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PILOT PROJECT UPDATE - ELECTRICITY DEMAND MANAGEMENT UTILIZING EXISTING EMERGENCY GENERATORS

The Environmental Services Committee recommends:

- 1. Adoption of the recommendations contained in the following report dated September 9, 2009, from the Commissioner of Corporate Services and the Commissioner of Environmental Services, subject to Recommendation No. 4 being amended to remove the word “large”, and the addition of a Recommendation No. 5 as follows:**
- 5. That staff report back to the Environmental Services Committee in the Spring of 2011 on the results of this project.**

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council endorse the continued implementation of demand response capacity using the emergency generator(s) at the Aurora Sewage Pumping Station.
2. Staff be authorized to prepare a revised contract agreement based on the best currently available demand response program in a form acceptable to the Regional Solicitor.
3. The Commissioner of Corporate Services be authorized to execute the revised agreement subject to review by Legal Services.
4. Demand response capability be assessed for future capital projects involving large generators, and incorporated into the infrastructure if the business case is acceptable and funding is available.

2. PURPOSE

Council previously approved the use of emergency generator(s) at the Aurora Sewage Pumping Station to help the Province alleviate a power shortfall in York Region during critically high demand periods. The Region has generators at all pumping stations in the event of a general power failure on the main power grid. The objective has not changed, however it is now being proposed to enroll under a different program with a different revenue share that would be more beneficial for the Region under most operating scenarios. It is also proposed that the use of emergency generators for provision of demand response capacity at other Regional facilities be explored.

3. BACKGROUND

Demand response pilot project was approved by Council in 2007

Council adopted the staff recommendations for occasional use of the three emergency generators at the Aurora Sewage Pumping Station (SPS) for electricity demand management at its meeting on March 29, 2007. Powerstream and its agent Safety Power would provide the capital and project management for required upgrades. After further investigation, only one of the three generators was found to be suitable for demand response purposes. (Emission levels from the two older generators were too high.) Council adopted on November 29, 2007 the recommendation to proceed with just the one 1.5 megawatt (MW) generator.

Benefits from enrolling in the demand response program include the following, as described more fully in the previous Council reports:

- Relieves stress on the Armitage Transformer Station during peak electricity demand periods, improving grid reliability in a large part of York Region
- Capital upgrades in place include equipment to reduce air emissions during generator operation
- Operating occasionally under full load increases generator life and reliability
- Enrolling for demand response generates revenue for the Region
- Demonstrates the Region's social, financial and environmental stewardship

Upgrades are complete but required approvals are still pending

Powerstream / Safety Power financed and installed the necessary upgrades to ready the emergency generator for peak demand management. These upgrades were completed in early 2008.

The responsibility of requesting and obtaining the revised Certificate of Approval (Air) lies with Powerstream / Safety Power. Changing the use of the generator to a combination of standby use and demand response brought the project under Ontario Regulation 116/01 Electricity Projects, which requires an Environmental Assessment Screening Process. The EA was completed in mid-2008, however the Ministry of Environment (MOE) did not post a ruling on air emission requirements for emergency generators used for demand response until March 2009. The MOE is still finalizing the revised Certificate of Approval.

In the meantime, the Environmental Services Department is finalizing an Internal Communications Protocol to ensure smooth implementation of the demand response program. The Protocol is a comprehensive document that describes the roles and responsibilities of York Region staff and Safety Power Inc. when an operational directive is received from the Province to operate the generator for demand response purposes at

the Aurora Sewage Pumping Station. Contract documents and revenue sharing with Safety Power are being negotiated.

4. ANALYSIS AND OPTIONS

Improved revenue opportunity is available at the Aurora Sewage Pumping Station

The previous Council reports specifically mention that York Region intended to enroll under the Province's Emergency Load Reduction Program with a 50-50 net revenue share with Powerstream / Safety Power. A new program, the North York Demand Response (DR) Program, has since become available that offers better revenue potential, as shown in Table 1 below.

Table 1
Estimated Annual Net Revenue to Region for Demand Response at
Aurora Sewage Pumping Station

Emergency Load Reduction Program	North York Demand Response Program
\$0 - \$12,200	\$18,100 - \$27,700

The revenue shown is net of incremental fuel and maintenance costs.

