TORONTO

STAFF REPORT
ACTION REQUIRED

Proposed Directives to Toronto Hydro Regarding Anemometer in Lake Ontario

Date:	October 18, 2011
To:	Executive Committee
From:	City Manager
Wards:	All
Reference Number:	P:\2011\Cluster B\TEO\EX11005

SUMMARY

This report provides information on the current anemometer testing program (the measurement of wind speed and direction) run by Toronto Hydro Corporation on Lake Ontario (one kilometre offshore from East Point Park in Toronto), and provides rationales that support the completion of the testing program in the fall of 2012, in line with the initial project schedule.

The rationales are: a substantive public investment of over $1 million; contracted partnerships with third parties to share the collected data; and technical and regulatory limitations on an early completion.

It is important that Toronto Hydro's ability to generate electricity and incorporate new electricity into the local distribution system be maintained to promote economic growth and provide greater security of electricity supply.

Regarding the proposed approval of a moratorium on wind turbine projects on Lake Ontario, the Province has placed a moratorium on construction on wind turbines on all of the Great Lakes, which governs Toronto Hydro and negates an extension of its current research work or introduction of new studies.

RECOMMENDATIONS

The City Manager recommends that the Executive Committee receive this report for information.

Financial Impact

Toronto Hydro Corporation's anemometer wind research program on Lake Ontario has been supported by over $1 million from Toronto Hydro, the City of Toronto, the Government of Canada and academic institutions. Toronto Hydro spends about $1,000 a month on maintaining and operating the anemometer and has budgeted an additional $100,000 for its removal in the fall of 2012.

No City funds are allocated in the 2011 Budget or planned in the 2012 Budget for the anemometer wind research program on Lake Ontario. Therefore, there are no financial implications for the City arising from this report.

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

DECISION HISTORY

At its meeting on April 19, 2010, Executive Committee referred a letter from Councillor Paul Ainslie and former Councillor Brian Ashton, to the Director of the Toronto Environment Office, with direction to report back to the Executive Committee once Toronto Hydro has collected and analyzed wind energy data from its anemometer.

http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2010.EX43.24

At its meeting on September 6, 2011, Executive Committee referred motions by Councillor Ainslie regarding removal of the anemometer and a moratorium on wind turbines on Lake Ontario to the City Manager for a report back to its meeting on November 1, 2011.

http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.EX9.15

ISSUE BACKGROUND

Shareholder Direction Respecting Electricity Generation

The current Shareholder Direction Relating to Toronto Hydro Corporation does not mandate that Toronto Hydro generate electricity. Instead, it provides a permissive directive, stating in Article 3.1, that "*the Corporation may engage in, and may authorize the Subsidiaries, except for the Distribution Company, to engage in . . . business activities permitted by the Ontario Energy Board Act*," provided that Toronto Hydro meets its financial obligations to the shareholder. One of the permitted business activities is: "(b) *owning, operating or having an ownership interest in an electricity generation facility*."

This enabling provision is consistent with the Ontario Green Energy and Economy Act (2009), that encourages local distribution companies to generate electricity from renewable sources, and consistent with current City policy, as approved by City Council in November 2009, as part of the City's Sustainable Energy Strategy. A copy of the Council decision and the strategy can be found at: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2009.EX36.9.

Purpose of the Anemometer Test

Investigating the feasibility of off-shore wind turbines on Lake Ontario commenced in 2004 by Toronto Hydro following economic modelling and preliminary geotechnical review. In 2006 and 2007, a block of lakebed grid cells were leased for exploration from the Ontario Ministry of Natural Resources. Subsequent geotechnical testing, engineering and research were conducted by Toronto Hydro. It was found that site specific and detailed wind resource data were required to complete the evaluation. A tower and platform was designed and built to support an anemometer with Light Detection And Ranging ("LIDAR") technology.

The anemometer measures wind speed, direction and turbulence at various heights over a 24-month period to accurately establish the wind resource in a location approximately one kilometre offshore from East Point Park in Toronto. In addition, temperature and humidity measurements are being collected. This detailed scientific information is critical for predicting potential wind turbine performance. A summary of the key project milestones is provided in Appendix A of this report.

Project Partners & Obligations

Agreements and contracts are in place with Natural Resources Canada and York University, involving financial contributions and reporting obligations. These commitments include research and innovation funding from NRCan, equipment loan from NRCan, and research agreements with York University. York University has secondary instruments hosted on the platform and they are conducting boundary layer weather modelling and data quality review.

COMMENTS

For this report, the City Manager consulted with organizations and individuals opposed to off-shore wind generation projects generally and the anemometer in Lake Ontario, as well as with Toronto Hydro. After due consideration given to the viewpoints and information provided, the following comments are offered.

