



**STAFF REPORT
ACTION REQUIRED**

Authority to Enter into Lease Agreement and Biogas Utilization Agreement with Toronto Hydro Energy Services Inc. and Ontario Plants Propagation Ltd. - Green Lane Landfill

Date:	March 31, 2010
To:	Executive Committee
From:	General Manager, Solid Waste Management Services Chief Corporate Officer
Wards:	All
Reference Number:	p:/2010/swms/April/010EC

SUMMARY

At its meeting on November 30, December 1, 2, 4 and 7, 2009, City Council directed the General Manager, Solid Waste Management Services to enter into sole source negotiations with Toronto Hydro Energy Services Inc. and Ontario Plants Propagation Ltd., in partnership, (herein referred to as “THESI/OPPL”) for a contract to design, build, own and operate a new cogeneration system to utilize the landfill gas from the Green Lane Landfill and to report back to City Council on the results of the negotiations.

The purpose of this report is to report on the results of the negotiations with THESI/OPPL and obtain City Council authority to enter into a Lease Agreement and a Biogas Utilization Agreement with THESI/OPPL to lease approximately 0.5 Ha of the Green Lane Landfill buffer lands to THESI/OPPL and to supply to THESI/OPPL the landfill gas generated by the Green Lane Landfill, and possible future quantities of digester gas that may be produced at a mixed waste processing facility that may be constructed on the buffer lands, for the construction and operation of a new biogas utilization system to convert biogas into electricity and heat.

RECOMMENDATIONS

The General Manager, Solid Waste Management Services and the Chief Corporate Officer recommend that:

1. Authority be granted for the City to enter into a Lease Agreement with Toronto Hydro Energy Services Inc. and Ontario Plants Propagation Ltd., for the lease of approximately 0.5 Hectare of the Green Lane Landfill buffer lands , substantially on the terms set out in Attachment 1 and such other terms and conditions as may be deemed appropriate by the Chief Corporate Officer, and in a form satisfactory to the City Solicitor, and that each of the Chief Corporate Officer and the Director of Real Estate Services be authorized severally to execute the Lease Agreement on behalf of the City.
2. Authority be granted for the City to enter into a Biogas Utilization Agreement with Toronto Hydro Energy Services Inc. and Ontario Plants Propagation Ltd., substantially on the terms set out in Attachment 2 and such other terms as may be satisfactory to the General Manager, Solid Waste Management Services, and in a form satisfactory to the City Solicitor, and that the General Manager, Solid Waste Management Services be authorized to execute the Biogas Utilization Agreement on behalf of the City.
3. Subject to the adoption of Recommendation 1, authority be granted for the City to enter into any other related agreement(s) as may be necessary to give effect to Recommendation 1, on terms and conditions as may be deemed appropriate by the Chief Corporate Officer, and in a form satisfactory to the City Solicitor, and that the Chief Corporate Officer be authorized to execute any such agreements on behalf of the City.
4. Subject to the adoption of Recommendation 2, authority be granted for the City to enter into any other related agreement(s) as may be necessary to give effect to Recommendation 2, on terms satisfactory to the General Manager, Solid Waste Management Services, and in a form satisfactory to the City Solicitor, and that the General Manager, Solid Waste Management Services be authorized to execute any such agreements on behalf of the City.
5. In the event that the Lease Agreement and the Biogas Utilization Agreement referred to in Recommendations 1 and 2 are not executed by 01 January 2011, the General Manager, Solid Waste Management Services be authorized, in his sole discretion, to terminate negotiations with Toronto Hydro Energy Services Inc. and Ontario Plants Propagation Ltd. and to issue a Request for Proposals for a contract to develop and operate a system to utilize biogas from the Green Lane Landfill.

6. The Chief Corporate Officer, in consultation with the General Manager, Solid Waste Management Services, be authorized to provide consent on behalf of the City, as landlord, for the submission of any applications required to be submitted by Toronto Hydro Energy Services Inc. and Ontario Plants Propagation Ltd. for land use approvals in respect of the lands to be leased.
7. The General Manager, Solid Waste Management Services be authorized to provide consent on behalf of the City for the submission of any applications to the Ontario Ministry of Environment for any required environmental approvals.
8. The Chief Corporate Officer be authorized to administer and manage the Lease Agreement, including the provision of any consents, approvals, notices and notices of termination provided that the Chief Corporate Officer may, at any time, refer consideration of such matters (including their content) to City Council for its determination and direction.
9. The General Manager, Solid Waste Management Services be authorized to administer and manage the Biogas Utilization Agreement, including the provision of any consents, approvals, notices and notices of termination provided that the General Manager, Solid Waste Management Services may, at any time, refer consideration of such matters (including their content) to City Council for its determination and direction.

