



Request for Information #RFI-1158-2017

for

**Mixed Waste Transfer and Pre-sorting, Organics
Processing, and Beneficial use of By-Products/End
Products**

for the Regional Municipality of Durham

Appendix B, RFI Questions

RFI Document 3 of 4

Hard copy submission only

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Information for Respondents, Appendix A, Appendix C and Attachments are posted as a separate PDF documents on the Region’s bidding website under RFI-1158-2017

Appendix A – Respondent Submission Form

Appendix C – Background

Attachment 1 – RFI Definitions

Attachment 2 – Map

Attachment 3 – Waste Flow Diagram

Part 1 Respondent's Company Information

1. If you are responding as a consortium, please provide the information related to the firm(s) within your consortium that were not provided in Appendix A, Item 1, including the firm(s)'s registered legal business name and any other name under which it carries on business, address, telephone, fax, website, contact name, and email address for the contact person.
2. Provide a brief description of your organization, its history, and relevant experience related to waste transfer, mixed waste pre-sort and organics processing and management, including examples of organics management strategies you have been or are involved in for municipalities or other similar organizations.

Supporting information may be provided as an appendix to your response including a description of:

- a) Organics management services provided (e.g. pre-processing or mixed waste pre-sorting services, transfer and/or haulage services, organics processing or other related operations, organic treatments, technology provision, organics post-processing or storage services, end-product/by-product generation, end-product/by-product handling and beneficial use, purchase or marketing services etc.);
- b) Key organics management facilities and locations utilized to deliver services described in a), initial and current capacities and utilization rates, and potential available organics management capacity and timing;
- c) Materials managed or ancillary services or facilities provided;
- d) Duration, timeframe and type of contractual arrangements under which the services and/or facilities noted were or are being provided (e.g. in-house service provision, public-private partnerships, contract for service (merchant capacity));
- e) Experience with organics management by-products/end-products, marketing and sales experience, and related contracts and pricing benchmarks (e.g. negotiated price, standard contract price, spot price etc.).
- f) Experience with the management of residual wastes related to each waste material type managed through the organics management services provided.
- g) Experience with odour management and the resolution of odour issues and odour complaints.

Part 2 Respondent's General Information

1. The Region of Durham will be comparing viable options through a business case analysis with up to a 20 year analytical timeframe. Responses that do not satisfy this timeframe for the Region of Durham's organics management needs should include information that provides details including resource requirements that would be necessary to extend their option to a 20 year timeframe.
2. Based on your experience with the implementation of one or more of the three components (Waste Transfer and Pre-sorting (at transfer location or at processing location); Organics Processing; and Beneficial Use of By-Products/End Products) and given Region of Durham's existing organics management system as described in the Appendix C of this RFI, please provide an overview of potential options or approaches under which Region of Durham may be able to maximize the diversion of organics and recyclables from the Region of Durham's residual mixed waste stream while optimizing the overall integrated waste management system.
 - a) Provide a description of how your proposed option(s) or approach(s) might assist the Region of Durham in conforming to objectives as highlighted in the Information for Respondents, including the Ontario regulatory and organics market environment and potential future trends, including any comments related to potential implications related to the proposed Food and Organic Waste Framework, and other legislation as noted within the RFI Objectives.
 - b) Specify if you have considered the Region of Durham's mixed waste and organics tonnage projections provided within the RFI Background section reasonable or if you have used your own projections. Please provide the assumptions and rationale used to calculate these estimates.
 - c) Identify any intent to oversize your management options in order to meet the needs of other waste management market participants (eg the Industrial, Commercial and Institutional (ICI) sector).
3. Do you have a preference for service delivery models that could be used by the Region of Durham for the option (s) or approach (s) you identify, including but not limited to:
 - Design-bid-build (DBB);

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- Design-build-operate (DBO);
- Design-build-operate-maintain (DBOM or DB+OM);
- Design-build-finance-operate-transfer (DBFOT);
- Design-build-finance-operate-maintain (DBFOM);
- Private ownership (merchant capacity);
- Other.

Please provide a rationale for your preferred service delivery model(s) as well any comments regarding potential cost and risk sharing benefits and/or challenges from both the public and private sector perspectives.

Part 3 Respondent's Detailed Information Relating to Areas of Interest**1. Residual Mixed Waste Transfer and Pre-Sort Facility(s)**

The Region of Durham is interested in options or approaches that could provide both transfer and mixed waste pre-sorting functions that could be co-located or at separate locations. If you are considering mixed waste pre-sort outside the Region of Durham, you should also consider that the Region of Durham will (based on logistics and efficiency considerations), require a transfer function in reasonable proximity to its areas of curbside collection.

Please indicate what option (s) or approach (s) you suggest, with rationale.

