

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON OCTOBER 24, 2017
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR - ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER
SUBJECT:	LANDFILL GAS UTILIZATION – UPDATE ON FEED-IN TARIFF (FIT) PROGRAM APPLICATION FOR A 500KW LANDFILL GAS POWER PLANT & REQUEST FOR AUTHORIZATION TO EXECUTE FIT CONTRACT

RECOMMENDATION

That, on the recommendation of the Managing Director, Environmental & Engineering Services and City Engineer and on the advice of the Director, Environment, Fleet and Solid Waste the following actions **BE TAKEN** with respect to development of a 500 kilowatt (kW) Power Plant at the W12A Landfill:

- a) the attached proposed By-law (Appendix A) **BE INTRODUCED** at the Municipal Council Meeting of October 30, 2017 to approve the standard Feed-In Tariff Contract (FIT Contract) substantially in the form of as approved by the City Solicitor, and to authorize the Mayor and City Clerk to execute the Agreement on the City's behalf once the official offer notice is received from the Independent Electricity System Operator, and to delegate authority to the Managing Director, Environmental and Engineering Services and City Engineer, or their written designate, to execute all documents as required as part of obtaining a Renewable Energy Approval and a Connection Agreement with the local power distribution company (London Hydro);
- b) the Civic Administration **BE AUTHORIZED** to issue a Request for Proposals (RFPs) for the Design, Build and Operation of a 500 kW Power Plant at the W12A Landfill Site, noting that revenue over the life of the Power Plant will cover all costs (e.g., technical consultant, City project manager, capital costs, operating costs) and generate a surplus;
- c) the Civic Administration **BE AUTHORIZED** to allocate \$75,000 per year for four years to partially offset the cost of a senior contract employee to manage the development, approval and implementation of the 500 kW Power Plant and related capital projects;
- d) the financing for the work identified in (c), above, **BE APPROVED** in accordance with the "Sources of Financing Report" attached hereto as Appendix "B"; and
- e) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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Relevant reports that can be found at www.london.ca under City Hall (Meetings) include:

- Municipal GHG Challenge Fund Applications, October 24 2017, meeting of the Civic Works Committee (CWC), included on the agenda with this report.
- Local Renewable Electricity Generation Projects Seeking Ontario Feed-In Tariff Contracts Municipal Council Blanket Support Resolution Landfill Gas Projects on Active & Closed landfill Sites Feed-In-Tariff (FIT) 5.0 Prescribed Forms, October 31, 2016 meeting of the Planning and Environment Committee (PEC), Agenda Item #3.

- Landfill Gas Utilization Update and Next Steps, October 4, 2016 meeting of the CWC, Agenda Item #12.
- Landfill Gas Utilization Status of Opportunities and Next Steps, March 29, 2016 meeting of the CWC, Agenda Item #16.
- Landfill Gas Utilization - Request for Qualifications, August 25, 2014 meeting of the CWC, Agenda Item #20.
- Landfill Gas Utilization - Next Steps – Preparing for a Feed-In-Tariff Submission, March 18, 2013 meeting of the CWC, Agenda Item #12.

STRATEGIC PLAN 2015-2019

Municipal Council has recognized the importance of solid waste management, climate change and other related environmental issues 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 utilization of landfill gas generated at the W12A Landfill:

Building a Sustainable City

- Strong and healthy environment

Growing our Economy

- Local, regional, and global innovation

Leading in Public Service

- Excellent service delivery

BACKGROUND

PURPOSE

The purpose of this report is to:

- provide an update on the application submitted to the Independent Electricity System Operator's (IESO) Feed In Tariff (FIT) program for a 500 kilowatt (kW) landfill gas power plant (Power Plant) at the W12A Landfill Site;
- request approval from Committee and Council for the Mayor and City Clerk to execute the standard Feed-In Tariff Contract (FIT Contract) once the official offer notice is received from the IESO;
- delegate authority to the Managing Director, Environmental and Engineering Services and City Engineer, or written designate to execute all documents required to secure a Renewable Energy Approval and Connection Agreement with the local power distribution company (London Hydro), for the Power Plant;
- request approval from Committee and Council to hire an internal project manager (contract) and to issue a Request for Proposals (RFPs) for the Design, Build and Operation of a 500 kW Power Plant at the W12A Landfill Site, noting that initial construction cost will be financed from Gas Tax, but over the duration of the 20 year contract the project will provide a revenue stream sufficient to recover (i.e., simple payback) all consulting, project management, development and construction costs within approximately 10 to 11 years.

