
TO: GENERAL COMMITTEE

SUBJECT: WIND TURBINE AT LANDFILL SITE

PREPARED BY AND KEY CONTACT: B. THOMPSON, C.E.T. *BT* *ST*
ENERGY & ENVIRONMENTAL OFFICER (EXT. 4557)

SUBMITTED BY: R. W. MCARTHUR, P. Eng. *R. W. McArthur*
DIRECTOR OF ENGINEERING

GENERAL MANAGER APPROVAL: *for* R. J. FORWARD, MBA, M.Sc., P. Eng. *RJF*
GENERAL MANAGER OF INFRASTRUCTURE, DEVELOPMENT & CULTURE

CHIEF ADMINISTRATIVE OFFICER APPROVAL: JON M. BABULIC *JM Babulic*
CHIEF ADMINISTRATIVE OFFICER

RECOMMENDED MOTION

1. That Golder Associates study the impacts of placing a wind turbine at the Barrie landfill in the location identified in Figure 1 of Staff Report ENG009-11 as part of the solid waste management master plan process and that the expenditure of up to a maximum of \$35,000 be taken from the Council Strategic Priorities Fund account # 01-13-1525-0000-3000.
2. That the Mayor and City Clerk be authorized to sign a non-binding Memorandum of Interest per Appendix "A" of Staff Report ENG009-11 to facilitate the Barrie WindCatchers in applying for funding from the Community Energy Partnership Program to offset City costs for the Golder Associates change of scope.

PURPOSE & BACKGROUND

3. In October of 2006, the Barrie WindCatchers made a presentation to Community Services Committee outlining their future plans and asking for support from the Corporation.
4. In October of 2006, Council adopted Motion 06-G-543 that stated:
 1. That the efforts of the Barrie WindCatchers to bring wind power energy to the City of Barrie be endorsed and that the Barrie WindCatchers be encouraged to proceed to Phase II of their wind energy project.
 2. That to facilitate the funding of Phase II of the WindCatchers' wind energy project, grant applications and communications plan by the Barrie WindCatchers', be supported and that staff assist with the grant applications as required.
5. The Barrie WindCatchers were successful in obtaining \$15,000 in funding through the Community Power Fund and in developing a web site, holding a public open house on installing a wind turbine at the landfill site, and in getting 25 people to join their organization.
6. On June 4, 2007, City Council adopted Motion 07-G-297 regarding a Wind Monitoring and Assessment Study as follows:
 1. "That Consultants be retained to install a meteorological tower with wind monitoring equipment at the Barrie landfill to conduct a wind study for a minimum of one (1) year to determine the viability of installing an electricity-generating wind turbine(s) at this site.

2. That approximately \$55,000 be taken from the Council Priority Account (01-13-1525) which will be reimbursed to the extent funds are received from the Federation of Canadian Municipalities and/or Barrie Hydro.
3. That staff in the Engineering Department report back to General Committee on the conclusions of the study."

Staff Report ENG032-07 is available in the Councillors' Lounge for further background information. The final report on the wind monitoring and assessment study prepared by Genivar is available in the Councillors' lounge for review.

7. Barrie Hydro ended up contributing \$30,000 to the project and the Barrie WindCatchers paid approximately \$10,000 for an electrical interconnection study that was an extra to the contract.
8. Genivar was awarded the contract to conduct the wind study using information gained from a previous Conestoga Rovers feasibility study. An area west of the existing operations compound was identified as a preferred location for a possible wind turbine at the landfill (Figure 1 Original Wind Turbine Location). Genivar encountered delays getting approval for the erection of the wind monitoring tower from Transport Canada due to the proximity of an airport on Anne Street and the Trans Canada Pipeline main trunk which is flown daily by helicopter to check for leaks. To address this, additional lighting was required which increased the costs.
9. The monitoring tower was constructed at the preferred location mentioned above and commissioned on October 10, 2008, with wind monitoring taking place for one year. The tower was decommissioned in November of 2009.
10. In the summer of 2009 Genivar presented a progress report that identified an inconsistency with information presented to date. Conestoga Rovers initial constraint analysis had used 500 metres as the set back requirement from residential dwellings. However, their review of aerial dwellings had missed several homes located at the top of Miller Drive in Springwater Township that were, in fact, within 500 metres of the proposed location.
11. As the Province was about to release new requirements for renewable energy projects and had indicated set back requirements from residential dwellings would be 550 metres the potential to site a wind turbine at this location within the landfill site became problematic.
12. In September of 2009, the Province enacted the regulations for the Feed in Tariff (FIT) Program as part of the Green Energy Act. These amongst other regulations provided the set back provisions for wind turbines over 50 kWh at 550 metres. Genivar provided a final report to the City in December of 2009 that indicated the area available to site the turbine and meet all Provincial regulations was close to the existing working areas of the landfill. Staff determined that several additional internal setbacks should be imposed to protect both staff and customers visiting the landfill. A 50 meter setback from the sweep of the blades was established for personal safety and a 120 meter setback was established from existing buildings (height of turbine plus blades).
13. Several potential health and safety concerns have also been identified which will have to be included in the Renewable Power EA that must be completed prior to the turbine being built.
14. The application of all of the setbacks as outlined above reduced available options for siting the turbine to a single location. That is south-east of the original location (Figure 1 Current Proposed Tower Location). The current proposed location is within an area identified by staff as having potential future waste management uses. Siting a wind turbine at this location could permanently limit or eliminate options currently available for future waste management uses.

