

INFORMATION REPORT

TO: Chair and Members Public Works Committee	WARD(S) AFFECTED: CITY WIDE
COMMITTEE DATE: June 6, 2011	
SUBJECT/REPORT NO: Community Energy Project Partnerships (Ground Mounted Solar Photo-Voltaic) (PW11035) - (City Wide) (<i>Outstanding Business List</i>)	
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Council Direction:

On a Motion at the Public Works Committee, February 7, 2011, the presentation from Patti Turnbull respecting possible Community Energy Project Partnerships was received and referred to the General Manager of Public Works and staff for a report back to the Public Works Committee.

Information:

At the February 7, 2011 Public Works Committee meeting, staff was directed to report back to the Public Works Committee respecting Community Energy Project Partnerships. This was in regard to a presentation by Ms. Patti Turnbull on Ontario's Feed in Tariff (FIT) Program and opportunities for partnering with the City on Ground Mounted Solar Photovoltaic (PV) Systems installations on City owned land and landfills.

Staff has reviewed the presentation materials and further reviewed opportunities for Ground Mount Solar PV applications on City owned land and landfill locations with the City's Economic Development and Real Estate Division, Public Works, Operations and Waste Management and Horizon Energy Solutions Inc. Given the magnitude of investment and the technical and legal complexities associated with this type of project staff recommend a cautious approach and not fast tracking any applications into the Ontario Power Authority's (OPA) FIT Program.

Based on this, staff offer the following comments and considerations:

Community Energy Project Partnerships

Community Energy Project Partnerships involve multi-organizational and personal entities. The City does not have experience in setting up and operating such types of ventures and is not currently staffed to establish and manage a community based energy program that involves multiple partners. To do so would take significant resources to setup and manage this type of arrangement. Staff suggests that establishing a Community Energy Project Partnership or any similar kind of venture with the City needs careful consideration of the overall good of the community as a clear understanding of the financial risk and potential liabilities to the City. Legal complexities also need to be clearly understood. There are a multitude of risks with any large investment project, including Ground Mounted Solar PV initiatives. These risks include legal, financial, technical and environmental impacts.

To that end there are other alternatives for implementing Ground Mounted Solar PV projects which include:

- Request for Proposal (public competition to lease land to highest bidder);
- City owned and operated project;
- Horizon Energy owned and operated project;
- Hamilton Renewable Power Inc. (HRPI) owned and operated project;
- Lease of land to Horizon, HRPI or a third party.

Community Energy Partnership's are eligible for a grant program called Community Energy Partnerships Program (CEPP). The guidelines of this funding model remove the City from key funding opportunities, as the organization seeking funds must be non-profit. This does not preclude others from pursuing Community Based Energy Projects as this attractive funding exists for such projects on private lands as well.

Unsolicited Proposals

Over the last several years the City has been approached by a variety of parties who have expressed interest in partnering with the City in installing Solar PV technologies on City owned roof space or land. These types of proposals are considered as Unsolicited Proposals in accordance with the City's Purchasing Policy Guidelines. In the case of the presenter, they represent a manufacturer of solar equipment and therefore fall into this category.

Capital Requirements for a 10 MW Ground Mounted Solar PV Project

The capital required to develop a 10 Megawatt (MW) Ground Mount Solar PV system is approximately \$40 million and would require approximately 100 acres of unencumbered lands to start. This is a significant capital investment for the City, even in a partnership scenario. The question with Community Partnerships would be who would bear the primary responsibility financially, legally and technically?

For Ground Mounted Solar PV systems, City lands would need to be secured for approximately 25 years. Staff suggests that careful evaluation would need to be completed to determine all business risks (legal, financial, environmental and technical) associated with this type of installation to determine if there is a viable business case.

Roof-Top Solar PV Pilot with Horizon Energy

On July 8, 2010, Council approved the report Renewable Energy (Solar PV) Opportunities for the City of Hamilton (PW10073, Item 8.5). That report resulted in the City moving forward with Horizon Energy Solutions Inc. (HESI) on a pilot project, for the design and installation of Solar Rooftop PV systems on City owned buildings where technologically and economically feasible. Part of the reason why the City elected to work with HESI under a leasing arrangement was because of the magnitude of capital required (\$15 to \$20 million). In addition, by leasing, all financial, installation and technological risks become the responsibility of HESI's. Working in partnership with HESI also provides potential for additional revenue to the City as Horizon's majority shareholder, which is not the case in a partnership with an independent third party.