Provide the estimated tonnage outputs assumed from mixed waste pre-sorting that could be anticipated for the following categories:

- a) OFMW (Organic Fraction of Mixed Waste) for organics processing;
- b) Marketable recyclables; and,
- c) Residual waste to disposal through the Region of Durham's Durham-York Energy Centre (DYEC) contract.

Answer the following questions, including assumptions made, for each stand-alone mixed waste pre-sorting facility and/or combined transfer and pre-sorting facility envisioned, based on the options or approaches provided within Part 2.

For assessment purposes, provide:

- a) An outline of the technology (s), required infrastructure, facilities, materials and feedstocks;
- b) Estimated mass balance of mixed waste pre-sort and transfer facility;
- c) Land requirements for the facility (s) in terms of land size (hectares).
- d) The location of available or planned mixed waste pre-sorting and transfer services
- e) Benefits to diversion and ability to add diversion materials;
- f) The capacity/size of facilities included within your option(s) with rationale for facility sizing and available growth capacity (e.g. tonnage projections etc.).

- g) Potential for expandability of the facilities once operational. Potential opportunities, issues or mitigating strategies that can be identified related to expandability or a phased approach.
- h) Potential synergies related to the siting/location of organics management services and/or assets;
- i) The ancillary facilities that could be located at the site of transfer to increase the efficiency and cost effectiveness of organics management or to ensure administrative effectiveness, security and/or oversight.
- j) The mixed waste pre-sorting and/or transfer facility odour management requirements.
- k) The permitting requirements for the facility(s).
- l) Other compliance requirements, logistics and functional requirements? Please provide supporting rationale.
- m) A reasonable timeline for planning, design, approvals and construction to commence operations.
- n) Describe the process and approvals required to achieve implementation consistent with the timing provided in the question above).

2. Organics Management: Processing

Answer the following questions, including assumptions made for organics processing facility(ies) envisioned based on the options or approaches provided within Part 2.

For assessment purposes, provide:

- a) Outline technology(s), infrastructure, facilities and materials envisioned for option(s) provided to process Source Separated Organics (SSO) and the Organic Fraction of Mixed Waste (OFMW). Indicate whether SSO and OFMW should be processed together or separately, including any rationale.
- b) Provide estimated mass and energy balance for organics processing facility option(s) provided;
- c) Describe residual waste tonnages and types of waste that would be generated by the organics processing facility identified as an option for the Region of Durham.

- d) The options available for the disposal of the residues that cannot be marketed.
- e) The land requirements for an organics processing facility capable of handling the Region of Durham's volumes, in terms of land size (hectares).
- f) Where available or planned organic processing services located or to be located.
- g) Identify benefits to diversion and ability to add diversion materials;
- h) Your opinion whether the Region of Durham should include processing of diapers, pet waste, sanitary products or other materials, as part of a processed organics stream or should these materials be better left within the mixed waste stream? Please comment on challenges and/or opportunities, benefits and costs and the rationale for the recommendation(s) for each material recommendation.
- i) The recommended size of organics processing facility would you suggest based on the Background Information as provided in Appendix C or your alternative projection. Provide rationale for facility sizing and available growth capacity requirements (e.g. tonnages projections etc.).
- j) The potential expandability of an organics processing facility once it becomes operational; if any.
- k) The potential opportunities, issues or mitigating strategies can be identified related to expandability or a phased approach.
- l) Identify potential synergies related to the siting/location of transfer/pre-sorting services and/or assets;
- m) Based on your experience, the ancillary facilities that are required for the operation of an organics processing facility (e.g., wastewater treatment, odour control system, storage etc.).
- n) The organics odour management requirements for an organics processing facility.
- o) The permitting requirements for an organics processing facility.

- p) Other compliance requirements, logistics and functional requirements? Please provide supporting rationale.
- q) A reasonable timeline for planning, design, approvals and construction to commence operations at an organics processing facility.
- r) Please describe the process and approvals required to achieve implementation consistent with the timing provided in item q, above.

3. By-Product/End-Product Opportunities

Answer the following questions, including assumptions made, for each of the by-products/end-products envisioned based on the options or approaches provided within Part 2.

For assessment purposes, provide:

- a) What by-products/end-products would be available from an organics processing facility capable of handling the Region of Durham's waste volumes?
- b) What quantities of each by-product/end-product could be anticipated?
- c) What are the best beneficial use opportunities for the by-products/end-products resulting from the proposed option(s) or approach(s) identified in Part 2?
- d) What qualities and quantities of materials will be saleable/marketable products and what proportion will likely be sent to disposal?
- e) What post-processing, storage or other requirements are necessary once organics processing is complete to ensure the quality and quantity of marketable by-products/end products?
- f) Are organic end products generally suitable in Ontario as compost, fertilizer, or other material and what opportunities and challenges exist to the marketing of organic end-products?
- g) Describe any probable environmental impacts including energy usage and intensity (absolute and processed amount); greenhouse gas (GHG) emissions and energy use by source.
- h) What quality of organics product can be anticipated and what proportion of organics and contamination can be expected? What approaches can minimize contamination and maintain a high level of organics quality and are the approaches cost effective?

