminary Business Case, be received.

Executive Summary

The purpose of this Item is to present the Preliminary Business Case for the County's long-term organics processing options. This comprehensive report, undertaken by Ernst & Young Orenda Corporate Finance Inc. (EY), assesses the business and operational impacts, associated risk, and cost/benefit of various options submitted via a Request for Information (RFI) process undertaken in early 2017.

The Preliminary Business Case examines five Project Options – including “status quo” (continued export to AIM in Hamilton), three technology options for a County-owned Organics Processing Facility (OPF) developed at 2976 Horseshoe Valley Road West, Springwater, and export to other facilities owned and operated by a merchant partner. The cost/benefit analysis considered long-term costs for transfer, haulage, and processing for export options and site-specific capital and operating and maintenance costs for a County OPF.

Based on the RFI-submitted information and estimated site development costs, development of a County-owned facility utilizing dry anaerobic digestion (AD) with in-vessel composting technology had the lowest 20-year nominal costs and Net Present Value (NPV) of all five options. In considering both business and operational impacts, development of a County-owned facility was also found to be the most advantageous – aligning with the Solid Waste Management Strategy and provincial policies including the Waste-Free Ontario Act (WFOA), providing ownership and control over operations, long-term viability, and process flexibility. In considering risk, the report noted that while the option to transport waste is convenient in the short-term, it is expected that increasing pressure on municipalities in the form of waste-related regulations and legislation (such as the WFOA) could lead to market capacity and availability issues.

EY has recommended development of a County-owned facility continue – noting that the OPF could provide a solution that is advantageous, comparably low risk, financially viable, and in alignment with the County’s objectives. As the analyses in the Preliminary Business Case were conducted using high-level cost estimates based on RFI responses, EY noted that the County would benefit from a “technology neutral” procurement process for the OPF that would allow proponents greater flexibility in the development of a solution to meet the County’s organics processing needs. Although there appears some advantage to pursuing dry AD with in-vessel composting technologies, it is recommended that the procurement process not eliminate any technology option at this stage in project development.

Going forward, advancement of the OPF project – including procurement of technology and preparation of the Final Business Case – will follow the on-going Planning process for the Environmental Resource Recovery Centre complex.

Background/Analysis/Options

The purpose of this Item is to present the Preliminary Business Case for the County’s long-term organics processing options. This report assesses various business impacts, the associated risk, and cost/benefit of options related to organics management – including development of a County-owned processing facility and continued utilization of contracted services.

The report was prepared by Ernst & Young Orenda Corporate Finance Inc. (EY) who were retained in early 2017 to complete the Business Case for the Organics Processing Facility (OPF). Their team of specialized infrastructure advisory professionals provide independent advice to clients on the procurement process, structuring, risk, and strategic and financial aspects of major infrastructure transactions. They have extensive experience – including financial analysis and business case preparation for the City of Surrey’s Organic Biofuel Processing Facility, various City of Toronto assignments (including their anaerobic digestion mixed waste processing facility project), and recent work on organics processing infrastructure projects for the Regions of Durham and Peel.

It is noted that this Item serves only as a summary of the comprehensive analysis undertaken by EY and that the full report, *County of Simcoe – Organics Management Preliminary Business Case*, August 2017, is presented for reference in Schedule 1.

This is the first of a two-part analysis as the Final Business Case for the OPF will be presented to County Council following the procurement process.

Request for Information

As outlined in *Item CCW 17-174 – Environmental Resource Recovery Centre – Project Update* (June 13, 2017), the first procurement document related to development of the OPF was released on November 30, 2016. The purpose of this Request for Information (RFI) was to gather information on alternatives for processing of the County’s source-separated organics. Respondents were requested to outline a variety of information in their submissions – including corporate background, proposed technology, mass balance, environmental controls, infrastructure details, and associated costs.

A total of eight separate submissions were received in response to the RFI. The respondents included a variety of constructors, operators, and technology providers. This information formed the basis of EY’s Preliminary Business Case.