15. The Ministry of the Environment was approached to determine what options were available to the City in terms of exemptions to the residential set back requirements. Exemptions while possible were not considered to be viable in this case. A meeting was arranged with the Director of Approvals for renewable power, Doris Dumais, of the Ministry of the Environment and she indicated her staff would be willing to take a closer look at our project to determine options for placement of the turbine. Information on our project was provided to the Ministry in late June 2010. The Ministry requested a meeting on December 1, 2010, and there were no alternative options presented to staff that were deemed viable.
16. The Ministry of Energy has indicated that starting January 1, 2012, Ontario content rules will change from a requirement of 25% to 50%. This could limit product availability, and potentially could further delay the project.
17. The stated goal of the Province is to promote both renewable power installation and renewable power manufacturing. It seems unlikely that these rules and guidelines enacted to promote renewable power would be allowed to prevent this from happening for any length of time.

ANALYSIS

18. The final report issued by Genivar estimated the average wind speed to be 6.1 m/s at the landfill site. This is slightly above the prefeasibility study which anticipated wind speeds of 6.0 m/s.
19. As part of the partnership with WindCatchers it has been beneficial to the Corporation to have the WindCatchers lead the promotional campaign for the wind turbine with the understanding that the main benefit of this is the feature that the turbine would be locally owned by Barrie residents. The new Green Energy Act was passed in the spring of 2009, and in September of 2009 regulations for renewable power and the price that will be paid in twenty year contracts with the OPA for each different renewable energy technology was passed. In some categories, the Province passed an additional incentive to the price, if the renewable technology was 51% or more owned by a community group. A Municipality is not considered a community group under the Provincial definition, but a renewable energy co-op such as the WindCatchers is.
20. Available information on wind turbine operation shows that the estimated yearly revenue is approximately \$597,680 and the estimated yearly maintenance cost is approximately \$74,200. Genivar uses a reference cost of \$7,000,000 for the wind turbine, but admits there is a great uncertainty in this. Due to the uncertainty, Genivar has performed a sensitivity analysis which calculates the return on investment calculation for a number of different price scenarios and shows the project would have a return on investment of 8.5% if prices are 20% less than their reference estimate. The Barrie WindCatchers have obtained preliminary pricing indicating a total cost of approximately \$5,000,000 which represents a price 28% below the Genivar reference cost.
21. In 2011 the Environmental Operations Branch will be proceeding with the development of a solid waste management master plan process to map the City's future waste management system requirements. As the Master Plan will recommend the future uses for the lands associated with the landfill after closure and identify the changes that will need to occur on the property over the next thirteen years to accommodate those uses, it is important that an item that could influence those choices, such as the wind turbine, be identified and accounted for in the report. Staff is recommending that the feasibility of integrating a wind turbine into the City of Barrie municipal waste management system be comprehensively studied to better understand associated benefits and impacts and that the this technical review be conducted as a scope change in the existing RFP awarded to Golder Associates.

22. It is staff's opinion that this study would be most efficiently completed by being done at the same time as the solid waste management master plan by the same consultant. The impacts and alternatives caused by the placement of the wind turbine would be best analyzed by the consultants preparing the future plan, rather than having to revisit the report after the process is complete. The solid waste management master plan process will include public information sessions which will allow for public feedback on all of the options being considered including the wind turbine. On this basis a competitive process to retain a consultant to analyze the impacts of the wind turbine location is not recommended.
23. A separate price has been provided for the scope change, however, it is considered to be integral to the master plan which has been awarded to Golder Associates under the City's RFP process.
24. Golder was retained to conduct the solid waste management master plan process partially based on their expertise in the area of solid waste management. Golder is a large and diversified consulting group and is also experienced in all areas of energy infrastructure development including renewable energy and is more than capable of fulfilling the tasks required in this scope change.
25. A further issue that may impact this project is a proposed development on Miller Drive by AGC Developments. See Figure 1. This proposed development is presently before the Ontario Municipal Board and, if approved, will need to be taken into consideration in terms of the site for the turbine.
26. In order to facilitate a successful application to the Community Energy Partnership Program, the City has been requested to sign a non-binding Memorandum of Interest with the Barrie WindCatchers. See Appendix "A". This Memorandum of Interest confirms the City's interest in a wind turbine at the City of Barrie landfill site. A successful application by the WindCatchers will allow for a grant of up to 90% of the cost for the Golder Associates study.
27. The next steps of the project are:
 - A communications plan be developed to provide opportunities for public input into the possibility of placing a turbine at the landfill.
 - Golder Associates complete the solid waste management master plan process report including the impacts of installing a commercial grade wind turbine, if it is determined a wind turbine is not compatible with the future uses of the landfill then the landfill will no longer be an option for the Barrie WindCatchers to site a turbine.
 - If it is determined that the turbine can be accommodated then the next step for the City is a lease or easement agreement signed with the Barrie WindCatchers ownership team.
28. The Ontario Sustainable Energy Association has informed staff that this Staff Report will aid the Barrie WindCatchers in applying for the Community Energy Program Partnership. The Windcatchers could take advantage of this opportunity while the city conducts the further study and
 - Apply for funding from the OPA Community Energy Program Partnership.
 - Use this money to hire a staff person to lead the organization in the next steps that are necessary in order to proceed with the project;
 - Determine ownership group (partnership with PowerStream, Georgian College);
 - Develop a business plan and legal organization;

