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WIND MONITORING STATION

(Regional Council at its meeting on January 26, 2006 requested the following Clause, be forwarded to the local municipalities for information.)

The Finance and Administration Committee recommends the adoption of the recommendation contained in the following report, November 14, 2005, from the Commissioner of Corporate Services:

1. RECOMMENDATIONS

It is recommended that this report be received for information.

2. PURPOSE

The purpose of this report is to describe the next phase associated with the development a small-scale “behind the meter” wind energy demonstration project.

3. BACKGROUND

The Region has completed a Wind Energy Pre-feasibility Study (“Pre-feasibility Study”) in the Towns of Georgina and Whitchurch-Stouffville, and a wind map analysis for York Region (collectively referred to herein as “Wind Energy Studies”). The Wind Energy Studies examined the wind resource quality, land use designations and constraints, as well as a host of other factors affecting the viability of a wind energy project.

Based on the results of the Wind Energy Studies and an examination into the Region’s Role in Wind Energy, staff recommend the Region limit its role in the use of wind energy where it could generate power to offset the electrical demand at Regional facilities (“behind the meter”) to demonstrate “green energy”, subject to an individual business case assessment and Council approval. A “behind the meter” project refers to a project tied directly to a load, such as the pumps at a water treatment plant. The objective is to reduce the consumption from the grid and therefore reduce electricity costs.

4. ANALYSIS AND OPTIONS

4.1 Site Selection

The Sutton Water Pollution Control Plant (WPCP) was identified in the Pre-feasibility Studies as the most promising “behind the meter” site. This site is located east of the Town of Sutton and south of Black River Road. Sites in addition to the Sutton WPCP were also identified as part of the wind map analysis. All “behind the meter” candidate sites fall within Regionally owned land and are located within exclusion zones of 150 m on both sides of roads and 400 m around buildings. Hence, these sites are located close to development and are subject to noise and/or visual impact considerations.

It was found that the Sutton WPCP is the most promising option, given that it was screened in the Pre-feasibility Studies and found that nearby houses were likely far enough away to avoid a potential noise issue. This site is also permitted for wind energy under the Greenbelt Plan.

4.2 Wind Monitoring Station

Wind speed is a key variable with respect to the amount of energy a wind turbine can convert to electricity. In fact, the energy content of the wind varies with the cube (third power) of the wind speed. A precise estimate of energy yields and, therefore, project revenues, would only be possible after 12 months of on-site wind monitoring.

Thus, in order to develop a wind energy business case it is necessary to erect a meteorological tower (“MET” tower) at the Sutton WPCP to gather on-site wind regime measurements for one year.

A MET tower provides site specific wind data collected at a height close to the eventual hub height of a wind turbine. It currently takes approximately two to three months to get Transport Canada approvals for the construction and operation of MET Towers.

To assist in the development of a wind energy business case, staff recommend that wind monitoring data be shared between the Region and the Town of Richmond Hill’s wind monitoring station.

4.3 Relationship to Vision 2026

Implementation of the Wind Energy Study findings supports Goal 2 in Vision 2026 which includes “investigating and promoting alternative energy sources”.

5. FINANCIAL IMPLICATIONS

The costs of the Pre-feasibility Studies (“Phase 1”) are summarized in Table 1. The Region leveraged Provincial wind map results to conduct the York Region wind map analysis at a cost of \$2,440. This replaced the York Region mapping initiative (previously approved by Council) of \$11,540.

Table 1
Wind Energy Study (Phase 1) Cost Summary

Project Activity	Status	Cost (\$)
Wind Energy Pre-feasibility Study (W-S)	Complete	\$27,500
Wind Energy Pre-feasibility Study (Georgina)	Complete	\$28,710
Evaluation of Wind Speeds	Complete	\$ 2,440
Total		\$58,650

The Region received conditional approval from FCM to cover 50% of the Wind Energy Study (“Phase 1”) costs. This funding would only be received if the Region proceeds past Phase 1 and conducts detailed feasibility work, as described in Section 4.2 (“Phase 2”). As a result, the Region would incur no net costs in 2006 if it were to proceed with Phase 2, since it would be eligible to recover 50% of both Phase 1 and 2 costs (Table 2). A detailed application will need to be submitted to FCM to apply for this funding. The cost and the potential funding have been approved in the 2006 Budget.

Table 2
Wind Energy Monitoring On-Site (Phase 2) Cost Summary

Project Activity	Timeframe	Cost (\$)
Wind Monitoring Station	2006 – 2007 (1 year)	\$55,000
50% FCM GMF Funding*		\$56,825
Total (Net)		(\$ 1,825)

*Phase 1 and Phase 2 costs are eligible for 50% FCM funding only if Phase 2 is completed.

The proposed Standard Offer Program and Net Metering Regulation would help offset incremental costs associated with the potential development of a wind energy project.

6. LOCAL MUNICIPAL IMPACT

A wind power project in York Region will have a range of benefits to the local community. One of the main advantages includes improvements in Regional air quality and reduced greenhouse gas emissions. A wind energy project could help the Region meet its clean air and Kyoto requirements.

Locally generated power, or 'distributed generation', means less wires/infrastructure and associated upgrades, as well as greater electrical grid reliability and stability in the Region. A 1 MW wind turbine with a capacity factor of 30%, to take account of the intermittency of wind, would produce enough energy to meet the consumption demand of 320 homes.

Furthermore, a wind energy project would be highly visible to the public and would demonstrate the Region's commitment to Vision 2026, Corporate Clean Air and Sustainable Development.

7. CONCLUSION

This report describes the next phase associated with the development a small-scale "behind the meter" wind energy demonstration project.

The findings of the Wind Energy Studies suggest that the Sutton WPCP is the most promising "behind the meter" site. Given the importance of wind resource quality in determining the business case for a wind energy project, the next phase is to erect a meteorological tower (MET Tower) at the Sutton WPCP and measure the wind regime for one year.

Staff will report back with a detailed business case for the development of a wind energy project at the Sutton WPCP following the 12 months of on-site wind monitoring.

The Senior Management Group has reviewed this report.