



CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Corporate Assets and Strategic Planning Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	October 17, 2016
SUBJECT/REPORT NO:	Installation of Ground Mounted Solar Panels on Active and Dormant Landfill Sites (PW16020a) (City Wide) (Outstanding Business List Item)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Frank Gazzola Superintendent, Office of Energy Initiatives 905-546-2424 x7518 Tom Chessman Manager, Office of Energy Initiatives 905-546-2424 x2494
SUBMITTED BY:	Geoff Lupton Director, Energy, Fleet & Facilities, Public Works 905-546-2424 x7372
SIGNATURE:	

RECOMMENDATION

- (a) That the City of Hamilton agrees that Hamilton Renewable Power Inc. (HRPI) is moving forward with a Ground Mounted Solar Photo Voltaic (PV) project (the “Solar PV Project”) at the City of Hamilton owned Glanbrook Landfill site, through an application to the Independent Electricity System Operator’s Feed In Tariff 5.0 program (the “IESO FIT 5 Program”);
- (b) That subject to all required approvals and Independent Electricity System Operator (IESO) awarding Hamilton Renewable Power Inc. (HRPI) a contract to participate in the IESO FIT 5 Program, the City of Hamilton provide a loan to HRPI in an amount of approximately \$1.2 million, the amount and interest of which HRPI will be repay to the City of Hamilton through the revenue generated by the PV Project, and that the final details of such loan to be approved by City Council;
- (c) That subject to all required approvals and Independent Electricity System Operator (IESO) awarding Hamilton Renewable Power Inc.(HRPI) a contract to participate in the IESO FIT 5 Program, the City of Hamilton enter into the appropriate land use and access agreements with HRPI, to allow HRPI to design, construct, operate and maintain the PV project at the Glanbrook Landfill site;

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- (d) That all applicable municipal resolutions and declarations contained in Appendix A to Report PW16020a be approved, and that the appropriate City officials be authorized to sign such resolutions and declarations for the purposes of HRPI's application to the Independent Electricity System Operator's (IESO) FIT 5 Program;
- (e) That the General Manager of Public Works be authorized and directed to execute all required documents to implement subsection (c) in a form satisfactory to the City Solicitor; and
- (f) That the Outstanding Business List item related to the Installation of Solar Panels on Active and Dormant Landfill Sites be identified as complete and removed from said List.

EXECUTIVE SUMMARY

Public Works Recommendation Report on the Installation of Ground Mounted Solar Panels on Active and Dormant Landfill Sites (PW16020) recommended that City Staff investigate the feasibility of installing a Ground Mounted Solar Photo Voltaic (PV) project (the "Solar PV Project") at the Glanbrook Landfill site. The conclusions and recommendations of that feasibility study are presented herein.

The result of the feasibility study carried out to evaluate a Solar PV Project for Glanbrook concluded with Staff recommending that the City not pursue a large scale Solar PV Project at the Glanbrook location using the Independent Electricity System Operator's (IESO) Large Renewable Procurement (LRPII) process. In a September 27, 2016 announcement made by the IESO, the Large Renewable Procurement program was cancelled as directed by the Minister of Energy.

As an alternative outlined in the previous Council report, staff has evaluated the opportunity for a smaller scale Solar PV Project at the Glanbrook Landfill location under the FIT 5.0 prescriptive based pricing program. Staff recommends proceeding with a FIT 5.0 application for a 500 kilowatt (kW) DC Solar PV Project and recommends that this project moves forward using Hamilton Renewable Power Inc. (HRPI) to carry out the engineering, procuring and construction. The size of any FIT 5.0 Solar project is capped at 500kW per site and the preliminary financial analysis suggests an estimated \$1.2 million construction cost per 500kW (FIT 5.0) System.

The revenue generated through this initiative is estimated to provide a net benefit to the City in the range of \$481,000 to \$680,000 over the life of the project.

The project is also recommended to be built, owned and operated by HRPI. The rationale for submitting this project through HRPI is outlined in the body of this report, but includes the fact that HRPI was created by the City of Hamilton to serve as the business entity to manage and operate its renewable energy assets. Furthermore, the existing HRPI operation is financially stable and in a position to carry the additional debt and finally the Glanbrook site has synergy with existing staff and possibly with existing service contracts (our people are already at this remote site).

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In advance of this report, the Board of Directors of HRPI has already granted approval to proceed with a FIT 5.0 application subject to approval from the City of Hamilton to provide the financing required.

