



**STAFF REPORT
ACTION REQUIRED**

**Amendments to Joint City of Toronto/Toronto Hydro
Solar Program**

Date:	December 17, 2015
To:	Parks and Environment Committee
From:	Chief Corporate Officer
Wards:	All
Reference Number:	P:\2016\Internal Services\E&E\Pe16003e&e (AFS #22389)

SUMMARY

This report recommends changes to the existing Council-approved City of Toronto/Toronto Hydro solar photovoltaic (PV) program. As a result of changes to the Province's Feed-in Tariff (FIT) program, Toronto Hydro is no longer able to co-invest in PV installations on City-owned facilities. The City's investment share in projects on City sites will increase from 51% to 100%. The report also recommends that the City be allowed to invest in installations on sites owned by Toronto Hydro and other City agencies and corporations.

Under the proposed changes, Toronto Hydro will continue in its role as construction manager for PV installations, as well as procuring the necessary equipment for these installations. Toronto Hydro may also undertake these roles for installations on small City facilities under the microFIT program.

The report also identifies future opportunities for solar installations, such as solar carports on City-owned parking lots, and on "net-zero" buildings, which generate more energy than they consume.

RECOMMENDATIONS

The Chief Corporate Officer recommends that:

1. City Council approve the following amendments to the City of Toronto/Toronto Hydro Solar PV program on terms and conditions satisfactory to the Chief Corporate Officer, and in a form satisfactory to the City Solicitor:

- a. Toronto Hydro will no longer co-invest in solar PV projects on City-owned facilities;
 - b. Toronto Hydro act as the construction manager, which will include procurement responsibilities, for the City's solar PV installations, including small systems to be installed under the Provincial microFIT program.
2. City Council authorize City investments in solar PV installations on facilities owned by City agencies and corporations.
 3. Parks and Environment Committee recommend to the Budget Committee, as part of the 2016 Budget Process, that:
 - a. City Council approve an increase of the 2016-2025 Preliminary Capital Budget for Facilities, Real Estate, Environment & Energy (FREEE) by \$7.95 million, \$1.75 million in 2016 and \$6.2 million commitments in 2017 funded by recoverable debt.
 - b. City Council approve future year commitments of \$13.2 million of which \$7 million is an estimate in the 2016-2025 Preliminary Capital Budget and Plan and an additional \$6.2 million is requested, resulting in a zero gross and net impact.

Financial Impact

The total estimated cost of the City's capital investment in the Solar PV program is \$19.8 million, net of HST recoveries, with cash flows of \$6.6 million in 2016 and \$13.2 million in 2017.

The 2016-2025 Preliminary Capital Budget and Plan for Facilities, Real Estate, Environment & Energy (FREEE) includes funding of \$11.850 million with planned cash flows of \$4.850 million in 2016 and \$7.000 million in 2017, funded by recoverable debt, to implement solar PV installations on City owned buildings.

Staff is seeking Council authority to increase the 2016-2025 Preliminary Capital Budget and Plan for FREEE by \$7.950 million, funded by recoverable debt, to reflect the City's ownership of 100% of the solar PV installations as per the revised City of Toronto/Toronto Hydro Solar PV program, and to support the expansion of the solar PV installation program on sites owned by Toronto Hydro and other Agencies and corporations. In addition, staff is seeking the ability to commit \$7.0 million currently in the 2016 plan, and the additional \$6.2 million requested for the Solar PV installations to allow for contracts to be awarded and work to proceed.

The capital investment will generate \$33.0 million in revenue from the sale of electricity to the Independent Electricity System Operator (IESO) for 20 years. As the program is funded through recoverable debt, debt repayments will be made upon completion of the program through these generated revenues from IESO to a maximum of 20 years of operation.

The solar panels have a 25-year warranty, and will continue to generate electricity after the end of the FIT contract. The electricity will then either be used within the building on which the panels are located, or sold into the electricity grid, whichever is more advantageous to the City. The additional nominal revenue/savings during this 5 year period is estimated to be \$14 million, based on an expected increase in the cost of electricity over the next 20 years. The program is in accordance with the financial parameters set out in the City of Toronto's *Sustainable Energy Plan – Financing* policy (FS-FP-024).

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

DECISION HISTORY

At its meeting of July 6, 7 and 8, 2010, Council adopted the recommendations contained in EX 45.39 "Solar Photovoltaic Program for City Facilities"

<http://www.toronto.ca/legdocs/mmis/2010/cc/decisions/2010-07-06-cc51-dd.htm>

This report recommended the establishment of the joint City/Toronto Hydro PV program.

At its meeting of October 8, 9, 10 and 11, 2013, Council adopted the recommendations in PE22.9 "Solar Photovoltaic Installations on City Facilities"

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.PE22.9>

This report recommended changes to the terms of the agreement governing the City/Toronto Hydro PV program.

