

Proposed New & Emerging Technologies REOI Handout on Content For Final Comment

New & Emerging Technologies, Policies & Practices Advisory Committee

For May 14, 2003

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Solid Waste Management Services



Structure of This Document

⌘ Proposed Introduction

- ☒ Purpose

- ☒ Scope of REOI

- ☒ Procurement Process

⌘ Proposed Waste Profile

⌘ Proposed Information Requirements of REOI

⌘ Proposed Screening & Evaluation Criteria for RFQ/RFP

Purpose of REOI

The purpose of this REOI is fourfold:

- 1 to identify potential vendors of new and emerging technologies to manage the City of Toronto's residual municipal solid waste
- 2 to signal to the marketplace the intention of the City to issue requests for qualifications (RFQ) and proposals (RFP) for such technologies
- 3 to solicit information from potential vendors to assist with making recommendations about the evaluation and selection of such technologies, and
- 4 to provide an opportunity for potential vendors to comment on screening and evaluation criteria to be used at the RFQ and RFP stages.

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Scope of REOI - What the City is Looking For

General description

⌘ Waste to be handled

- ☒ residual waste after source separation programs
- ☒ diversion programs include recycling of containers & paper, collection of household organics & leaf & yard waste

⌘ Sustainability

- ☒ City seeking to improve environmental performance of waste management system
- ☒ City Intends to evaluate alternative technologies within the waste management system with respect to lifecycle inventory

⌘ Types of technologies

- ☒ Broad range of technologies including physical, biological and/or thermal processes
- ☒ City is not interested in incineration
- ☒ City is not interested in a proposal for landfill capacity

Scope of REOI - What the City is Looking For

General description

⌘ Who should submit

- ☒ City is seeking to implement complete systems to process a mixed waste feed between 50,000 and 200,000 tonnes per annum to divert it from landfill.
- ☒ Seeking EOI submissions from proponents of complete systems
- ☒ Also entertain EOIs about technologies that could form part of a system to manage this quantity of the mixed residual waste.
- ☒ In this case throughput requirement would not necessarily apply to the individual component.
- ☒ However, at the RFQ and RFP stages, City will be seeking submissions for complete systems only.
 - ☒ Vendors of individual components of a system will have to form joint ventures or consortia to satisfy the criteria of a complete system to manage at least 50,000 tpa.

⌘ Status of development

- ☒ Seeking proposals for technologies at least at the pilot stage
- ☒ Must be able to demonstrate the potential for scale up and commercialization

Procurement Process - REOI

General description

- ⌘ This REOI is **NOT** a pre-qualification stage
- ⌘ No screening or evaluation at this stage
- ⌘ Vendors will **NOT** be restricted from submitting qualifications or proposals on the basis of submissions to this REOI.

REOI

- ⌘ provides information regarding City's intention to issue RFQ & RFP
- ⌘ provides information for vendors to prepare proposals
- ⌘ asks for information about vendors and technologies to appropriately specify the City's requirement in the RFQ and RFP, and
- ⌘ asks for comments on City's proposed screening & evaluation criteria for RFQ and RFP.

Procurement Process

Next Steps After REOI

- ⌘ Toronto City Council directed staff to report on:
 - ☑ Results of REOI
 - ☑ Recommendations about environmental assessment (EA) process
 - ☑ Recommendations about issuing a request for qualifications (RFQ)

- ⌘ Report to Council in September, 2003

Environmental Assessment

- ⌘ Advise from MOE that individual EA will be required
 - ☑ whether City or private firm(s) identified as project proponent

- ⌘ Council directed staff to report in September on a workplan and timeframe for the EA process

Planned Procurement Process

Stage	Date	Proponent Requirements	Outcome
REOI	May 2003	<ul style="list-style-type: none"> - Information only - Vendors of complete systems or individual components may submit EOIs - Technology descriptions - Input to RFQ/RFP stages 	<ul style="list-style-type: none"> - No Screening or Evaluation - Report to Council in September, 2003 on results and recommendations re RFQ
RFQ	To be determined, recommendations to Council Sept. 2003	<ul style="list-style-type: none"> - Detailed proponent capabilities - Technology descriptions - Proponents of complete systems only – joint venture or consortia if necessary 	<ul style="list-style-type: none"> - Screening of submissions - Pass/Fail - Submissions which pass invited to submit RFP - Submissions which fail not considered further - Report to Council on results and recommendations re RFP
RFP	To be determined	<ul style="list-style-type: none"> - Detailed proposals - Detailed operating data, certified - Proponents of complete systems only – joint venture or consortia if necessary 	<ul style="list-style-type: none"> - Screening of submissions* - Pass/Fail* - Submissions which pass will be evaluated - Ranking of submissions - Report to Council on results and recommendations re award