Alternatives for Consideration – See Page 6

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial:

Subject to approval by the City, HRPI plans on securing a loan from the City of Hamilton to fund the capital required to build the Solar PV Project at the Glanbrook Landfill site. The details of the loan will be secured between HRPI Board and the City once the approvals and FIT contract is secured. The FIT approval process is expected to take up to 9 months, after which the construction costs and finance details can be secured. The capital and interest will be repaid by HRPI to the City.

The revenue generated from HRPI operations will be managed by the HRPI Board and staff. It is contemplated that continuing revenues from HRPI will continue to deliver dividend payments to the City according to dividend payment policies.

Staffing:

No new staff will be required to accommodate this project.

Legal:

HRPI will be submitting the application to the IESO FIT 5.0 program and sign off will be in the name of HRPI throughout the project. Legal review of the loan agreement between the City and HRPI will be expected at the appropriate time.

HISTORICAL BACKGROUND

Public Works Recommendation Report on the Installation of Ground Mounted Solar Panels on Active and Dormant Landfill Sites (PW16020) recommended that City Staff investigate the feasibility of installing a Solar PV Project at the Glanbrook Landfill site. The conclusions and recommendations of that feasibility study are presented below.

Based on the recommendations presented to the City from the consultant commissioned to carry out the detailed feasibility study, staff is recommending not pursuing a large scale Solar PV Project at the Glanbrook location using the IESO Large Renewable Procurement (LRPII) process.

Staff pursued clarification and leniency with the IESO on parameters related to project size, municipal involvement and project team issues. All comments were responded to by the IESO with no program rule changes.

As a result of the siting criteria relating to offsets, setbacks required to meet environmental compliance and Request for Qualifications criteria, the scope of the project that originally considered a 5 MW Solar PV Project was reduced to 1.3 MW. This downsizing impacted the potential revenue stream.

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Upon further evaluation of the application rules and criteria for meeting the Request for Qualification process as a Qualified Participant, as described in the IESO's recently released rules, it was concluded that the City of Hamilton, based on the relatively small project size, would have a very low probability of becoming a successful proponent and being awarded a project.

In terms of revenue, the total revenue coming to the City through the LRPPII is awarded to the lowest bidder and could be at a rate of \$135/Mega Watt hour (MWh) or lower, whereas the FIT 5.0 program offers a posted prescriptive rate of \$202/MWh (49% higher than estimated LRPPII) as per the IESO web site posting in September 2016.

In a September 27, 2016 announcement made by the IESO, the Large Renewable Procurement program was cancelled as directed by the Minister of Energy. This effectively restricts the options available to the City of Hamilton to the FIT 5.0 program which is in line with the recommendations of this report.

As an alternative outlined in the previous Council report, review of the recently released criteria required for the IESO's Feed-In-Tariff version 5.0 (FIT 5.0) program was also conducted. City Staff has evaluated the opportunity for a smaller scale Solar PV Project at the Glanbrook Landfill location under this FIT 5.0 prescriptive based pricing program. The size of any FIT 5.0 Solar project is capped at 500kW per site. The preliminary financial analysis suggests an estimated \$1.2 million construction cost per 500kW (FIT 5.0) System.

The window for the FIT 5.0 application process opens October 31, 2016 and is closed on November 18, 2016. In advance of this report, the Board of Directors of HRPI has already granted approval to proceed with a FIT 5.0 application subject to approval from the City of Hamilton to provide the financing required. The rationale for developing this project through HRPI includes:

- HRPI was created by the City of Hamilton to serve as the business entity to manage and operate its renewable energy assets;
- HRPI currently provides the City with a net benefit of over \$1.5 million per year;
- This project will bring increased revenues to HRPI which in turn will result in even greater benefit to the City;
- The existing HRPI operation is financially stable and well positioned to carry the additional debt;
- The Glanbrook site has synergy with existing staff and possibly with existing service contracts (our people are already at this remote site).

