TORONTO

STAFF REPORT
ACTION REQUIRED

Proposed Zoning By-law Amendment to Permit Distribution of Energy from Renewable Energy Devices.

Date:	December 17, 2007
To:	Planning and Growth Management Committee
From:	Chief Planner and Executive Director, City Planning Division
Wards:	All
Reference Number:	Pg070086

SUMMARY

The City's Official Plan supports the use of renewable energy devices as part of its intent to improve air quality, reduce greenhouse gas emissions and reduce electricity demand. The Official Plan's intent in this regard is also consistent with the City's initiatives for the Climate Change, Clean Air and Sustainable Energy Action Plan.

The 43 separate zoning by-laws in the City are all silent on the use, size, erection and location of renewable energy technologies and the possible distribution of energy from those renewable sources. This issue exists because the existing zoning by-laws were created at a time when the feasibility and viability of on-site power generation, sufficiently innocuous to form part of the principal use, could not have been envisioned. However, under such circumstances, the generating of power that is transferred off site to either the electrical grid or as hot water, in the case of a district heating and cooling system, is interpreted as being a separate use and allowed only if expressly permitted. Provincially sponsored programs, that pay owners a guaranteed rate for electricity produced on their land with renewable energy products, and the increasing interest in district based heating and cooling solutions warrants a general zoning amendment at this time.

The purpose of this report is to seek Council's authorization for the preparation of a stand-alone zoning by-law to permit for the distribution of energy produced by renewable energy devices. A stand-alone single amendment is possible because the existing zoning bylaws are silent on the matter and could be passed in 3 months. Amending all the existing zoning bylaws would likely take over a year and will detract from other priorities.

RECOMMENDATIONS

The City Planning Division recommends that:

1. Staff be directed to prepare a draft by-law to permit renewable energy production substantially in accordance with the draft zoning by-law amendment as Amendment No. 1 and that the by-law be brought forward to a public meeting at the February 13, 2008 meeting of Planning and Growth Management .

2. Notice for the public meeting under the Planning Act be given according to the regulations under the Planning Act.

Financial Impact

These recommendations will have **no** financial impact beyond what has already been approved in the current year's budget.

DECISION HISTORY

At its meeting of July 16, 17, 18 and 19, 2007 City Council adopted the following recommendations as part of the Climate Change, Clean Air and Sustainable Energy Action Plan:

that City Council:

7d. direct the Chief Planner to prepare in 2007, a Renewable Energy By-law (Phase 1) that will permit renewable energy generation as-of-right on all residential properties, setting appropriate restrictions on height, size and placement of structures and including changes required to waive building permit fees for residential PV solar energy installation;

7e. direct the Chief Planner, in consultation with the City Solicitor, Chief Building Official and the Renewable Energy Action Plan Working Group to prepare recommendations on how to address the following issues concerning renewable energy generation:
i. standards for the placement, orientation, size and form of renewable energy technologies;
ii. options to protect access to solar and wind resources from property owners who have installed renewable energy equipment;
iii. permissive regulations for district-based energy distribution between multiple properties; and
iv. provide guidance with respect to potential issues of conflict around tree protection and installation of renewable energy systems;

http://www.toronto.ca/legdocs/mmis/2007/cc/decisions/2007-07-16-cc11-dd.pdf

Also, at its meeting of March 1, 2 and 3, 2004, City Council requested that the Commissioner of Urban Development Services respond to Planning and Transportation Committee regarding an information request from Councillor Jenkins. The request directed staff to study the feasibility of installing solar and wind energy collection devices on residential and other buildings.

http://www.toronto.ca/legdocs/2004/agendas/council/cc040301/pltcl009a.pdf

ISSUE BACKGROUND

Official Plan

The City's Official Plan contains numerous policies that support City Council's Climate Change, Clean Air and Sustainable Energy Action Plan by ensuring that development contributes to air quality improvement, greenhouse gas emission reduction and electricity demand reduction. This can be achieved through more energy efficient design, renewable energy production and district based heating and cooling. Renewable energy technologies, the subject of this report, are specifically encouraged by Chapter 3.4, Policy 18 (d) of the Official Plan which states:

> *establishing and extending district heating and cooling facilities, wind and solar installations and other renewable energy systems*

Zoning By-laws

Development applications that include structures and devices for the production of renewable clean energy, from wind, sunlight and geo-energy sources, are being more frequently submitted to the City. These applications are assessed under one of the 43 separate zoning by-laws in the City that are all silent on the use, size, erection and location of renewable energy technologies and the possible distribution of energy from those renewable sources. This issue exists because these by-laws were generally created prior to this use being contemplated as a viable land use.