Addressing the Appropriateness of Toronto Hydro Generating Electricity

The current Shareholder Direction for Toronto Hydro states that one of the four primary objectives is that "*the value of Toronto Hydro be maintained or increased*." Giving Toronto Hydro the flexibility to develop projects that generate electricity contributes to this objective. Local energy generation improves system reliability and can expand Toronto Hydro's revenue sources, potentially increasing the City's annual dividend payments.

Toronto Hydro in partnership with the City and others parties is engaged in several projects that generate electricity, including the wind turbine at Exhibition Place and several solar photovoltaic installations. These projects are summarized in Appendix B. They improve the financial value of the corporation and thereby the potential return to the shareholder and supports economic development and energy security.

Existing federal and provincial legislative and regulatory requirements and the current existing Shareholder Direction ensure that Toronto Hydro, as it considers potential electricity generating projects, conducts a thorough and inclusive process and identifies and addresses local and city-wide concerns.

Ability to Remove the Anemometer by November 30, 2011

Removal of the anemometer from Lake Ontario is scheduled for the fall 2012, which will provide Toronto Hydro and its partners with two years of data.

To turn off and remove the anemometer any earlier is problematic for the following reasons:

- there is a lack of an immediately available, qualified marine contractor capable of removing the device, which is secured to Lake Ontario's bedrock, in accordance with the requirements of the permit from the Ontario Ministry of Natural Resources;

- by the time a qualified contractor would be available, oncoming winter weather conditions would prohibit removal until mid-spring 2012 at the earliest;

- the provincial and federal governments are unlikely to grant approval to remove in spring 2012 because of possible disturbances to fish breeding that occurs at that time; and

- removal in summer 2012 immediately after fish breeding season ends, instead of fall 2012, potentially jeopardizes commitments that Toronto Hydro has made in agreements with Natural Resources Canada and York University to provide two years of reliable data in return for financial and other contributions towards this research project.

Proposed Restriction on Future Studies on Wind Energy Generation on Lake Ontario

As the Province has imposed a moratorium on off-shore wind generation, City Council's approval is not required. If necessary, staff will report out on any changes to the Province's moratorium directive.

CONTACT

Lawson Oates
Director
Toronto Environment Office
loates@toronto.ca
416-392-9744

_____

Joseph P. Pennachetti
City Manager

Appendix A: Toronto Hydro's Anemometer Project Milestones
Appendix B: Electricity Generation Projects involving Toronto Hydro

Appendix A

Table One: Toronto Hydro's Anemometer Project Milestones	
Date	**Project Milestone**
2004	Ontario Ministry of Natural Resources issues Request for Expressions of Interest
2006 – 2007	Exploration Lease Agreement Signed between Toronto Hydro and Province (MNR) for 26 km Lake Ontario shelf (Leslie Spit to Ajax)
2008	Initiation of the Class Environmental Assessment (Type 2) for the installation of the anemometer and meeting both Federal and Provincial requirements
2008 – 2009	Agreement with Natural Resources Canada established, providing research funding and LIDAR equipment loan
2008 – 2009	Public consultations held as part of the Class Environmental Assessment
Late 2009	Environmental Assessment finalized and approved by the Provincial and Federal Governments
Summer 2010	Anemometer installed in Lake Ontario
October 2012	Anemometer scheduled for removal from Lake Ontario

Table Two: Electricity Generation Projects Involving Toronto Hydro		
Project Name	**Description**	**Value to the City**
Exhibition Place Wind Turbine	This is a 750 kilowatt project installed in 2002. Toronto Hydro owns one-half of the turbine in partnership with the WindShare Co-operative.	Generates approximately one million kilowatt (kWh) hours of electricity per year. Approximately $130,000 of revenue per year, displacing about 250 tonnes of carbon per year.
Exhibition Place Solar Photovoltaic Installation	This is a 250 kilowatt project installed in 2011. Toronto Hydro owns 100% of system and leases the roof from Exhibition Place.	Generates about 489,000 kWh of electricity per year. Approximately $300,000 of revenue per year, displacing about 120 tonnes of carbon per year.
City/Toronto Hydro Roof Top Solar Photovoltaic Installations	This is a joint venture with the City that involves the installation of approximately 25 roof systems on City-owned facilities; financed 49% by the City and 51% by Toronto Hydro. City Council approved this initiative at its meeting of July 6, 2010[1].	This initiative is expected to generate about $800,000 a year in revenue for the City for 20 years, generating 2,200,000 kWh per year, and displacing 400 tonnes of carbon.

Toronto Hydro is also the developer for energy generation projects at the City's Green Lane Landfill and Ashbridges Bay Water Treatment sites.

[1] A copy of the report and Council decision can be found at: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2010.EX45.39