The Internal Rate of Return (IRR), based on the financial analysis model for the proposed 500 kW DC system is contingent upon project costs which includes the costs for panels, racking systems, inverters, installation and connection to the grid. As the solar industry has matured in the past few years, costs have reduced significantly and the trend is for these construction costs to lower. With this in mind, an analysis using a

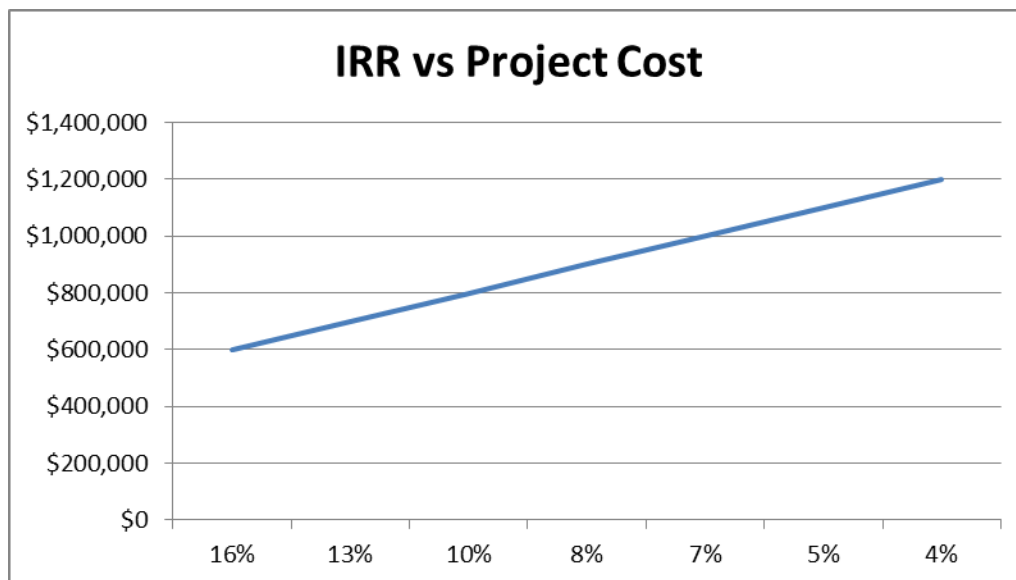
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cost per kW DC of \$1,950 yields an IRR of 7% and a project cost of \$975,000 (See Graph 1: Internal Rate of Return vs Project Costs). The estimated revenue is approximately \$795,000 over the twenty year life of the FIT contract, which equates to \$39,750 per year on average.

Graph 1: Internal Rate of Return vs Project Costs



The evaluation of the FIT applications by the IESO includes a review and assessment of priority points that are awarded to each application determined by the nature of the applicant. One particular manner of receiving a priority point is through a resolution that has been passed by the City.

In this report, staff is requesting Council approve all mandatory resolutions and declarations that will support the FIT 5.0 application to be submitted by HRPI for a 500 KW Ground Mounted Solar PV ground mount installation at the Glanbrook landfill site. Appendix A to Report PW16020a is the prescribed resolution and declaration templates.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

This project is supported by the Corporate Energy Policy.

RELEVANT CONSULTATION

The internal divisions and external parties that would be impacted by this initiative have been active in the preparation of this report and the recommendations presented herein.

HRPI, through its Board of Directors, has endorsed a resolution for HRPI to proceed with a FIT 5.0 application for a 500 KW ground mounted Solar PV system.

Operations were consulted to confirm there are no future plans or conflicts for the designated parcel of land that is designated as buffer land and that it will not be compromised if a Solar PV Project is constructed on this site.

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Planning and Economic Development have provided confirmation of the zoning, land registration and official plan was provided and no conflicts or obstacles are foreseen.

Finance has been consulted on the request for funding from the City of Hamilton to HRPI and will determine what the pay back terms and conditions will be once capital costs are finalized and a contract is awarded by the IESO.

Real Estate staff was consulted regarding land access for this project.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

To allow this Solar PV Project to move forward through HRPI, Council approval is necessary to direct staff to proceed with the financing arrangements, FIT resolutions and FIT declarations and land access agreements.

The revenue generated through this initiative is estimated to provide a net benefit to the City in the range of \$481,000 to \$680,000.

ALTERNATIVES FOR CONSIDERATION

Council directed staff to identify candidate sites for potential renewable energy projects on the City's Landfill sites. This report speaks to developing one of those sites from that directive.

The one option that was considered related to the program that is used to secure revenue for the project – namely the Large Renewable Procurement (LRP) program. This program calls for larger projects (over 500kW, but typically over 20,000kW) and competitive bidding which leads to very low revenues. The LRP program was considered, but due to the risk and cost of the application process that would most certainly yield less revenue than the proposed option, staff recommends the higher revenue per kWh, lower capital, smaller project size and less complex application process of the FIT 5.0 program be pursued.

In a September 27, 2016 announcement made by the IESO, the LRP program was cancelled as directed by the Minister of Energy.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Clean and Green

Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

APPENDICES AND SCHEDULES ATTACHED

Appendix A – FIT Resolutions For Hamilton Renewable Power Inc.