⌘ Project schedule will depend on Council direction with respect to environmental assessment and planning process

⌘ This two-step qualification and evaluation process may be modified based on the EOI submissions and subsequent recommendations of staff and Advisory Group

⌘ * same screening criteria applied at RFP as RFQ - verification only

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Proposed Waste Profile - Quantities

⌘ Waste Streams to be Managed

- ☒ residential single family households & apartment buildings
- ☒ City's agencies, boards, commissions and departments (ABC&Ds), and
- ☒ small commercial businesses - restaurants, green grocers, retail stores, mainly downtown
- ☒ Generally, large apartments & most small commercial collected separately at this time

⌘ Table of projected waste quantities - estimates only

- ☒ Figures represent waste remaining **AFTER** diversion programs, which are planned to achieve 60% diversion between 2006 & 2010
 - ☒ Estimates only, actual quantities will depend on results of programs and waste generation
- ☒ Potential for variation in waste quantities
 - ☒ daily, seasonal, long-term with changes in packaging & consumer goods & with new diversion programs
- ☒ Planning estimates for future years will be provided at RFQ stage

Residual Waste Generation After Diversion		
	2007 (estimated)	2010 (estimated)
Residential Total	379,000	387,000
City Small Commercial Total	10,000	10,000
ABCD + Public Space	30,000	30,000
Total	419,000	427,000

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Proposed Waste Profile - Waste Characterization

⌘ Table of Waste Composition

- ☒ Estimates based on recent waste audit - additional audits may be undertaken
 - ☒ estimates only, actual composition may be different depending on results of diversion programs and waste generation
- ☒ Figures represent residential composition
 - ☒ single-family households and apartments may have slightly different composition, likely in the amount of household organics
- ☒ ABC&D and small commercial waste streams may be somewhat different, but if collected together, affect on composition negligible and would not significantly alter waste composition
 - ☒ ABC&D generally collected together with residential at this time
 - ☒ Both small commercial and ABC&D have access to similar diversion programs already or will be in place
- ☒ Potential for variation in waste quantities
 - ☒ daily, seasonal, long-term with changes in packaging & consumer goods & with new diversion programs

**Estimated Composition of Combined Single and Multi-Family Residential Waste Stream
2006 - 2010**

Material Type	Estimated Proportion of Materials in Residential Waste Stream (Weight %)
Paper Fibre	30 \diamond 40
Plastic	10 \diamond 17
Glass	4 \diamond 5
Metal	3 \diamond 4
HSW	<math>< 1</math>
Organics	20 \diamond 33
Other, including:	10 \diamond 17
textiles	2 \diamond 3
building renovation	5 \diamond 8
diapers and sanitary products	2 \diamond 4
furniture	<math>< 2</math>

⌘ Lab Analyses to be conducted

- ☒ will provide data on chemical & physical properties of waste stream
- ☒ Vendors given opportunity to indicate what tests may be helpful

Proposed Information Requests

Preamble:

Information requested from proponents is:

- ⌘ general in nature,
- ⌘ required to help City to specify its requirements by
 - ☒ learning what is available, and
 - ☒ identifying & researching additional technical information needs
- ⌘ requested to help City specify criteria for screening & evaluation of proposals

Specific topics:

- ⌘ Description of Technology
- ⌘ Feedstock Requirements
- ⌘ Products, Markets and Emissions
- ⌘ Existing Applications, Status of Development
- ⌘ Commercialization Plans
- ⌘ Proposed Capacity
- ⌘ Preferred Approach to Implementation
- ⌘ Proponent Information – experience, etc.
- ⌘ Additional Information Required for Bidding (next stage)

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REOI Information Requests - Description of Technology

⌘ Category of major component - physical, biological, thermal

⌘ Is process a component of a system or a complete system

If proposed process is a component, indicate:

where it would fit in a complete system to divert mixed residual waste stream

requirements for preparing the waste, and

requirements for processing after proposed operation

⌘ Process description, covering all of:

major components and unit operations, status of development

stages of process

process flow diagram, showing each component

all consumables required - energy, amendments, oxygen, etc.

process conditions - temperature, pressure, moisture content, etc.

If a thermal process, how is it different from incineration

REOI Information Requests - Feedstock Requirements

Recognizing we are looking for processing for mixed residual solid waste of composition profile provided,

describe feedstock requirements:

- ☒ In what form must feed waste be delivered, e.g.
 - particle size
 - manageable variation
 - moisture content
- ☒ Can the process receive raw unprocessed residual solid waste delivered loose or compacted?
- ☒ Will other processing components be required to deliver waste in required form?