Description of Project Options

Following review of the RFI information, various options were grouped according to technology type and agreement approach (i.e. development of a County-owned facility or export to an alternate processor). Table 1 below outlines information on each of the Project Options assessed in the Preliminary Business Case noting that this included the “status quo” option, reflective of the County’s current system for management of organics. Project Options 2 to 4 considered development of a 30,000 tonne/year, County-owned facility at 2976 Horseshoe Valley Road West, Springwater, delivered via a Design-Build-Operate (DBO) procurement method.

Table 1: OPF Preliminary Business Case – Summary of Project Options

Option	Description/Assumptions
<p>Project Option 1 Status Quo</p>	<ul style="list-style-type: none"> • considered continued export of organics to AIM Environmental in Hamilton for processing • facility utilizes in-vessel composting and does not accept pet waste or diapers • costs assumed current contractual pricing for processing • considered required transfer and haulage (assuming County fleet)
<p>Project Option 2 County OPF – Wet anaerobic digestion “Wet AD”</p>	<ul style="list-style-type: none"> • anaerobic digestion (AD) is a process by which microorganisms break down biodegradable material in the absence of oxygen to produce biogas (mainly composed of methane and carbon dioxide) and liquid digestate • digestate may undergo dewatering and additional refining to be able to be converted to compost • digestate can also be applied directly as a fertilizer (noting that this is not common and could not occur during winter months) • biogas could be refined to feed an engine or boiler to supply both heat and electricity to the facility, sent to the natural gas grid, or used as fuel for vehicles
<p>Project Option 3 County OPF – Dry anaerobic digestion with in-vessel composting “Dry AD”</p>	<ul style="list-style-type: none"> • Dry AD systems are typically based on the same microbiological process as Wet AD, but operate at higher total solids • outputs include digestate that can be converted to compost • as per the RFI response, this option would be combined with in-vessel composting • biogas produced by the Dry AD process could be refined to feed an engine or boiler to supply both heat and electricity to the facility
<p>Project Option 4 County OPF – In-vessel composting</p>	<ul style="list-style-type: none"> • in-vessel composting is a process by which microorganisms break down biodegradable material in presence of oxygen producing compost
<p>Project Option 5 Merchant Capacity</p>	<ul style="list-style-type: none"> • considered continued export to a composting or AD facility owned and operated by a merchant partner • costs consider transfer, haulage, and gate fees (processing costs) charged by the site operator • it is assumed that the Merchant Capacity option would accept pet waste and diapers for processing

Methodology

EY utilized a “triple bottom line” framework and applied various social, environmental, and economic criteria to this assessment. Their methodology and comprehensive criteria for the business and operational impact assessment, risk assessment, and cost/benefit analysis is outlined on Figure 9 of their report (provided on pages 47 and 48 of Schedule 1).

The cost/benefit analysis (quantitative analysis) considered long-term costs for transfer, haulage, and processing for export options and site-specific capital and operating and maintenance costs for a County OPF. The various assumptions and details of these costs are outlined in Section 10 of the EY report (beginning on page 71 of Schedule 1).

Conclusions

Further to the three-part analysis, EY outlined the following key findings. For reference, a summary table presenting the results of the cost/benefit analysis is provided in Schedule 2.

- A financial model was developed and reviewed with the County to assess the 20-year nominal and Net Present Value (NPV) cash flows for each of the five Project Options. The lowest cost option, Dry AD with in-vessel composting, results in 20-year nominal costs of \$79.4M and a 20-year NPV cost of \$54.6M
- The Status Quo and Merchant Capacity options were determined to be the third and fourth highest costing options, respectively. The Merchant Capacity option results in a 20-year nominal cost of \$114.2M and a 20-year NPV cost of \$62.8M. The Status Quo option results in a 20-year nominal cost of \$105.9M and a NPV amount of \$58.2M.
- While the option to transport organics is convenient in the short-term, it is expected that increasing pressure on municipalities in the form of waste-related regulations and legislation (such as the *Waste-Free Ontario Act*) could lead to market capacity and availability issues. Potential impacts related to market capacity may include increasing gate fees at privately-owned or partner facilities/sites, inability to accept new materials such as pet waste and diapers, and expensive transport to facilities/operators in distant jurisdictions.
- A business and operational impact assessment was undertaken to consider the identified Project Options against qualitative assessment criteria in order to assess the potential advantages and disadvantages to the County from a business and operational perspective. The Dry AD with in-vessel composting option and In-vessel composting option (both delivered under a DBO model) were found to be the most advantageous when aligned with the County’s business and operational objectives, including providing the County with ownership and control over facility operations, process flexibility (including input volume capacity) and alignment with policies including changes to regulations/legislation. The Status Quo and Merchant Capacity options were determined to be the least aligned with the County’s long-term objectives.
- A qualitative risk workshop was conducted in consultation with the County to identify potential risks associated with the Project Options and to assess the likelihood of occurrence (probability) and potential impact on the County should the risk occur. The Status Quo, Wet AD, and Merchant Capacity Project Options were determined to have a higher risk profile (as per the outcomes of the risk workshop) as compared to the Dry AD with in-vessel composting and In-vessel composting Project Options.

