

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON OCTOBER 4, 2016
FROM:	JAY STANFORD, M.A., M.P.A. DIRECTOR, ENVIRONMENT, FLEET & SOLID WASTE
SUBJECT	UPDATE AND NEXT STEPS: LONDON WASTE TO RESOURCES INNOVATION CENTRE AND GREEN SHIELDS ENERGY

RECOMMENDATION

That on the recommendation of the Director, Environment, Fleet & Solid Waste, this report **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

Relevant reports that can be found at www.london.ca under City Hall (Meetings) include:

- Preliminary Concept for a London Waste to Resources Innovation Centre (February 3, 2015 meeting of the Civic Works Committee (CWC), Item #4)
- Memorandum of Understanding with Green Shields Energy (Examining the Role of a Waste Diversion Technology) (February 3, 2015 meeting of the CWC, Item #5)
- Update – Key Solid Waste Management Initiatives (December 16, 2014 meeting of the CWC, Item #12)
- Interim Waste Diversion Plan (July 21, 2014 meeting of the CWC, Item #18)

STRATEGIC PLAN 2015-2019

Municipal Council has recognized the importance of solid waste management, climate change, other related environmental issues and innovation in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)). With respect to this CWC report, three of the four Areas of Focus address resource recovery from residential waste using innovative technologies:

Building a Sustainable City

- Strong and healthy environment

Growing our Economy

- Local, regional, and global innovation

Leading in Public Service

- Proactive Financial Management
- Excellent service delivery

BACKGROUND

PURPOSE

The purpose of this report is to provide CWC and Council with an update on the London Waste to Resource Innovation Centre and the non-binding Memorandum of Understanding (MoU) between the City of London and Green Shields Energy (GSE) including the next steps. This report partially addresses CWC Deferred Matters File #36.

CONTEXT:**February 9, 2015 Council Direction - London Waste to Resources Innovation Centre**

At its February 9, 2015 meeting, Council approved and adopted the following recommendation with respect to the London Waste to Resources Innovation Centre:

- a) *the concept of a London Waste to Resources Innovation Centre BE APPROVED IN PRINCIPLE; it being noted that the Centre would build upon the numerous innovative activities that have already occurred to date and are being planned for 2015 and 2016;*
- b) *the Civic Administration BE DIRECTED to:*
 - i) *identify potential partners, projects, resource requirements and funders;*
 - ii) *obtain initial feedback from potential partners; and,*
 - iii) *develop a scope of work for the London Waste to Resources Innovation Centre concept; and,*
- c) *the Civic Administration BE DIRECTED to report back with a proposed scope of work and funding plan for the London Waste to Resources Innovation Centre.*

It is also worth noting that the London Waste to Resources Innovation Centre is listed as a component of London's Strategic Plan 2015-2019 under Local, regional and global innovation.

February 9, 2015 Council Direction - Memorandum of Understanding with Green Shields Energy (GSE)

At its February 9, 2015 meeting, Council approved and adopted the following recommendation with respect to GSE's proposal:

"...authorize and approve a Memorandum of Understanding with Green Shields Energy with respect to advancing our joint waste conversion, resource and energy recovery objectives with the mutual understanding that the combined expertise, influence and commitment are better applied together to support common goal..."

DISCUSSION**Update - London Waste to Resources Innovation Centre (LWRIC)**

The primary goals of LWRIC are to:

- build on the existing foundation of traditional and innovative projects to divert waste from the landfill and create value added products from waste; noting that many of these activities have been occurring in the London area for more than 15 years,
- create a focal point (location or locations) for the ongoing examination of innovative solutions for waste reduction, resource recovery, energy recovery and/or waste conversion,
- establish partnerships and collaborations between government, academia and businesses to build on existing strengths to create opportunities to prevent waste and to solve existing waste management challenges, and
- be known as a centre of excellence with shared facilities and resources providing leadership, implementing best practices, undertaking leading edge research, providing support and/or training, and providing resources for students in the various fields of resource and waste management.

Activities and Accomplishments in the last 18 months

The table below summarizes the progress made in a number of key areas. City staff would like to recognize the ongoing work and support received from Dr. Franco Berruti, Institute for Chemicals and Fuels from Alternative Resources (ICFAR), Western University.

Area of Activity	#	Details
Academic Research Projects and Presentations	15	Students from the Faculties of: <ul style="list-style-type: none"> • Engineering • Science • Social Sciences
Projects/initiatives completed or in progress	5	<ul style="list-style-type: none"> • Maximizing Resource Recovery from Waste Through Biogas and RNG Production, a project partially funded by the Federation of Canadian Municipalities (FCM) Green Municipal Fund with support from the Canadian Biogas Association • Two audits/assessments of packaging materials at the City's Material Recovery Facility (MRF) • Establishment of an internal network of 19 internationally recognized experts from Western's Faculties of Engineering, Science, Social Science, and the Schulich School of Medicine & Dentistry, coordinated by Dr. Berruti • Establishment of a Municipal Working Group for Mixed Waste Processing (7 Ontario municipalities) • Avoiding food waste, an emerging collaboration with Western University and potentially input for the local Food Policy Council
Presentations promoting LWRIC	4++	<ul style="list-style-type: none"> • FCM Sustainable Communities Conference (Feb. 2015) • Several internal presentations by ICFAR staff to other faculties at Western University (2015/2016) and at various conferences around the world • Converting Wastes to Resources Through Sustainable Engineering Workshop, Western University (April 2016) • Resource Recovery Partnership Workshop, University of Waterloo (June 2016)
Businesses and Associations expressing interest in the LWRIC	10+	Includes several local business, Ontario based businesses and 1 European company
Memorandum of Understanding approved	1	Green Shields Energy (February 2015)
Memorandum of Understanding under development	1	Institute for Chemicals and Fuels from Alternative Resources (ICFAR), Western University
Funding opportunities being examined	4	<ul style="list-style-type: none"> • Sustainable Development Technology Canada • Federation of Canadian Municipalities • Ontario Research Fund Research Excellence Program • Natural Sciences and Engineering Research Council (NSERC) Collaborative Research and Development (CRD) Fund • Industrial Contracts

Two challenges have been experienced over the 18 months that have impacted the timeline for completing a Business Plan for the LWRIC:

1. Available Resources

City staff provide as much time as possible to this initiative. Due to existing workload requirements, this means that some activities on this project move slower than originally planned and proactive work is delayed.