- Determine what is necessary to sell shares (developing an offering statement) in the turbine and how to promote it; and
- Prepare a new interconnection study to be undertaken by PowerStream Inc. as the rules for the study were changed in the Green Energy Act.
- If the WindCatchers enter into a lease with the City then they would need to apply to FIT and conduct a Renewable Energy EA.

ENVIRONMENTAL MATTERS

29. The following environmental matter has been considered in the development of the recommendation:
- a) The development of renewable power is an extremely important aspect in moving forward towards a new low carbon future. The Province of Ontario has set targets for renewable energy installations and incentive programs to promote them. While a single turbine represents a small contribution towards these goals, it represents a much bigger statement about Barrie, as it will be one of the only turbines in Ontario situated in an urban area and helps promote Barrie as a symbol of commitment to the environment that will be visible to millions of people a year driving up the 400 highway.

ALTERNATIVES

30. There are three Alternatives available for consideration by General Committee:

Alternative #1

General Committee could choose to enter into lease (easement) agreement with the Barrie WindCatchers prior to completing the solid waste master plan.

This Alternative is not recommended as it will have the potential to limit choices for landfill designs and uses both present and future.

Alternative #2

General Committee could choose to not approve the funds required for Golder to review the wind turbine location as part of the solid waste management master plan process and not authorize the signing of the Memorandum of Interest.

This Alternative is not recommended as it would preclude any further opportunity for a wind turbine at the Barrie landfill that meets the long term operational requirements of the landfill.

Alternative #3

General Committee could choose to not approve the funds required for Golder Associates to review the wind turbine location at the landfill as part of the solid waste management master plan process and authorize the signing of the Memo of Interest.

This Alternative is not recommended as it is felt that these issues can be most effectively dealt with together and the solid waste management master plan process is beginning now, while funding approval for the Community Energy Partnership Program could take some time.

FINANCIAL

31. The funding requirement resulting from the proposed recommendation would come from the Council Strategic Priorities, account # 01-13-1525-0000-3000

32. The Community Energy Program Partnership can be accessed by renewable energy co-ops such as the Barrie WindCatchers. This fund provides 90% grants to a maximum of \$200,000 for various activities involved in building community power projects and can be used to fund these activities. The Wind Turbine Impact Study will be specifically identified in the WindCatchers application and 90% of the cost of the study will be requested. See www.comunityenergyprogram.ca, a copy of which has been placed in the Councillors' Lounge, for more information.

LINKAGE TO COUNCIL STRATEGIC PRIORITIES

33. The 2010-2014 Council Strategic Priorities have not been established as of the time of writing of this report.

APPENDIX "A"

CITY HALL
70 COLLIER STREET
TEL. (705) 739-4207
FAX. (705) 739-4247

P.O. BOX 400
BARRIE, ONTARIO
L4M 4T5

THE CORPORATION OF THE CITY OF BARRIE
Engineering Department
"Committed to Total Service Excellence"

February 14, 2011

File: E11-WI

Barrie WindCatchers
12 Hogan Court
Barrie, ON
L4M 6W7

Dear Barrie WindCatchers:

Re: Wind Turbine At Landfill Site

The City of Barrie has had discussions with you about your proposed wind power project, which you wish to locate at 272 Ferndale Drive North, Barrie, ON. This address is located at 44°23'02.06"N latitude and 79°44'17.45"W longitude.

I confirm that the City of Barrie is the owner of this site. The City of Barrie has control of this site and has the authority to lease this site for the purpose of this project.

Based on our discussions to date, I wish to express my interest in leasing this land to you for the purpose of this project. This is a non-binding expression of interest.

Yours truly,

Mayor J. Lehman

D. McAlpine, City Clerk

FIGURE 1