Under the current zoning regime for these 43 zoning by-laws, a land use that is not listed as permitted is interpreted to be prohibited unless it is an ancillary use to the principal use on the lot. Devices for renewable energy production can be considered an ancillary use provided that the energy is consumed on-site. However, when the energy produced is put into the electrical grid, the ancillary use argument no longer meets the definitional test of being *'exclusively devoted to a principal use'*. In this case, it must be considered to be a use on its own, which then is not permitted in the by-law. Simply stated, when you use it yourself the use is okay, when others benefit from it it is not acceptable under current zoning interpretation.

Under current legislation, it is not possible to distribute (sell) electrical energy to anyone except Ontario Power Generation. Therefore, the Province has created legislation to allow individuals to distribute (sell) surplus energy back to the power grid. Once

distribution of energy back to the grid occurs, the use that was legal as an ancillary use now becomes illegal since it is considered to be a principal use comparable to retailing or manufacturing.
This existing zoning by-law situation is an impediment to implementing City Council's policy direction of permitting as-of-right renewable energy production in residential areas. Under the current use permissions in all the existing zoning by-laws in the City, there is no unequivocal permission for the distribution of any form of energy from renewable energy sources.

The solution to removing this impediment to Council's policy direction is to amend the policy documents. To amend 43 zoning by-laws is a complicated and cumbersome process that will be lengthy and time consuming. However, it is possible to prepare quickly a single stand-alone zoning by-law to cover the entire City. This stand-alone by-law which would provide supplemental policy direction to all existing zoning by-laws, would clarify that the distribution (sale) of energy from renewable energy devices or sources is permitted, subject to all other requirements of the zoning by-laws currently in place. This permission would include energy distribution in the form of electrical and heat energy contained in non-potable water.

This stand-alone zoning by-law is a reasonable first step to in encouraging the broader use of renewable energy. When the new City of Toronto Zoning By-law is prepared, the regulations of the stand-alone renewable energy distribution by-law will be incorporated and may be expanded as Council determines.

COMMENTS

Approach to the Distribution of Energy from Renewable Energy Devices

Renewable energy is obtained from sources that are essentially inexhaustible and non-depleting. These include energy from technologies such as solar photovoltaic, solar thermal, wind, hydro, geo-energy, cogeneration and biomass energy. While each of these technologies may fit the definition of a renewable energy source, they do not all have the same level of land use impacts.

In this regard, this initial consideration for inclusion of as-of-right permission for renewable energy sources in the City's zoning by-laws should be done on the basis of land use compatibility and the type or method of renewable energy production.

Each of the following renewable energy options provides a unique opportunity to reduce the energy demand within the City of Toronto, by permitting individual properties to have low impact facilities for energy production using specific renewable energy resources. This initial approach recognizes the environmental benefits of these renewable energy technologies and assists in introducing their use through the zoning by-law, but it also protects the existing permitted land uses.

1. Sun Energy Devices

Energy from the sun is captured either by photovoltaic cells to produce electrical energy or by solar thermal technologies to produce heat. These methods present no identifiable environmental concerns and when subject to appropriate zoning controls for height and location, these renewable energy devices should not have any visual or aesthetic impact on neighbouring properties.

Current photovoltaic technology, limits the amount of power generated to the size of the area covered by the photovoltaic cells. Solar thermal technologies would fall within the same small scale production parameters. Therefore, assuming that the size of the devices is regulated to suit the character of the zone it is located in, these devices should not be incompatible with other land uses.

To ensure that compatibility objectives are achieved, solar energy devices should only be permitted on a site where it is ancillary to a permitted principal building and permitted principal use that exists on the site.

