TORONTO STAFF REPORT

June 10, 2002

To: Board of Health and the Administration Committee

From: Commissioner of Corporate Services

Subject: Council's Goal of Purchasing 25 Percent Green Power

Purpose:

To respond to Council's request regarding the process and progress being made towards meeting Council's goal of purchasing 25 percent green power.

Financial Implications:

There are no financial implications of this report.

Recommendations:

It is recommended that this report be received for information.

Background:

With reference to Board of Health Report No. 3, Clause 2, Council recommended that "the Commissioner of Corporate Services, in consultation with the Medical Officer of Health and appropriate officials of Toronto Hydro, be requested to submit a report to the Board of Health and the Administration Committee, in June 2002, on the process and progress being made towards meeting Council's goal of purchasing 25 percent green power"

At its meeting of April 11, 12, 13, 2000, Council adopted Policy and Finance Committee Report No. 4, Clause 7, and in doing so, adopted in principle its "Clean, Green and Healthy – A Plan for an Environmentally Sustainable Toronto". This plan recommends that the City support the use of Green Power, and that it should reaffirm its commitment to purchase 25 percent of its energy needs through green power.

Subsequently, at its meeting July 4, 5 and 6, 2000, Council adopted Report No. 7 Clause 6 of the Planning and Transportation Committee, as amended, endorsing and authorizing the City's participation in the Toronto Intergovernmental Clean Air Working Group, as set out in the

"Toronto Intergovernmental Declaration on Clean Air". This declaration states that the City and Toronto Hydro are committed to purchase 25% of the City's electrical needs from green power sources by 2005.

At is meeting of November 6, 7, and 8, 2001 Council adopted Report No. 14, Clause 13 of the Policy and Finance Committee as amended which included the following recommendations:

"1) authority be given to appropriate City Staff to negotiate and enter into an electricity pricing arrangement with Toronto Hydro Energy Services Inc., for the supply of electricity as required by the City, its agencies, boards and commissions, provided that:

c) the purchase price for renewable energy sources (green power) that may be incorporated into the City's electricity supply mix does not exceed the City's average cost for other sources of electricity by more than 60%;

d) a reduction in the City's electricity consumption through demand side management initiatives be considered as a contribution towards the City's renewable energy targets as previously adopted.

Policy & Finance Committee's recommendation:

"requested the Commissioner of Works and Emergency Services to report to the Works Committee on an annual basis regarding the City's progress towards meeting its targets for green power"

It was further recommended that:

"1) all staff be directed to meet green energy targets for fiscal 2002 through the reduction in demand for electricity; and

2) for fiscal 2003 and subsequent years, all staff be directed to identify the cost of green energy to be purchased in their overall budgeted energy costs"

Comments:

Renewable or "Green" Energy:

In Ontario, electricity is transmitted from generators to the ultimate end-users through an integrated power system, consisting mainly of an extensive power grid. Green energy sources that are currently available are fed into the same provincial power grid. Therefore, in order for a purchase of renewable energy to have a positive impact on the environment, it is required that this purchase cause new sources of renewable energy to be brought into the overall system. This system, and the City's commitment to purchasing 25 percent green power, will allow the City to reduce air emissions and accelerate the development of new, green energy sources in Ontario.

The City has also expanded its definition of green energy in 2002 to include demand side management or the reduction of electricity consumption as a method to reach its green power targets. Given that reducing the City's consumption of electricity would be an environmentally positive step, and given the investment required when purchasing green energy, a combination of green power purchasing and demand side management is seen, currently, as the most viable method in working towards the City's green power targets.

Availability of Green Power:

The technology to produce renewable, low-impact power is available. However, if the development of new low-impact generation capacity is to accelerate and displace some more polluting conventional generation capacity, a strong expression of demand is required. There are currently limited available sources of renewable energy, however, new sources are expected to become available over the next few years. Toronto Hydro Energy Services Inc.(THESI) expects approximately 100,000 to 150,000 Mwh of new green power will be available in the first quarter of 2003. Market research and current trends indicate that Ontarians consider the development of renewable energy resources a high priority for the electricity sector, and that they are willing to pay an additional amount to help support these initiatives.