REOI Information Requests - Products, Emissions, Markets

Products

- ☒ list products (both material and energy)
- ☒ identify markets for each product and identify market potential
 - ☒ well-developed ready markets
 - ☒ proven market but uncertain in Toronto
 - ☒ early stages of market development - market research required for Toronto

Emissions

- ☒ list all emissions - gas, liquid & solid,
 - ☒ include solid residuals for which no market exists
 - ☒ consider all stages e.g. dryers, preprocessing, environmental controls, etc.
- ☒ Describe all emission control processes

REOI Information Requests - Status of Development

Existing Applications of Proposed Technology

☒ Looking for those managing MSW feedstock

☒ List:

☒ scale - bench, pilot, demonstration, commercial

☒ design & actual throughput (tonnes/hour, tonnes per day, etc.)

☒ source & type of feedstock

☒ status - operating, under construction

☒ operating history

☒ location

☒ partners

Commercialization plans

☒ identify planned facilities - describe status

☒ identify partners - financial, equipment suppliers, markets

☒ comment on plans with respect to Toronto's requirements for residual waste processing

REOI Information Requests - Proposed Capacity

State capacity or range of capacity to be proposed, noting what Toronto is looking for,

- express in tonnes per year
- if submission is for individual component of system, identify capacity in tonnes per hour, and
 - indicate pre-processing of waste required and processing required after proposed operation
- potential for modular expansion - if so, what capacity
- estimated footprint of facilities of proposed capacity, and
- footprint of minimum modular expansion unit

REOI Information Requests - Proponent Information

Proponent Information

- Company name and parent companies
- Country of incorporation
- Technology/process name, and any patents
- Contact information, names, address, phone, fax, e-mail, etc.

Screening & Evaluation Criteria

- Offering proponents an opportunity to provide input to the design of the subsequent procurement stages (RFQ and RFP)
- Comment on screening & evaluation criteria

Other Information For Bid Preparation

- Indicate any other specific information that would be helpful for proposal preparation

Proposed Screening Criteria for RFQ

- ⌘ Statement up front that **No screening** of REOI submissions
- ⌘ RFQ submissions to be screened
- ⌘ Proposed criteria as follows
- ⌘ Proponents asked to provide comments on proposed criteria

Technical & Operational

- ⌘ Demonstrated Operating Experience
- ⌘ Proposed Capacity
- ⌘ Meet Ontario Regulations
- ⌘ Not Incineration
- ⌘ Not Landfill

Proponent Capability

- ⌘ Financial Strength
- ⌘ Insurability
- ⌘ References
- ⌘ Signatures

Proposed RFQ Screening - Technical & Operational

Experience operating at pilot scale

- ☒ Minimum design throughput 40 kg/hr or about 1 tonne per day
- ☒ At least 1 year operation
- ☒ Demonstrate operation achieved at least 75% of design capacity
- ☒ MSW feedstock similar in composition to profile provided
- ☒ MSW defined as:
 - ☒ residential, ABCD, commercial
 - ☒ post source separation programs
 - ☒ projected profile provided
- ☒ Must provide:
 - ☒ operating data demonstrating stated specified conditions
 - ☒ operating data showing all inputs & emissions (gas, liquid, solid)
 - ☒ independent verification and assessment of operating data
 - ☒ commercialization/scalability

Proposed RFQ Screening - Technical & Operational

Proposed Capacity

- ☒ Applies to system size - not contract size
- ☒ Minimum of 50,000 tonnes per annum of mixed residual MSW (~ composition profile provided)
- ☒ Maximum of 200,000 tonnes per annum of mixed residual MSW (~ composition profile provided)
- ☒ Contract capacity up to 400,000 tonnes per annum of mixed MSW
- ☒ Note that vendors of individual components may submit EOIs, but screening for complete systems will be undertaken at the RFQ and RFP stages.

Proposed RFQ Screening - Technical & Operational

Meet Ontario Regulations

- ☑ Must be able to meet all applicable Ontario environmental and waste management Regulations
- ☑ City will provide sample list of regulations
- ☑ Must provide operating data, with a 3rd party assessment, that process would be able to meet regulations on scale-up

Proposed RFQ Screening - Technical & Operational

Not Incineration

General statements in REOI:

- Exclude incineration
 - Council direction
 - Contractual requirements
- Include excerpts from Republic disposal contract
 - new & emerging technologies allowed
 - incineration is not allowed
 - definition of incineration*
- Specific criteria to be developed for RFQ

* Definition in City of Toronto Disposal Contract with Republic:

“an engineered process that uses combustion (i.e. thermal oxidative degradation), of the organic matter in solid waste where the molecular integrity of solid waste is broken down into volatile gases and such gases are destroyed through a process of rapid exothermic chemical reaction between an organic substance and oxygen under high temperature conditions in the presence of excess oxygen such that the end-products of the carbon and hydrogen present in the solid waste are in the form of carbon dioxide and water.”