In residential areas, photovoltaic cells should only be located on the principal building. Solar thermal devices when not located on a principal building will be subject to the regulations applying to an ancillary building.

Distribution of energy from a solar energy device would be permitted.

2. Wind Energy Devices

Wind energy uses a wind turbine to convert wind energy to electrical energy. Like sun based energy production, wind production methods present no identifiable environmental concerns. Also, subject to appropriate zoning controls for height and location, this form of renewable energy production should not have any visual or aesthetic impact on neighbouring properties.

Similar to the photovoltaic technology, the amount of electrical energy production from wind is directly related to the size of the turbine and the size of the turbine blades. With proper zoning regulations in place, it can be assumed that the size of the wind generator can be appropriately regulated to be compatible with any land use. This means that in residential areas smaller turbines are permitted while on large lots larger windmills would be possible.

In residential areas, compatibility and nuisance issues are more likely to be prominent. Therefore, it is proposed that a maximum of one wind turbine be permitted on a residential lot. In instances where additional turbines are desired on a residential lot, rezoning or committee of adjustment variances option exist and will be subject to the appropriate public process.

In all non-residential areas, no specific limit on the number of devices is suggested as the regulations for the lot will provide sufficient control.

To ensure that compatibility objectives are achieved, wind energy devices should only be permitted on a site where it is ancillary to a permitted principal building and permitted principal use that exists on the site. Distribution of energy from a wind energy device would be permitted.

3. Geo-Energy

Geo-energy technology allows for the heat and cold found in the earth or below water to be used to heat or cool buildings. This is the principle of the Enwave project, which uses of Lake Ontario's deep water temperatures to cool buildings. It is also the same principle used in everyday heat pumps, which extracts heat from the air or underneath the ground, to heat a building. In the summer, the pump is reversed to provide air conditioning by moving hot air out of the building and down into the ground or out into the air.

Using geo-energy is efficient, because it requires less energy to move heat from one location to another than it does to convert one kind of energy into another.

The primary issue arising from this form of energy efficiency is related to mass distribution of the heating or cooling between properties. Unlike electrical distribution that uses existing wiring infrastructure to move energy, the geo-energy heat has no establish distribution system to use. While zoning can deal with the regulation of the device, the transmission of the energy between sites will require other regulations that cannot be achieved through a zoning by-law.

To ensure that compatibility objectives are achieved, geo-energy devices should only be permitted on a site where it is ancillary to a permitted principal building and permitted principal use that exists on the site. The individual zone requirements should provide ample protection to neighbouring properties.

Distribution of energy from this geo-energy device would be permitted.

4. Cogeneration

Cogeneration is the simultaneous production of heat energy and electrical energy or mechanical power from the same fuel in the same facility. The range of cogeneration type activities is very broad. This type of energy production is more typically identified as a by-product of other types of activities. The decomposition of some wastes produces both heat and gas which can be collected and burned to generate electricity. The stepping down of pressure in natural gas pipelines results in a production of heat which can be used to space heat buildings. The collection of methane gas from landfill site is another form of bio-fuel that falls within the cogeneration realm.

While the larger and more offensive forms of cogeneration are more appropriately located in industrial and open space areas other forms are compatible for residential use. To ensure that compatibility objectives are achieved, cogeneration devices should only be permitted on a site where it is ancillary to a permitted principal use and principal building.

In addition, in residential areas the cogeneration devices must be located inside a principal building on the site. In non-residential areas the cogeneration device may be located outside the building subject to all other applicable zoning requirements.

Distribution of energy from this cogeneration device would be permitted.

Zoning of Renewable Energy Distribution

The as-of-right permission, under section 34 of the Planning Act, to distribute energy from renewable energy devices, provides a simple first-step method of establishing permission within the City of Toronto for renewable energy production. Included with this permission is clear direction that where renewable energy devices are permitted, the energy produced may be used either on-site or off-site.

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SIGNATURE

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Ted Tyndorf
Chief Planner and Executive Director
City Planning Division

ATTACHMENTS

Attachment 1: Renewable Energy Draft By-law

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Authority: Planning and Growth Management Committee Report No. , Clause No. , as adopted by City of Toronto Council on, 2008
Enacted by Council: , 2008

CITY OF TORONTO

BY-LAW No. -2008

A By-Law To Permit The Production And Distribution Of Energy From Specific Renewable And Green Energy Sources.