Premiums paid for renewable sources of energy vary widely, depending on the type of technology involved. It should be understood however, that a strategic investment in green power can produce dividends in the form of improved air quality and lower health care costs, provided that the amount of carbon based generation is not increased. The following table outlines the range of price premiums for renewable energy over conventional sources of energy.

Source of Green Power	**Price Premium***
Solar	500-800%
Wind	60-140%
Landfill Gas	20-60%
Small Hydro	0-40%

*over conventional sources of electricity. Source Toronto Hydro.

It should be noted that over time, as the amount of available renewable energy increases, along with the number of suppliers, related costs are expected to decline.

THESI, along with developing its own resources, has secured 28,000 Mwh of green power and an additional amount is pending. A wind turbine is planned for the Exhibition Place grounds, and is expected to be in service by the end of 2002. THESI also recently launched its residential and small commercial program, offering customers incremental blocks of 55 kwh of green power for $5/month extra on their bill.

Toronto Hydro-Electric System Limited announced it will purchase a full 25 percent of its in-house electricity needs over the next 5 years from green power sources.

The City, presently, does not have plans to purchase green energy from the wind turbine, however, the City could request this option through the budget process.

Based on de-regulated market pricing projections, it is estimated that the cost of converting a full 25% of City electricity usage (500,000 Mwh) to renewable sources, using expected pricing for 2002, could add an additional $15 million (using the price premium cap of 60%) to the City's annual energy bill. The ultimate amount of this increment would be determined by the availability of the various types of renewable energy.

The City has not purchased any green power to date and any recommended purchases by City Departments would have to be approved through the budget process as directed by Council. While the City has an ambitious target there is no formal direction or funding process to include green power in the City's supply mix.

Demand Side Management:

The City is embarking on a renewed Demand Side Management program that will expand on its efforts to reduce energy use in its facilities and operations. By adopting, April 16, 17 and 18, 2002, Report No. 6, Clause 3 of the Policy and Finance Committee, titled, Energy Retrofit Strategy for City-Owned Facilities, Council has set the wheels in motion to start this work. It has been estimated that a capital investment of $20 million spent on energy retrofits in City facilities (not including the ABCs) could realize a saving of over $2.5 million per annum. This work would be completed over, approximately, a 5 year period.

Energy retrofits will reduce energy consumption in City facilities year over year. Reductions in the City's use of the electricity, natural gas and water use will result in environmental benefits. For example a reduction in electricity use will mean that harmful emissions from coal-fired electrical generating stations will decrease, provided the current generation is unchanged.

Emission reductions of carbon dioxide (a greenhouse gas) of over 12,500 tonnes annually could be realized from this program. While this program cannot replace the target for green power purchases, it is a good start and will provide a financial benefit for the City once the projects have been paid for.

Another method to reduce the amount of harmful emissions from coal-fired generation is through load-shifting. This means that energy use would be minimized during peak periods when coal-fired generation is in the supply mix to off-peak periods when less coal-fired generation is in the mix. The City in its Water Supply operations has made this a normal operating practice.

The City is also planning to install a solar energy wall on the vehicle maintenance garage at 843 Eastern Ave. This solar wall will use renewable energy to displace conventional sources of energy to provide heating and ventilation to the facility.

Conclusion:

Demand Side Management along with its environmental benefits, provides the City with a cost-effective start towards its green power targets. Given the current state of market development and price premiums, in order for the City to build a reasonable portfolio of renewable energy, a variety of tools will be required. A combination of enhanced energy demand management, and staged purchases of green energy, is seen as the best strategy for meeting the City's green energy commitment. Over time, availability of green energy will increase and price premiums for green energy are expected to decrease, giving the City opportunities to increase purchases of green energy, relative to energy from conventional sources. Adopting such an approach would allow the City to incorporate a green energy component into its commodity purchases, while taking advantage of expected cost reductions as green energy production grows.

The City of Toronto has shown leadership in energy management, and the City is in a position to continue to show leadership on energy issues. The City will continue to work with Toronto Hydro and others to identify opportunities to expand and work towards the City's green power purchase targets.

This report was prepared in consultation with the Medical Officer of Health and Toronto Hydro Energy Services Inc.

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