Implementation Points

1. The General Manager, Solid Waste Management Services and the Chief Corporate Officer will continue to negotiate with THESI/OPPL to finalize the Lease Agreement and the Biogas Utilization Agreement.
2. THESI/OPPL will present the commercial terms of the Lease Agreement and the Biogas Utilization Agreement to their respective boards for approval.
3. In the event Council adopts the Recommendations in this report, the Solid Waste Management Services may retain, on a sole source basis, the services of external legal counsel to assist in the final negotiations and preparation of the Biogas Utilization Agreement and any other necessary related agreements, within the financial limits of his delegated authority.
4. Subject to THESI/OPPL getting board approval, the City will enter into the finalized Lease Agreement and Biogas Utilization Agreement prior to January 1, 2011.

Financial Impact

THESI/OPPL will design, construct, own and operate the entire biogas utilization system and will incur all associated capital and operating expenses over the term of the Lease Agreement and the Biogas Utilization Agreement.

These agreements will generate revenue for the City and will not result in additional capital or operating costs for the City.

The City will lease land to THESI/OPPL for the purpose of locating the compressor plant, a portion of the biogas pipeline and, possibly, a generation plant. The City will also supply biogas to THESI/OPPL which THESI/OPPL will convert into electricity and heat.

Lease Revenue

THESI/OPPL will lease approximately 0.5 hectare (or 53,820 square feet) of vacant buffer land of the Green Lane Landfill ("GLL") from the City for an initial term of 25 years. In the first year of the term, the annual rent payment will be approximately \$32,292.00. The annual rental payment will be increased by 2.5 percent for each of the subsequent years of the term and the 10 year extension term, if THESI/OPPL exercises its option to extend the term. The estimated total rental payment revenue for the term and the extension term is \$1,773,741.00. THESI/OPPL will be responsible for all capital and operational costs, so that the lease will be fully net and carefree to the City.

Biogas Royalty Revenue

Under the Biogas Utilization Agreement, beginning in the month in which the cogeneration plant begins operations, which is expected to be July 2013, and in each month of the term thereafter, THESI/OPPL will pay to the City a variable royalty payment. The amount of the variable royalty payment will be a percentage (the "royalty percentage") of the gross revenue received by THESI/OPPL from the sale of electricity produced from biogas supplied by the City.

The monthly variable royalty payment amounts are expected to vary over the term due to changes in the gross revenue received by THESI/OPPL from the sale of the electricity and also due to the tiered structure of royalty percentages.

The amount of electricity which THESI/OPPL will be able to sell will vary due to changes in the quantity and quality of biogas supplied by the City, and possibly also due to unplanned interruptions in THESI/OPPL's ability to utilize the biogas or sell the electricity.

The Biogas Utilization Agreement will establish four tiers of royalty percentage based on the quantity and methane content of the biogas supplied by the City. The highest royalty percentage will apply when the quantity of biogas supplied by the City is near its expected maximum amount and the methane content of the biogas is 45 per cent by volume or greater. Lower royalty percentages will apply when lesser quantities of biogas are supplied or when the methane content of the biogas is less than 45 per cent by volume.

The City and THESI/OPPL have reviewed a financial model of the Biogas Utilization Agreement which applies the variable royalty payment structure described above to the expected implementation schedule of the cogeneration and generation plants and the forecasted future variation in the quantity of biogas available. Based on this analysis, the annual totals of the monthly variable royalty payments due to the City, beginning in 2013 and over the remainder of the term of the Agreement, are expected to vary from approximately \$1,500,000.00 to \$2,300,000.00. The estimated total variable royalty payment for the term excluding the extension period is \$42,679,000.00.

The rental income and variable royalty payments to the City over the term are summarized in Table 1. Estimates of biogas volume derive from a study commissioned by Solid Waste Management Services in 2009, which considered the quantities and types of waste expected to be disposed of at the GLL over its remaining life. Electricity sales were calculated assuming normal losses when converting biogas into electricity and the electricity purchase price currently offered by the OPA's FIT Program applied to all electricity produced from the biogas over the term. The average royalty percentage reflects the top tier royalty percentage which is considered to be reasonable over the term based on current landfill gas production.