WHEREAS City Council recognizes the need to allow the production and distribution of energy from renewable and alternative green energy sources within the City; and

WHEREAS City Council recognizes that the integration of renewable and green energy production into the urban fabric of the City is a desirable objective in order to reduce the environmental impact of fossil fuel based energy production; and

WHEREAS authority is given to City Council by Section 34 of the *Planning Act*, R.S.O. 1990, c.P.13, as amended to pass this by-law; and

WHEREAS City Council has provided adequate information to the public and has held at least one public meeting in accordance with the *Planning Act*;

The Council of the City of Toronto HEREBY ENACTS as follows:

1. For the purposes of this by-law:

(1) "**renewable energy**" means energy obtained from **solar energy**, **wind energy**, or **geo energy**;
(2) "**cogeneration energy**" means thermal energy and electrical energy simultaneously produced from the same process;
(3) "**solar energy**" means energy from the sun that is converted to produce electrical or heat energy;
(4) "**wind energy**" means energy from the wind that is converted to produce electrical energy;
(5) "**geo energy**" means energy derived from the temperature of the earth that is used to produce electrical or heat energy;
(6) "**distribution**" means the delivery of energy derived from **renewable energy** or **cogeneration energy**, to a distribution network.

2. Despite any other general or specific provision in any by-law of the City of Toronto or its former municipalities:

(1) the production of **renewable energy**, and the production of **cogeneration energy** shall be permitted uses in all zones or districts of the City of Toronto, provided that:

(a) the production of the **renewable energy** or **cogeneration energy** on a lot is only permitted where that lot also contains a main or principal use, permitted on the lot by the applicable zoning by-law;

(b) when a device producing the **renewable energy** or **cogeneration energy** is located on a lot where the applicable zoning by-law permits a dwelling unit:

(i) a photovoltaic **solar energy** device

(A) when located on a building, shall only be permitted when located on a building and shall be subject to all the requirements of the applicable zoning by-law for the building on which the device is located; and

(B) when not located on a building, shall be subject to all the requirements of the applicable zoning by-law for an accessory or ancillary building or structure on a lot in the zone in which the device is located;

(ii) a thermal **solar energy** device:

(A) when located on a building, shall be subject to all the requirements of the applicable zoning by-law for the building on which the device is located; and

(B) when not located on a building, shall be subject to all the requirements of the applicable zoning by-law for an accessory or ancillary building or structure on a lot in the zone in which the device is located;

(iii) a **wind energy** device shall be subject to all requirements of the applicable zoning by-law for a main or principal building on the lot where the device is located;

(iv) a maximum of one **wind energy** device is permitted on a lot;

(v) any above-ground part of a **geo energy** device shall be subject to the requirements of the applicable zoning by-law for an accessory or ancillary building or structure on a lot in the zone in which the device is located; and

(vi) a **wind energy** device, **solar energy** device and a **geo energy** device shall not be located in a front yard or side yard that abuts a street or public highway.

(vii) a **cogeneration energy** device shall be located on the lot so that it complies with all requirements of the applicable zoning by-law, for a main or principal building on the lot where the device is located; and

(c) when a device producing the **renewable energy** or **cogeneration energy** is located on a lot where the applicable zoning by-law does not permit a dwelling unit, the device shall be subject to all the requirements of the applicable zoning by-law for a main or principal building on the lot where the device is located; and

(d) the production of the **renewable energy** or **cogeneration energy** and any device used to produce the energy comply with all municipal, provincial and federal, by-laws, statutes and regulations; and

(2) the **distribution** of **renewable energy** from **solar energy**, **wind energy** or **geo energy** using wires or pipes, and the **distribution** of **cogeneration energy** using wires or pipes, shall be permitted uses in all zones or districts of the City of Toronto, provided the energy is produced in compliance with subsection 2(1) of this by-law, and the **distribution** of the energy produced complies with all municipal, provincial and federal, by-laws, statutes and regulations.

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ENACTED AND PASSED this day of, A.D. 2008.

(Corporate Seal)