CONTEXT

October 11, 2016 Council Direction

At its October 11, 2016 meeting, Council adopted the following recommendation with respect to the landfill gas utilization and the submission of an application to the IESO for development of a 500 kW Power Plant at the W12A Landfill Site:

- a) *the Civic Administration **BE AUTHORIZED** to prepare an application to the Independent Electricity System Operator's Feed-In Tariff Program for a 500 kilowatt landfill gas power plant which will use about 20 percent of the annual landfill gas produced;*
- b) *the Civic Administration **BE AUTHORIZED** to undertake all administrative acts in regard to the Feed-In Tariff Program application;*
- c) *the attached proposed By-law (Appendix 3) **BE INTRODUCED** at the Municipal Council Meeting of October 11, 2016 to approve and authorize the execution of documents with respect to Prescribed Forms for participation in Ontario's Feed-In Tariff program between the Independent Electricity System Operator and The Corporation of the City of London;*
- d) *Civic Administration **BE DIRECTED** to examine renewable natural gas production as the preferred option for utilization of the remaining volume of landfill gas at the W12A Landfill;*

FIT Application

The application to the Feed-In Tariff (FIT) Program is for a 20 year contract for a 500 kW power plant. The power plant would produce enough renewable electricity to power over 400 homes per year. A summary of key features of the power plant are:

- expected capital cost of between \$3.1 and \$3.5 million;
- City project management and project integration costs of \$300,000 over 4 years;
- technical consulting costs for an RFP to design, build and operate a 500 kW Power Plant; undertake a renewable energy approval (REA); and contract administration estimated between \$375,000 and \$425,000;
- expected operating costs over the 20 year project life of \$7.1 million (approximately \$355,000 per year);
- expected revenue over the 20 year project life of \$14.5 million (approximately \$724,000 per year); and
- will use between 15% and 20% of landfill gas currently being captured.

Pictures 1 and 2 provide a visual indication of the size of the installations. Both these facilities are in operation in Ontario (Milton, Region of Halton and North Bay) and are about twice the size of what is being proposed for London.



Picture 1 is the 2,100 kW (2.1 MW) landfill gas to electricity facility at the Halton Region Waste Management Site, Milton, Ontario



Picture 2 is the 1,600 kW (1.6 MW) landfill gas to electricity facility at the Merrick Landfill, North Bay, Ontario

Remaining Landfill Gas (80% to 85%)

The CWC report *Municipal GHG Challenge Fund Applications* on this CWC Agenda (October 24, 2017) is seeking approval to submit an application for funding to build a plant to upgrade the remaining landfill gas (50% methane content) collected at the W12A Landfill to pipeline-quality renewable natural gas (RNG) (over 95% methane) for pipeline injection. This RNG could provide about 440,000 gigajoules per year of heat energy, equivalent to the natural gas used by about 5,250 homes.

A portion of this RNG could also be allocated for use by City of London fleet vehicles as well as municipal facilities to help achieve near net-zero emissions for municipal operations. This would use up about half of the available RNG. The RNG production facility would be designed to accommodate potential biogas and/or syngas from future organics management facilities and solid waste management facilities. This potential project, if funded, represents the preferred approach to address Council Resolution d) from October 2016.

DISCUSSION

Notification of Upcoming Offer

On September 20, 2017, the City was notified that the IESO is prepared to offer the City of London a FIT Contract for a 500 kW Power Plant at the W12A Landfill. It was one of 390 new FIT Contracts that will be offered in the coming weeks as part of the FIT 5 procurement process and the only one dealing with landfill gas.

The City will have 20 business days to execute and return the contract once the offer has been made. The contract requires (notwithstanding limited provisions for extension that may or may not be subject to penalties) the power plant to be commercially operational within three years of the contract being executed. This will involve:

- releasing a Request for Proposals for the Design, Build and Operation of a 500 kW Power Plant;
- selection of a preferred vendor;
- obtaining a Renewable Energy Approval for the facility;
- a connection agreement with London Hydro for access to the local power distribution system; and
- construction and commissioning of the facility.

The time lines are tight as just the Renewable Energy Approval from the Ontario Ministry of the Environment and Climate Change (MOECC) is expected to take 12 months or longer.

Execution of Agreement

The FIT Contract is a standardized agreement with the exception of customized cover pages identifying applicant and project specific details that the IESO uses for all successful FIT Program applications. The FIT Contract (excluding project specific customized cover pages) is available in PDF form on the IESOs website and has been reviewed by Legal Services. Once the official offer notice is received the customized cover pages of the FIT Contract will be provided to Legal Services for review.

City Project Management and Integration

Development of a landfill gas power plant with connection to the local power distribution system in general is a complex and specialized undertaking. Development of the 500 kW Power Plant at the W12A Landfill is further complicated by only using approximately 15% to 20% of the available landfill gas generated at the W12A Landfill. This will require integration of a landfill gas distribution system component of the project to ensure that the landfill gas required to fuel the 500kW Power Plant is optimally supplied to limit the amount of plant downtime. The remaining gas would be delivered to either the existing flare or any other utilization technology that is developed, such as a Renewable Natural Gas production facility.