Table 1: Summary of Rental Income and Variable Royalty Payments

Year	Rental Income \$	Estimated Biogas Volume (million cubic metres)	Estimated Electricity Sales \$	Average Royalty Percentage	Estimated Royalty Amount \$	Total Estimated City Revenue \$
2011 to 2015 ¹	\$169,737	166	\$33,638,909	15%	\$5,046,000	\$5,215,737
2016 to 2020	\$192,042	347	\$70,620,833	15%	\$10,593,000	\$10,785,042
2021 to 2025	\$217,278	377	\$77,979,304	15%	\$11,697,000	\$11,914,278
2026 to 2030	\$245,831	368	\$77,715,822	15%	\$11,657,000	\$11,902,831
2031 to 2035 ²	\$278,135	113	\$24,575,066	15%	\$3,686,000	\$3,964,135
Total 25 Year Term	\$1,103,022	1371	\$284,529,935	15%	\$42,679,000	\$43,782,022
2036 to 2045 ³	\$670,719	TBD	TBD	TBD	TBD	TBD
Total Term Plus Extension	\$1,773,741	TBD	TBD	TBD	TBD	TBD

Notes:

1. Includes electricity sales in years 2013 to 2015 only. Construction of the biogas utilization system will occur in years 2011 and 2012. Sale of electricity from the cogeneration plant is expected to begin in 2013.
2. Includes electricity sales in years 2013 and 2032 only. The 20-year term of the FIT program contract for electricity from the cogeneration plant will expire in 2032. A different and unknown purchase price will apply to electricity sold in year 2033 and beyond. Electricity revenues expected in 2033 and beyond cannot be estimated at this time and are ‘To be Determined’ and are therefore excluded from this table.

The variable royalty payments will be allocated to the operating budget of the Solid Waste Management Services under the item Disposal Services, Green Lane Landfill account SW0901. Any resultant net operating surplus will be contributed to the Green Lane Landfill Reserve Fund. The rental revenue payments will be allocated to the operating budget of the Real Estate Services Division under the cost centre FA2490.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its May 17, 18 and 19, 2005 meeting, City Council adopted the recommendations in Clause 27 of Policy and Finance Committee Report No. 5, authorizing staff to negotiate agreements with Toronto Hydro Energy Services Inc. ("THESI") to develop cogeneration projects at Dufferin Transfer Station, Ashbridges Bay Treatment Plant, Thackeray Road Landfill and Highland Creek Treatment Plant. The decision document can be found at: <http://www.toronto.ca/legdocs/2005/agendas/council/cc050517/pof5rpt/c1027.pdf>

At its March 3, 4 and 5, 2008 meeting, Council approved Motion M17.8 which reaffirmed the original motion but substituted the Thackeray Landfill with the Green Lane Landfill. This motion also refers to THESI agreeing to compensate the City by sharing any revenues, payments or other subsidies to be generated through the development and operation of projects of this nature. Any funds to be received through the development and operation of the cogeneration project are to be first applied to ensuring that there is no increase in City divisional Operating or Capital costs and second, towards other Council-approved initiatives that would reduce air pollution and greenhouse gas emissions. The decision document can be found at:

<http://www.toronto.ca/legdocs/mmis/2008/cc/decisions/2008-03-03-cc17-dd.pdf>

City Council on November 30, December 1, 2, 4 and 7, 2009, adopted the recommendations in Item PW28.14, authorizing and directing the General Manager, Solid Waste Management Services to enter into sole source negotiations with THESI and Ontario Plants Propagation Ltd., in partnership, for a contract to design, build, own and operate a new cogeneration system to utilize the landfill gas from the Green Lane Landfill, and to report back to City Council on the results of the negotiations. The decision document can be found at:

<http://www.toronto.ca/legdocs/mmis/2009/pw/reports/2009-11-03-pw28-cr.htm#PW28.14>

ISSUE BACKGROUND

In accordance with Council direction, Solid Waste Management Services has, over the past 18 months, been in discussions with THESI and their project partner, Ontario Plants Propagation Ltd. ("OPPL") regarding a THESI-OPPL proposal to develop a cogeneration system to utilize the biogas produced at the GLL.

In 2009, the Solid Waste Management Services completed a comparative assessment of viable options to utilize the biogas generated at the GLL. The study compared utilization options on the basis of financial, environmental and risk criteria and recommended the THESI-OPPL proposal as the preferred option. The recommendations of the study were reflected in the recommendations in Item PW28.14 which were adopted by City Council on November 30, December 1, 2, 4 and 7, 2009 (see Decision History above).