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- i) Describe any energy-related products that are available from organics processing and what opportunities and/or challenges exist to the marketing and sale of energy end-products, including potential electricity, fuels or other products and revenue and or cost-recovery opportunities?
 - j) If applicable, based on market information and your experiences, what quantity and quality of biogas could be expected (e.g. per gross tonne of incoming organic material)?
 - k) Provide rationale for assumed facility sizing and growth capacity where additional equipment and/or facilities are required for the generation of beneficial by-products (e.g. assumed inputs and outputs etc).
 - l) If applicable, describe biogas utilization technology including the technical process, its development history, operational North American facilities, and anticipated emissions to the environment.
 - m) If applicable describe, the permitting requirements and a reasonable timeline for planning, design, approvals and construction to commence operations of a biogas utilization system.
 - n) The land requirements for a biogas facility capable of handling the Region of Durham's volumes, in terms of land size (hectares).
 - o) Describe residual or other products from the biogas process, if identified. Which of these materials can be marketed? What qualities of these materials are anticipated (e.g. tonnes)?
 - p) Based on your experience and industry expertise, outline any potential biogas utilization or combined heat and power (CHP) options that you view as viable in today's market or future markets based on anticipated future market or regulatory changes or trends. Provide rationale.
 - q) If applicable, how much net biogas production would be typically available for sale/market purposes net of site load utilization? Please describe assumptions or provide rationale.
 - r) If applicable, what volume of renewable natural gas (RNG) in cubic metres (m³) would be generated by a biogas facility?
 - s) Provide any additional comments on Ontario markets for end-products (current or anticipated). What can service providers, municipalities and the province do to further develop markets to ensure the viability of organics diversion? Include rationale.
 - t) What marketing approaches are common in the Ontario market under either a public partnership approach or merchant service contract?

Part 4 Respondent's Costing Information

Please note that detailed costing estimates will be deemed and treated as confidential in accordance with Appendix A, Section 2(i).

1. Residual Mixed Waste Transfer and Pre-Sort Facility(s)

Answer the following questions, including assumptions based on options or approaches provided within Part 3, Item 1 and your experience and industry knowledge and Region of Durham-specific information provided in Appendix C of the RFI:

- a) What are the estimated capital costs and estimated capital cost per design tonne for each facility you described in Part 3, Item 1, excluding financing costs and land requirements?
- b) Do the unit capital costs change under alternative growth projections? How?
- c) What are the anticipated lifecycle maintenance and capital replacement requirements and costs for each facility?
- d) What percentage of capital costs estimated would represent a reasonable contingency to account for project management, soft costs and other contingencies?
- e) What are the estimated facility operating costs per year (including labour, administration, utilities, personnel, and ongoing maintenance of building, equipment and grounds and other identified costs)?
- f) Identify separately, any potential revenues on a dollars per tonne (\$/tonne) or annual basis.
- g) What are the facility odour management capital costs?
- h) If you provided information on a merchant capacity service, what is the estimated \$/tonne price for transfer and/or transfer and mixed waste pre-sorting provided through a contracted private sector service, and the preferred contract term?
- i) If the mixed waste pre-sorting facility(ies) you noted in Part 3, Item 1 is located outside the Region of Durham, what would the estimated \$/tonne be to transport the residual mixed waste from a Region of Durham transfer site to the mixed waste pre-sorting facility?
- j) Are there are any storage requirements and what is the related costing?

2. Organics Management: Processing

Answer the following questions, including assumptions related to organics processing, based on viable options or approaches provided within Part 3, Item 2 and your experience and industry knowledge and Region of Durham-specific information, provided in Appendix C of the RFI:

- a) What is the estimated capital cost for processing facility(ies) you described Part 3, Item 2 and what is the estimated capital cost per design tonne, excluding financing costs and land requirements?
- b) Do the unit capital costs change under alternative growth projections? How?
- c) What are the anticipated lifecycle maintenance and capital replacement requirements, costs and timing for the facility?
- d) What percentage of capital costs estimated would represent a reasonable contingency to account for project management, soft costs and other contingencies?
- e) What are the estimated facility operating costs per year (including labour, administration, utilities, personnel, and ongoing maintenance of building, equipment and grounds and other identified operating costs)?
- f) Provide any additional capital costs, land requirements, lifecycle requirements, operating costs or other expenditure requirements related to post-processing expenditures necessary to ensure the quality and quantity of marketable end products and maximize net revenues?
- g) What are the processing facility odour management costs?
- h) If you provided information on a merchant capacity service, what is the estimated \$/tonne price for the organics processing provided through a contracted private sector service and the preferred contract term?