Hiring a contract, senior project manager will ensure that all capital works associated with landfill gas capture collection and utilization over the next approximately four years are developed efficiently and integrated appropriately. This approach (dedicated contract employee for discrete and specialized projects) has been effectively utilized for two other projects involving the W12A Landfill site, specifically the Environmental Screening for the expansion of the service area for the W12A Landfill and the current Environmental Assessment for expansion of W12A Landfill.

City staff are recommending that \$75,000 per year be allocated for four years to partially offset the cost of a senior contract employee to manage the development, approval and implementation of the Landfill Gas Power Plant and related capital projects.

RFP for a Technical Consultant

The City will require a technical consultant to assist with three phases of work:

- Preparation and evaluation of an RFP to design, build and operate a 500 kW Power Plant;
- Undertake a renewable energy approval as prescribed by the Provincial Government; and
- Contract administration for the Power Plant build.

Some tasks will be undertaken directly by the proposed City contract employee. These details will be noted in the RFP for technical consulting services.

RFP for the Design, Build and Operation of a 500 kW Power Plant

It is proposed to seek a vendor who will design, build and operate the power plant. Coupling construction and operation of the constructed facility for a certain duration is a standard practice for these types of projects. Development of landfill gas power plant requires specialized knowledge and experience and requiring the constructor to operate the facility for a defined period of time ensures construction of an efficient and robust facility.

Once constructed and commissioned, City staff are recommending that the successful proponent be required to operate the 500 kW Power Plant for seven years plus three, one-year extension options at the sole discretion of the City. This length of term is consistent with comparable projects such as the design, build and operations of the City's material recovery facility (MRF).

The operational component of the RFP shall include appropriate incentives for the successful proponent to limit facility downtime and thereby maximize revenue generation. Subject to Committee and Council approval, it is expected that the RFP will be released and awarded in the first quarter of 2018.

ACKNOWLEDGEMENTS

This report was prepared with assistance from Laurie Green, Financial Business Administrator; Alan Dunbar, Manager, Financial Planning & Policy; Jamie Skimming, Manager, Air Quality and Andre Joseph, Manager, Solid Waste Engineering & Planning.

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Appendix A A By-law to authorize the Mayor and City Clerk to execute the IESO standard Feed-In Tariff Contract for development of 500 kilowatt power plant utilizing landfill gas from the City's W12A landfill at 3502 Manning Drive, and authorizing the Managing Director, Environmental & Engineering Services & City Engineer of their written designate to execute all documents required to obtain a Renewable Energy Approval and a Connection Agreement with the local power distribution company.

Appendix B Source of Financing

Appendix A – Authorizing By-law

Bill No.
2017

By-law No.

A by-law to approve and authorize the execution of an agreement between the City of London (City) and the Independent Electricity System Operator (IESO), under the Feed-In Tariff (FIT) Program with respect to development of a 500 kilowatt landfill gas fuelled power plant at the City of London's W12A Landfill and to delegate authority to the General Manager of Environmental & Engineering Services & City Engineer, or their written designate, to execute all documents required as part of obtaining a Renewable Energy Approval and a Connection Agreement with the local power distribution company (London Hydro) as they relate to development of a 500 kilowatt landfill gas fuelled power plant.

WHEREAS section 5(3) of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, provides that a municipal power shall be exercised by by-law;

AND WHEREAS section 9 of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act;

AND WHEREAS it is deemed appropriate for The Corporation of the City of London (the "City") and the Independent Electricity System Operator (IESO) to enter into an agreement to develop a 500 kilowatt power plant fuelled by landfill gas from the City's W12A Landfill at 3502 Manning Drive;

AND WHEREAS the Municipal Council deems it appropriate to authorize the General Manager of Environmental & Engineering Services & City Engineer, or their written designate, to execute all documents required as part of obtaining a Renewable Energy Approval and a Connection Agreement with the local power distribution company (London Hydro) as they relate to development of a 500 kilowatt power plant fuelled by landfill gas from the City's W12A Landfill at 3502 Manning Drive;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. The Mayor and the City Clerk are hereby authorized to execute the standard Independent Electricity System Operator Feed-In Tariff Contract, substantially in the form of, as approved by the City Solicitor, and attached hereto as Schedule "A", for the development of a 500 kilowatt power plant fuelled by landfill gas from the City's W12A Landfill at 3502 Manning Drive.
2. The General Manager of Environmental & Engineering Services & City Engineer, or their written designate, is hereby authorized to execute all documents required to obtain a Renewable Energy Approval and a Connection Agreement with the local power distribution company (London Hydro) as they relate to the agreement to develop a 500 kilowatt landfill gas power plant authorized and approved for execution substantially in the form of, as approved by the City Solicitor in section 1, above.

3. This by-law shall come into force and effect on the day it is passed.

PASSED in Open Council October 30, 2017

Matt Brown
Mayor

Catharine Saunders
City Clerk

First reading – October 30, 2017
Second reading – October 30, 2017
Third reading – October 30, 2017