Discussions have centered primarily on the development of a financial model to assess the net financial cost and benefits to the City as well as the development of commercial terms that could form the basis of an eventual Lease Agreement and Biogas Utilization Agreement.

The negotiations between the parties have resulted in the preparation of the commercial terms detailed in Attachments 1 and 2 to this report. It is upon these commercial terms that City staff recommend that negotiations with THESI/OPPL for a Lease Agreement and a Biogas Utilization Agreement be finalized and the Agreements be entered into.

THESI/OPPL will enter into a contract with the Ontario Power Authority ("OPA") under the terms of the Feed-In Tariff (FIT) Program whereby the OPA will purchase the electricity produced by the cogeneration plant over a 20-year period. THESI/OPPL may also enter into a separate contract under the FIT program for the sale of electricity produced by the generation plant.

The terms of the FIT program require that emission reduction credits associated with the electricity purchased under the program be transferred to the OPA. However, the terms of the FIT program leave open the possibility that reduction credits associated with certain aspects of the biogas utilization project need not be transferred to the OPA.

The proposed biogas utilization project will generate emission reduction credits in three ways:

- destruction of methane;
- through the displacement of natural gas in the production of electricity; and
- through the displacement of natural gas in the production of thermal energy (e.g., in the form of hot water);

of which only the second, associated with the displacement of natural gas in the production of electricity, may need to be transferred to the OPA.

THESI/OPPL will take all commercially reasonable steps in entering into contracts with the OPA under the FIT Program in respect of the biogas utilization system, to preserve its rights to all emissions credits not required by the OPA to be assigned to it. Arrangements with THESI/OPPL, as contemplated by the commercial terms outlined in Attachment 2, therefore, require that any emissions credits retained by THESI/OPPL in relation to the biogas utilization system and that are rightfully the property of the City, are transferred back to the City.

This is consistent with the City's Climate Change and Sustainable Energy Strategy, which supports the City's entitlement to emissions credits for projects involving the City's facilities, such as the GLL and Council's earlier direction that THESI/OPPL agree to City ownership of any resultant emission credits not required to be provided to the OPA.

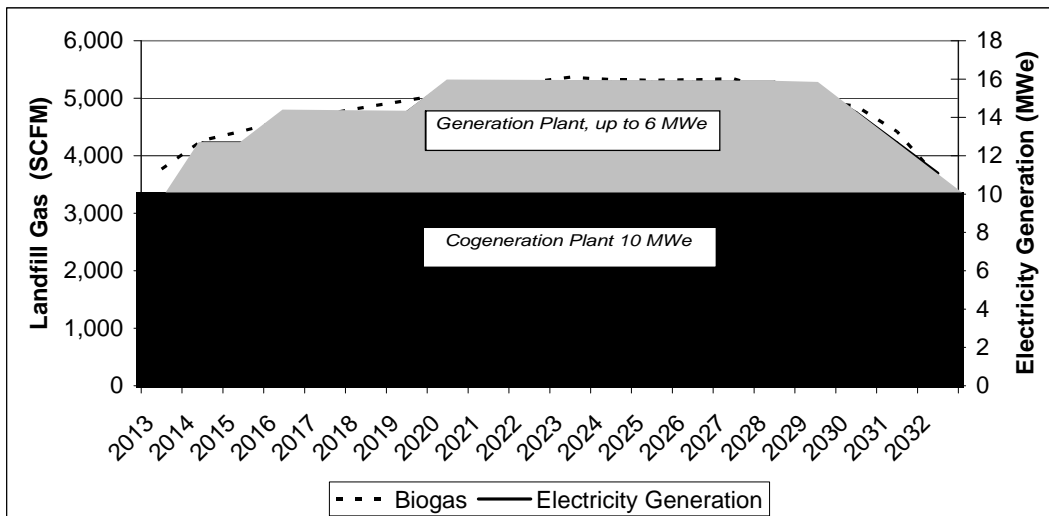
COMMENTS

The GLL began receiving waste in the late 1970s, and will continue to receive waste until 2030 or later depending on future trends in waste generation and whether or not the planned mixed waste processing facility is constructed on the GLL buffer lands. The decomposing organic material present in the buried waste produces a combustible gas, referred to as landfill gas, the majority portion of which is methane. At the GLL, landfill gas is collected in an engineered landfill gas collection system of buried pipes and blowers which draw the gas from the buried waste to a central point at which the collected landfill gas is currently combusted in an enclosed flare.