- i) If the organics processing facility is located outside the Region of Durham what would the estimated \$/tonne be to transport the organic waste to the organics processing facility? Please include assumptions and rationale.
- j) Are there any storage requirements and what would the related costs be?

3. By-Product/End Product Opportunities

Answer the following questions, including assumptions made for the by-products/end products based on viable options or approaches provided within Part 3, Item 3 and your experience and industry knowledge and Region of Durham specific information provided in Appendix C of the RFI:

1. Digestate/Compost Opportunities, if applicable

- a) Identify any estimated capital costs necessary to ensure the diversion/marketing of digestate/compost (e.g. storage or treatment facilities), excluding financing costs and land requirements? Provide rationale and assumptions including sizing and growth capacity for any required facilities or ancillary facilities.
- b) Do the unit capital costs change under alternative growth projections? How?
- c) If capital requirements are identified, what are the anticipated lifecycle maintenance and capital replacement requirements, costs and timing?
- d) What percentage of identified capital costs estimated would represent a reasonable contingency to account for project management, soft costs and other contingencies?
- e) What are the estimated operating costs per year for any capital facilities required related to digestate/compost (including labour, administration, utilities, personnel, and ongoing maintenance of building, equipment and grounds and other identified costs)?
- f) What estimated revenues, if any, are available from the sale of digestate/compost based on assumed or required quality standards? Based on your experience, could the revenue from digestate/compost offset any of the identified capital and operating costs?

- g) Based on the current market environment what market rate could be anticipated in \$/tonne for digestate/compost, with rationale or pricing benchmarks provided?
- h) If you provided a merchant capacity service, what is the estimated \$/tonne price for any required digestate/compost processing services that would be required to ensure a marketable product, or would these services already be included in the processing fee provided in Item 2 above?
- i) What revenue sharing arrangements are common in the market under either a public partnership approach or merchant capacity service contract?
- j) Describe in \$/tonne the costs to manage digestate (NASM, fertilizer, compost or other), identifying both capital and operating costs with a total cost per tonne, excluding haulage.
- k) Describe in \$/ tonne the costs to manage compost (AA, A, B or other), identifying both capital and operating costs with a total cost per tonne, excluding haulage.
- l) Are there storage requirements and what is the related cost?

2. Biogas Utilization Opportunities, if applicable

- a) Based on your experience, what is the estimated capital cost for a Biogas Utilization facility, excluding financing and land requirements? Provide rationale for assumed facility sizing and growth capacity. Does this cost include any ancillary facilities? What is considered additional to this cost?
- b) What are the anticipated lifecycle maintenance and capital replacement requirements, costs and timing for identified facilities related to biogas utilization only?
- c) What percentage of capital costs estimated for biogas utilization would represent a reasonable contingency to account for project management, soft costs and other contingencies for the facility?
- d) What are the estimated facility operating costs per year (including labour, administration, utilities, personnel, and ongoing maintenance of building, equipment and grounds and other identified costs) for biogas utilization?

- e) What estimated revenues are available from a Biogas Utilization facility with rationale or pricing benchmarks provided? Based on your experience, how will the revenue compare to the capital and operating costs of a Biogas Utilization facility?
- f) Based on the current market environment in Ontario and with rationale provided, what market rate could be anticipated in \$/ m³ for renewable natural gas (RNG) either now or in anticipated in the future?
- g) If you provided information on a merchant capacity service, what is the estimated \$/tonne price for biogas utilization services beyond those included in Item 2 processing?
- h) What revenue sharing arrangements are common in the market under either a public partnership approach or merchant service contract?

Part 5 Expression of Interest in Forming a Business Relationship with the Region of Durham

Respondents who are interested in providing an organics management option which is in line with any of the Service Delivery Models outlined in the Definitions should complete the applicable sections of the RFI Questions (Appendix B, Parts 1 to 4).

This section is separately included to determine if there is interest in pursuing a business relationship with an entity that shares the Region of Durham's stated or similar objectives as defined in the Information for Respondents. If you are interested in entering into a business relationship which would share the benefits and risks associated with one or more components of the Region of Durham's long term organics management strategy, please provide information for consideration.

The Region of Durham is seeking high-level information related to the nature of proposed business relationship(s) which could include information on the following:

- Preferred model: Public-Private or Public-Public
- Preferred parameters for a financial relationship (e.g. ownership and share commitment preferences or constraints)
- Assignment of risk to each entity
- Involvement in procurement process
- Involvement in management of construction, operations, marketing and sale or the purchase of potential end-products/by-products
- attribution of environmental benefits and any implications related to carbon credit distribution
- Marketing expectations for processing or other capacity

The Region will concurrently review the RFI responses for Appendix B, Parts 1 to 4, with the Part 5 responses that demonstrate interest in a business relationship.