- Development of the County's new organic waste processing capacity fits in very well with Bill 151 – *Waste-Free Ontario Act*, the province's Circular Economy Strategy, and the Organics Action Plan. The County's efforts can be framed within the circular economy context and include considerable focus on its climate change benefits and the production of high quality biogas, digestate and/or compost products that will be cycled back into the local economy.

Moving Forward

Based on the above noted considerations and results of the analyses, EY has recommended development of a County-owned facility continue noting that if delivered under the DBO model, the OPF could provide a solution that is advantageous, comparably low risk, financially viable, and in alignment with the County's objectives.

As the analyses in the Preliminary Business Case was conducted using high-level estimates (based on RFI responses), EY recommends a "technology neutral" DBO procurement process that would allow proponents greater flexibility in the development of a solution to meet the County's organics processing needs. Further, they recommend that the County develop a procurement process which allows for further input from the market by soliciting bids for viable technology solutions and designs. This process should allow proponents to submit solutions and bids for any viable technology (wet AD, dry AD, in-vessel composting, etc.) which allows for innovation and the greatest potential value for the County and its residents. Details should be sought on critical information regarding potential revenues (end products, biogas, carbon credits, etc.) and impact of recovery of biogas on operating costs – information that will be valuable for preparation of the Final Business Case.

The Final Business case is set to follow a Request for Prequalification (RFPQ)/Request for Proposal (RFP) process. Procurement will not be undertaken, however, prior to securing the required Planning approvals for 2976 Horseshoe Valley Road West, Springwater. It is anticipated that the Planning Act application process will take some time.

Financial and Resource Implications

The financial implications of development of a County OPF have been discussed in detail in the Preliminary Business Case. Based on the 2016 Development Charges (DCs) background study, it is estimated that DCs would fund 22.5% of the capital costs given that the facility would be constructed to process diverted organics from the waste stream. The remainder of the funding would be provided by the Solid Waste Management reserve, in addition to internal and external financing (to be outlined in future reports).

Operating and maintenance costs for the facility would be budgeted annually – noting that currently, approximately \$1.5M is budgeted annually for contracted processing services (excluding transfer and haulage costs).

Relationship to Corporate Strategic Plan

In regard to long-term processing of organics, the Solid Waste Management Strategy recommended development of a centralized composting facility within the County. Public input indicated support for in-County processing as well as for the addition of pet waste and diapers to the program.

Reference Documents

Item CCW 16-226 (August 9, 2016) Organics Processing Facility – Project Delivery Method

Item CCW 16-357 (October 25, 2016) Organics Processing Facility – Recommendation for Project Delivery Method

Item CCW 17-174 (June 13, 2017) Environmental Resource Recovery Centre – Project Update

Attachments

Schedule 1: Report – *County of Simcoe – Organics Management Preliminary Business Case* (Ernst & Young Orenda Corporate Finance Inc., August 2017)

Schedule 2: Summary of Quantitative Cost/Benefit Analysis over 20 Years


for CCW 17-222
Schedule 1.pdf


for CCW 17-222
Schedule 2.pdf

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August 23, 2017
August 23, 2017
September 18, 2017
September 19, 2017