The GLL is generating landfill gas at an increasing rate and will, by 2013, be producing landfill gas at a rate sufficient to support approximately 10 megawatts of electricity generation (MWe). Equipment for converting landfill gas into electricity of the type to be employed in this biogas utilization system is modular and can be expanded in increments of 1.4 or 1.6 MWe. Therefore, as the rate of landfill gas generation gradually increases, additional electrical generation units can be installed to match the quantity of landfill gas available. The forecasted maximum landfill gas production rate for the GLL would be sufficient to support approximately 16 MWe of generating capacity.

Forecasted landfill gas generation and matching electricity generation capacity is shown in Figure 1. Note that the advent of electricity generation capacity is shown as lagging behind landfill gas availability due to the time required to install the additional generation units.

Figure 1: Forecasted Landfill Gas Supply and Electricity Generation



The mixed waste processing facility proposed for the GLL buffer lands would process the organic fraction of the mixed waste stream by anaerobic digestion and would produce digester gas. The digester gas will be similar in composition to landfill gas and will be compatible with the biogas utilization system described in this report. Forecasts based on the operation of the proposed mixed waste processing facility show that, over the term of the Biogas Utilization Agreement, reductions in landfill gas generation (due to reduced landfilling of organic material) will be mostly offset by digester gas production. Therefore, the scale of the biogas utilization system considered in this report is compatible with the continued operation of the GLL on a status quo basis and also with the development of the proposed mixed waste processing facility.

Solid Waste Management Services and Real Estate Services, assisted by Legal Services, have negotiated the commercial terms outlined in Attachments 1 and 2 which will form the basis for the negotiation of the Lease Agreement and the Gas Utilization Agreement with THESI/OPPL for the construction and operation of the biogas utilization system proposed by THESI/OPPL. The commercial terms outlined in Attachments 1 and 2 are considered to be fair, reasonable and reflective of market value.

The biogas utilization system proposed by THESI/OPPL has 4 main components: (1) a 10 MWe cogeneration plant (i.e., producing heat and electricity) to be constructed on the property of OPPL and to be operational by mid-2013, (2) a pipeline to convey the biogas from the GLL to the OPPL site, (3) a compression plant to be located on the GLL buffer lands on an area to be leased by the City to THESI/OPPL, and (4) a generation plant of up to 6MWe of electrical generation capacity to be constructed either at the GLL buffer lands (on the leased land adjacent to the compression plant) or at the OPPL site when sufficient biogas is available.

The proposed biogas utilization system is illustrated in Attachment 4. THESI/OPPL will lease an area of the GLL buffer lands of approximately 0.5 Ha (or 53,820 square feet) as shown in Attachment 3 on which they will locate the compression plant and, possibly, also the generation plant.

THESI/OPPL will enter into an agreement with the OPA under the current FIT program to sell the electricity generated by the 10 MWe cogeneration plant. THESI/OPPL will also enter into a separate agreement under the current, or the successor or preferred alternative to, the FIT program to sell the electricity generated by the 6MWe generation plant.

The term of both the Lease Agreement and the Biogas Utilization Agreement is twenty-five (25) years to allow for the design and construction of the biogas utilization system, a 20-year operating period as required by the OPA's FIT program, and also for future decommissioning, if necessary. The Agreements will both provide for one ten (10) year extension on the same terms and conditions, except that there will be no further right to extend the Agreement beyond the expiry of the extended term and, since the FIT contract associated with the cogeneration plant will have expired, the variable royalty payment structure will be revised by mutual agreement.

The City's real estate disposal process, as set out in Chapter 213 of the City of Toronto Municipal Code, stipulates that prior to a sale transaction (which includes a lease of 21 years or longer) being approved, the land must be declared surplus, in accordance with City Policy. Real Estate staff has advised that this process is underway and will be completed by the date City Council considers the proposed lease to THESI/OPPL.

The biogas utilization system proposed by THESI/OPPL and the commercial terms of the Lease Agreement and the Biogas Utilization Agreement are subject to approval by Toronto Hydro's and Ontario Plants Propagation Ltd's respective boards. It is anticipated that approval from both boards will be obtained by August, 2010.

CONTACT

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SIGNATURE

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ATTACHMENTS

- Attachment 1 – Commercial Terms of Lease Agreement at Green Lane Landfill Site
- Attachment 2 – Commercial Terms of Biogas Utilization Agreement at Green Lane Landfill Site
- Attachment 3 – Location of Proposed Leased Lands
- Attachment 4 – Proposed Biogas Utilization System