2. Provincial and Federal Government Legislation, Regulations and Programs

The specific details and regulations under several key pieces of legislation have not been announced including:

Legislation/ Regulations/ Programs	Status
<i>Waste Free Ontario Act</i>	Passed in June 2016. Next steps include finalizing the draft Strategy for a Waste-Free Ontario: Building the Circular Economy and development of regulations to implement the Act.
Ontario Climate Change Action Plan	Released in June 2016, the Plan identifies needs in areas such as: <ul style="list-style-type: none"> • Support innovation and commercialization of new low-carbon technologies • Reduce emissions from waste and move Ontario towards a circular economy • Help the agri-food sector adopt low-carbon technologies, and • Proposing a renewable natural gas content requirement for the province's natural gas supply from sources such as landfills and municipal organics management collection. Details on how this will be implemented are expected in 2017.
Ontario Cap and Trade Program	The first compliance period begins in January 2017, with the first auction scheduled for March 2017. The province will be inviting feedback on a draft regulatory proposal on offset credits, offset protocols, and the rules to apply for offset credit creation. Protocols related to organics management are expected, but it is not known whether protocols for thermal energy-from-waste (e.g., incineration and other thermal technologies) will be developed.
Federal Climate Change Strategy	Canada-wide consultation program nearing completion followed by drafting a strategy.

This creates uncertainty on direction for Ontario businesses and associations and for foreign companies that wish to invest in Ontario and parts of Canada.

Next Steps

The key next steps for this initiative include:

- Completing a draft MoU with ICFAR and submitting at a future CWC meeting (late fall 2016 is the target),
- Developing an improved marketing campaign in conjunction with ICFAR and other faculties at Western University (late fall 2016 is the target), and
- Developing a phased business plan for LWRIC that is reflective of the existing challenges and uncertainties for submission by mid-2017 including operational requirements, funding opportunities, synergies with existing expenditures and investments at the City of London and ICFAR, expected results, and funds required to grow LRWIC.

Update - Memorandum of Understanding (MoU) with Green Shields Energy (GSE)

The current MoU, in effect to December 31, 2017, outlines the role of the City and GSE in taking the initial steps towards:

- developing a mutually beneficial relationship for a potential waste conversion technology that could assist municipalities in addressing advanced waste diversion challenges, renewable energy generation, waste disposal needs, and climate change impacts, and
- identifying and addressing the requirements that satisfy the Ministry of the Environment & Climate Change (MOECC) for a pilot demonstration project proposed to convert household garbage and related materials into an energy source (e.g., syngas, renewable natural gas, etc.) using a gas phase reduction (GPR) technology.

The MoU was the first step in the process towards developing a pilot scale facility. A formal agreement approved by Council will be required before proceeding with any pilot project facility. City staff have been fulfilling the requirements of the current MoU and meeting regularly with GSE representatives. GSE has engaged MOECC officials and Federal government officials with respect to the technology, potential investors in a pilot project facility and continues to make refinements to its application that would be required for a Pilot Project Environment Compliance Approval (ECA). City staff would like to recognize the ongoing work and commitment to this project by Jeffrey Shields, President & CEO, Green Shields Energy and Dr. Doug Hallett.

Over the course of these discussions and based on the proposed system design, GSE has approached the City about increasing the size of the proposed pilot project facility from 1 tonne per day to 50 tonnes per day. GSE wants to increase the size of the pilot project facility to allow them to more accurately determine the viability of a full size facility including environmental benefits (e.g., greenhouse gas reduction) and to demonstrate this technology at a scale that will make municipalities, businesses and investors comfortable that it will work on a commercial scale.

All activities will occur indoors in a fully enclosed facility to be located next to the MRF. The Pilot Project tonnage to be managed at this facility represents between 5 and 10 percent of the incoming tonnage managed at the W12A Landfill.

All required documentation is currently being prepared by GSE, in consultation with City staff, to meet the requirements of the MOECC, the governing agency for all waste approvals in Ontario. Specific requirements must be met for a pilot project ECA including sign off from the municipality confirming “...*the Municipality has no objection to the construction of the works in the Municipality.*” The following timeline is being followed:

Key Dates	Key Items and Action
October 4	Civic Works Committee - Staff Update report (GSE and London Waste to Resources Innovation Centre and Green Shields Energy)
October 11	Council meeting
October 20	Provide update to the W12A Public Liaison Committee
November/ December	Staff Report submitted to CWC and Council requesting Municipal Council support the GSE application to MOECC for a Pilot Project (review period typically between 6 months and one year)
December	Provide update to the W12A Public Liaison Committee
Quarter 1 2017	GSE and City begin work on: <ul style="list-style-type: none"> • Amendments to MoU for submission to CWC/Council for approval • Operating Agreement between GSE and the City of London for submission to CWC/Council for approval

ACKNOWLEDGEMENTS

This report was prepared with assistance from Mike Losee, Manager – Division Manager Solid Waste Management.

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