(Taken from disposal contract with Republic which was approved by Council in 2000)

Proposed RFQ Screening - Technical & Operational

Not Landfill

General statements in REOI:

- ☒ Exclude landfill
 - ☒ Council direction
 - ☒ Contractual requirements
- ☒ Include excerpts from Republic disposal contract
- ☒ Specific criteria to be developed for RFQ
- ☒ Processing may result in residual requiring landfill, but this provision is to exclude provision of the landfill capacity

Proposed RFQ Screening - Proponent Capability

Financial Strength

- ☒ **Financial Record** - good records demonstrated by audited financial statement (or equivalent)
 - ☒ 3 years
- ☒ **Capability to Execute Project** - Letter from proponent's financial institution stating that proponent is capable of executing proposed project
- ☒ **Ability to Obtain Surety** - Letters stating that proponent can obtain letter of credit or bonds to cover bids and performance
 - ☒ scaled to undertaking
 - ☒ City team to specify requirements
- ☒ Must be provided by prime member of team

Proposed RFQ Screening - Proponent Capability

Insurability

- ☒ Letter stating liability insurance can be obtained
 - ☒ City team will set level

References

- ☒ Incorporation in Ontario
- ☒ References - prime proponent not technology
 - ☒ municipalities
 - ☒ environmental regulators

Signatures

- ☒ Signatures from signing officers of each team member

Proposed Evaluation Criteria for RFP

- ⌘ Statement up front that **No evaluation** of REOI submissions
- ⌘ RFP submissions to be evaluated
- ⌘ Proposed broad areas in which City will be evaluating submissions as follows
- ⌘ Evaluation criteria to be further developed before RFQ/RFP
- ⌘ Proponents asked to provide comments on proposed criteria

Proposed Evaluation Criteria

- ⌘ Technological Viability
- ⌘ Environmental Performance
- ⌘ Cost
- ⌘ Siting - no site information to be provided at this stage
- ⌘ Public Acceptability
- ⌘ Risk/Uncertainty

Proposed RFP Evaluation - **Technological Viability**

☒ **Development status**

- ☒ stage of development & potential for scale-up

☒ **Reliability**

- ☒ consistency of operation, products & emissions
- ☒ how process responds to upsets

☒ **Flexibility**

- ☒ varying feed composition & quantity
- ☒ short-term & long-term
- ☒ all components of proposed system
- ☒ how might be modified to accommodate future changes

- ☒ Must provide detailed, independently verified operating data demonstrating specified conditions
- ☒ Must be willing to allow City representatives to visit facilities
- ☒ Must be willing to test Toronto's residual waste

Proposed RFP Evaluation - Environmental Performance

Preamble:

- ☒ City seeking to improve environmental performance of waste management system
- ☒ City intends to evaluate alternative technologies within the waste management system with respect to lifecycle inventory

Products

- ☒ Identify & quantify products, material & energy
- ☒ Market potential
 - Identify market status
 - Identify agreements

Emissions

- ☒ Identify & quantify all emissions (gas, liquid & solid)
- ☒ Describe potential for odours, dust & other nuisances from all components of process & mitigation measures

- ☒ Must provide independently verified operating data and lab analyses
 - ☒ identifying measurement methods
- ☒ City will indicate (likely shortly after REOI released) the types of testing and measurement protocols that will be required
 - ☒ to be posted on City web-site
 - ☒ Proponents that are about to undertake tests should check the web-site for specifications or contact the City

Proposed RFP Evaluation - Cost

Net cost per tonne raw feed

- capital, labour & operating cost less revenues for products (material & energy)

Requirements of City

- resources
- ownership
- operation
- approvals

For City-owned option

- Total Capital Cost for entire facility and for all major components

For City-operated option

- Operating cost per tonne raw feed

- labour
- material & energy inputs
- maintenance costs
- costs for managing emissions, including solid residuals

For Private operation

- Minimal acceptable price for heat & power

Proposed RFP Evaluation - Siting & Risk/Uncertainty

Siting

- ☒ Footprint of facility of proposed capacity
- ☒ Comment that depending on the approach to the environmental assessment (EA) and approvals process adopted by the City, siting may be considered only after selection of a technology or, sites (possible City and proponent sites) may be considered in the evaluation of proposals.
- ☒ No site information is requested at REOI stage

Risk/Uncertainty

- ☒ General comment that will be developing criteria and requesting information to assess risk