ISSUE BACKGROUND

The City/Toronto Hydro PV program has been in operation since 2010. Under the terms of the program, both parties co-invest in, plan, construct and maintain solar PV installations on the roofs of City-owned buildings. Since the program's inception, 20 solar PV installations have either been completed or are under construction.

These 20 installations will help the City meet its greenhouse gas reduction targets by generating clean power that is sold into the electricity grid under FIT contracts with the Province's Independent Electricity System Operator (IESO). At a combined upfront cost of \$10.5 Million, the installations will generate approximately \$31 Million in revenue over 20 years, plus additional revenue and/or cost savings for an additional 5 years. The amount of electricity generated over that period will be approximately 65,000,000 kilowatt hours (kWh), with a resulting reduction of 3000 tonnes of greenhouse gas emissions.

COMMENTS

Toronto Hydro has informed the City that it will not be able to invest in most of the projects envisioned for the next phase of the joint PV program. Toronto Hydro's cost of debt is higher than the City's cost for recoverable debt, which is used to finance the City's investment in the PV systems. The City's investment in the revised program will meet the recoverable debt requirements. Toronto Hydro's solar investments must satisfy internal rates of return associated with its cost of debt and equity return requirements. The estimated internal rate of return for the next phase of projects is generally below Toronto Hydro's requirements, given declining FIT prices and forecast construction costs. However, 2 larger facilities owned by Toronto Hydro have lower forecast construction costs due to their construction approach and their scale (each 500kW) which will satisfy Toronto Hydro's internal rate of return. These 2 larger facilities are proposed as joint investments between Toronto Hydro (51%) and City of Toronto (49%), in keeping with the requirements of the FIT program.

The City has applied for FIT contracts for 41 sites, while Toronto Hydro has applied for contracts on its 2 sites. Because of FIT rules which include favourable consideration for contract applications submitted by public sector entities such as municipalities, staff are confident that the City will be awarded most, if not all, of the contracts applied for.

The relationship between Toronto Hydro and the City in delivering the PV program has been positive, with both parties bringing complementary skills and capabilities to the program. FIT contracts are expected to be awarded in May 2016; all projects must be completed within 18 months of award. This will result in a significant increase in staff workload in dealing with both the construction of the PV installations and their ongoing operation and maintenance for 25 years.

The estimated City investment in these 43 projects is \$19.8 Million, totalling 6.4 MW of generation capacity. When fully built out they will generate revenues of approximately \$1.65 Million annually for 20 years. In addition, incremental nominal revenues/savings for the 5 years beyond the life of the FIT contracts is expected to be \$14 million, based on estimated future year cost increases in electricity. These 43 projects will produce 8,000,000 kWh of electricity and will reduce GHG emissions by 430 tonnes per year.

Toronto Hydro has carried out construction management responsibilities under the existing program. Staff recommend that they continue in that role under the new program. Included in this role is the procurement of solar panels and other equipment required for the installations.

The City also installs small, 100% City-owned PV systems (under 10 kW) on smaller City-owned facilities under the Provincial microFIT program. Staff are recommending that Toronto Hydro be permitted to carry out construction management and procure the required equipment for these small PV systems on behalf of the City, in order to take advantage of price discounts that would result from a bulk purchase.

Future Solar Initiatives

To date, the City's solar initiatives have been confined to rooftops installations. Recently, a small solar carport, covering 4 employee parking spaces, was installed at Ellesmere Yard as a pilot project to determine operational and other issues which may arise, and how to address those issues. Staff will examine the potential for larger-scale systems at other City locations. In addition to generating clean electricity, solar carports offer opportunities for reducing the urban heat island effect, storm water management, cooling employee vehicles in hot weather, and reducing snow accumulation on vehicles during the winter.

Staff are also studying the potential for constructing a "net-zero" building – one where the amount of power consumed by a building is equal to or less than that generated within the building. Energy efficient measures such as LED lighting are employed in such buildings in order to reduce energy demand, while clean energy generation systems such as solar PV can provide the remaining power requirements.

Currently, solar PV systems are prohibited from feeding electricity into buildings on which they are installed during power failures. As the City improves the resiliency of its facilities in response to the increase in severe weather events, it will be increasingly important to be able to provide backup power to those buildings. Staff will consult with Toronto Hydro, the Province and other parties to investigate the technical, regulatory and other steps that need to be taken to allow for the use of existing PV systems for backup power. Such consultations will also involve the potential for incorporating energy storage systems in City buildings.

CONCLUSION

The recommended changes to the City of Toronto/Toronto Hydro program will allow the City to continue to work with Toronto Hydro and to invest in solar PV installations, thereby helping to meet Council's greenhouse gas emission reduction goals, as well as generating revenue for the City for a period of 25 years.

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SIGNATURE

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