The Emergency Load Reduction Program only pays when the generator actually runs. The higher Emergency Load Reduction Program estimate assumes 40 hours annual run-time, but as the program has not been activated the revenue to date would be zero. The North York DR Program provides a capacity (standby) payment even if the generator doesn't run. The lower estimate is based on zero run-time and the higher end of the revenue range is based on our estimate of 125 hours maximum likely annual run-time.

There are no penalties under the North York DR Program if the generator is unavailable for any reason; however, payments owing the Region would be withheld and reoccurrence of non-compliance can result in the agreement being terminated.

Details of the revenue sharing agreement are still being negotiated, so the revenue opportunity may improve further. York Region staff is seeking authorization to prepare an agreement based on the best currently available opportunity. This would include the possibility of enrolling in an alternate demand response program should one become available during negotiation that overall provides similar or better advantages for the Region than are contained in the North York DR Program

Future developments may impact our involvement in the program

Previous Council reports proposed a minimum three-year contract term with Powerstream / Safety Power. Several important events will happen during that period that may influence our involvement in the program:

- The revised Certificate of Approval stipulates that source testing be completed and submitted to the MOE within three months of issuance in order to maintain the Certificate of Approval. The Region's share of the testing cost is expected to be about \$3,000.
- Ontario's *Electricity Act* was amended to specifically exempt the Region from being required to establish a separate municipal corporation to generate electricity at the Aurora Sewage Pumping Station. The exemption expires May 25, 2010. PowerStream / Safety Power will request an extension to the amendment if required.
- More stringent air emission limits in the revised Certificate of Approval take effect on January 1, 2011. Additional modeling, testing, and possibly equipment upgrades may be required. Any significant capital requirements will be brought to Council in 2010.

Staff is recommending that since the North York DR Program expires on September 30, 2012, and that the Region's involvement in any successor program will have to be negotiated, that York Region proceed with preparing a revised contract agreement based on the best currently available demand response program. Update reports will be provided to Council before any renegotiations.

Additional demand response projects should be explored

The Property Services Branch has discussed the possibility of additional pilot projects with various departments and has developed a financial model to describe the cost-benefit. Potential revenue from upgrading additional emergency generators ranges from \$60,000 to \$125,000 per MW per year, with a payback frequently less than ten years. Total capacity of existing emergency generators in the Environmental Services Department, as an example, is 24 MW.

Staff is recommending that demand response capability be evaluated for future capital projects involving installation or upgrade of large (megawatt-size) generators, and incorporated into future capital projects if the business case is acceptable and funding is available.

Relationship to Vision 2026

This Program is in line with Goal 2 "Enhanced Environment, Heritage and Culture" and supports Goal 4 "responding to the needs of our residence" of Vision 2026. Implementing this program will support the following criteria:

- Ensuring clean water and air
- Promoting conservation
- Using energy more efficiently in operations of the Regional government

5. FINANCIAL IMPLICATIONS

No additional capital investment required at present

As there is no capital investment required from the Region, this proposal will have no impact on the budget. No additional staff is anticipated to be required for this initiative due to the minimal involvement required to make the generator available for participation. Any incremental cost associated with operating the generator for the purpose of peak demand management will be deducted from the revenue received from electricity generation.

Increased revenue expectations

PowerStream / Safety Power is seeking the right to use the single 1.5 megawatt generator for the maximum 250 hours per year for a minimum of three years. Actual run-time will likely be much less. Revenue sharing will be negotiated based on the best currently available opportunity, but will be at least as good as described in previous Council reports.

6. LOCAL MUNICIPAL IMPACT

This initiative exhibits the Region's leadership in addressing the critical electricity supply issue in North East York Region.

7. CONCLUSION

The Aurora Sewage Pumping Station demand response initiative is a partnership between York Region and PowerStream / Safety Power. The community benefits from improved reliability of the electricity grid and reduced risk of events such as brown-outs and rolling black-outs in York Region and the Province. Generator reliability will be improved and air emissions during generator operation will be reduced. The Region will benefit from a new revenue source.

For more information on this report, please contact Michael Lithgow, Corporate Energy Manager at Ext. 1743.

The Senior Management Group has reviewed this report.