Land Use Issues

Ground Mounted Solar PV systems require substantial land area. Industry feedback suggests a 10 Megawatt (MW) system, enough to power over 1,000 homes for a full year, is ideal from a revenue and power generation basis. A 10 MW project would require about 100 acres of land. As land use area for a project reduces, so does production capacity, resulting in a similar reduction in the return on investment as well.

Area zoning must also be assessed to ensure that a Ground Mounted Solar PV system is suitable for a given location. In addition to proper zoning, the installation of a Ground Mounted Solar PV system is at least a 25-year commitment. After ongoing and often extended efforts to get such land classified for industrial development, the change in use to Solar also suggests careful consideration be taken. In some cases it may make good use of the land that otherwise cannot be developed or used for other needs. From discussions with the City's Economic Development & Real Estate Division, the City is quite limited in suitable locations in terms of size and committing to holding land development for 25 years.

In terms of comparing land use for developed industrial land on a similar scale (100 acres) to the Ground Mounted Solar proposal, a recent industrial land development secured tax revenue of about \$6 million per year and creates 1,200 jobs on a comparable 100 acre parcel (extrapolated from a 25 acre industrial site).

The City's land fill sites have other issues that would need to be addressed. Landfill sites are bound by specific environmental requirements and the risks associated with what can be put on top of a closed landfill site would need to be examined. For example, nothing can be installed on a landfill site that may puncture the surface membrane cap one meter below the surface. Puncturing the cap would leave a path for methane gas to escape as well as leachate seep. Landfill staff raised the following issues on how a solar array may affect the landfill site at Upper Ottawa:

- Storm water management in landfills is achieved by infiltration of water first through a vegetative support layer and then through a soil layer where the water is diverted to surface water collection areas. Placement of the solar panels on the landfill may affect the runoff quantity and patterns. Control and maintenance of the vegetative cover

must be evaluated so that suitable vegetative cover that requires less maintenance can be used to ensure ground cover is maintained.

- Future landfill maintenance - If the City had to go back and remediate an area for environmental reasons how would this affect the Solar PV operations? In order to maintain cap and slope stability, regular inspections are conducted. If the City had to remediate a seep this could potentially be costly both in capital and lost revenue as the Solar PV panels would be taken off line and then put back into place after repairs are made). This is in addition to the cost of repair work to the cap.
- Settlement - How would putting Solar PV panels affect settlement across the site? This may also lead to remediation, again to maintain proper storm water management.

The City's closed landfill at Upper Ottawa has about 39 Acres (16 hectares) that has good southern exposure for maximum solar gain. The north side of the site is shaded.

The Glanbrook Landfill site is still active and has expansion plans in the future. At this location there are about 75 Acres of land that may be suitable for a Ground Mounted Solar PV installation, subject to proper zoning and other environmental considerations. Site staff has also indicated that local residents who live at the corner of Woodburn and Hall road may have concerns with this type of land use.

Some municipalities, such as the Town of Clarington have recently raised concern about the installation of Ground Mount Solar PV's on green space, which may be a similar concern for the public at Glanbrook.

Given that Glanbrook is an active site and will be for many years, the impacts of dust on the performance (energy production) would be significant and additional maintenance costs for a solar array in this area would need to be carefully reviewed.

Interconnection with the Electricity Grid

Connecting to the electrical grid is a key issue with any solar installation to secure incentive payments. In discussions with HESI about the Upper Ottawa site they have indicated that Hydro One has capacity constraints on some portions of the Nebo Transformer Station (TS). If there are capacity issues at this location this could strand the project for a significant amount of time (years) and eliminate revenue stream until such time as a connection is possible.

Environmental Assessments and Timing

The use of land for Ground Mounted Solar PV projects often requires an Environmental Assessment. Preliminary estimates from the industry indicate this process can take up to 2 years and cost anywhere from \$100,000 to \$200,000, depending on the amount of land area involved and complexity of the project. Certain soil classes (Class 3) have been targeted by the Ontario Power Authority to limit such projects to a total of 500MW province wide, as per the Regional Administrative Boundary Alignment.

Conclusion

In reviewing various factors associated with Ground Mounted Solar PV on City owned land and landfills suggest that due to the magnitude of the financial investment, limitations in available resources and the unknown legal complexities and potential liabilities, advise against entering into a Community Energy Partnership Project at this time.