



# The Corporation of the Town of Milton

Report To: Council

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From: Glen Cowan, Chief Financial Officer/Treasurer

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Date: January 21, 2019

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Report No: CORS-005-19

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Subject: Loan Guarantee for Milton Hydro Battery Project

**Recommendation:** **THAT Council approve the borrowing by Milton Energy and Generation Solutions Inc. in the amount of up to \$9,400,000 from TD Bank for the capital investment in the Vanadium Redox Battery Project as described in report CORS-005-19 (“MEGS Loan”);**

**AND THAT the Town of Milton provide a grant to Milton Energy and Generation Solutions Inc. in the form of a guarantee in favour of TD Bank, on terms and conditions satisfactory to the Town’s solicitor and Chief Financial Officer / Treasurer guaranteeing the indebtedness of Milton Energy and Generations Solutions Inc. to TD Bank, pursuant to the MEGS Loan;**

**AND THAT the Mayor and the Town Clerk be authorized to sign any required guarantees, agreements or other documents to implement the foregoing matters, in the forms approved by the Chief Financial Officer/Treasurer, in consultation with the Town Solicitor.**

## EXECUTIVE SUMMARY

- Milton Hydro Holdings Inc. (“Milton Hydro”), through Milton Energy and Generating Solutions (MEGS) intends to acquire the rights to an agreement with Ontario’s Independent Electricity System Operator (IESO) for a Vanadium Redox Battery Project.
- MEGS will be responsible for the acquisition and operation of the Battery with an initial capital cost estimated at \$9.3 million. IESO will provide MEGS revenue of



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\$69,498 per megawatt (MW) per month for a 10 year period. The project has an estimated internal rate of return of 7.0% in the first 10 years.

- MEGS intends to secure a loan from TD Bank for the project, and will receive preferential terms (including a lower cost of borrowing) should the loan be guaranteed by the Town.
- The risk associated with the significant variables involved with the project will be reduced through securing the rights to the agreement with IESO, the acquisition of additional warranty coverage, and the confirmation of capital costs at the project's outset. As such no direct cash flow implications are expected for the Town. Should something unexpected arise MEGS would need to identify alternate sources to support the repayment to TD Bank, which could ultimately impact the amount available for dividend to the Town.

## REPORT

### Background

IESO initiated a process to better understand how energy storage projects can be integrated and operated in the Ontario market. Through an energy storage procurement process, IESO identified projects that have the ability to store energy during times when demand for electricity and associated prices are low and re-inject it into the grid during periods of greater need and higher prices. Baseload Power Corp., in collaboration with Milton Hydro, has entered into an agreement with the Independent Electricity System Operator (IESO) to serve as a location for one of these projects.

The project will involve a Vanadium Redox Battery (VRB). This a 4-hour 2 MW flow battery with the ability to store up to eight MWh of energy. The name of this technology comes from the fact that the charge carriers are in a liquid form and flow past the electrodes during times of charging and discharging. Flow batteries have a number of advantages:

- the amount of electricity (in kWh) they can store is limited only by the size of the liquid storage tanks;
- deep charging and discharging can occur over a large number of cycles without significant degradation;
- end of life recharging can be almost instantaneous by replacing the liquid in the storage tanks and recovering the spent material for re-energization;
- the equipment is non-flammable and emission free without containing any heavy metals; and



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- the complicated and expensive parts of the system — the electrodes and membrane separating the two charge carriers — can be relatively compact and still handle a large amount of kWh of storage.

The project will be located on the site of Milton Hydro Distribution Inc.'s head office in an area in close proximity to other large electricity consumers. The project will feed into the Milton Hydro distribution system, providing support for the grid if needed and the storage of less expensive off-peak power for use at higher cost peak times.

MEGS will be required to purchase and install the VRB, at a cost estimated in the order of \$9.3 million. They will also be responsible for any associated maintenance and operating costs. IESO has committed to provide \$69,498 per megawatt (MW) per month for a 10 year period through their existing contract with Baseload Power Corp. MEGS intends to secure the rights to this contract, and therefore the related revenue stream, prior to the capital acquisition.

In order to finance the initial capital cost, MEGS has engaged in discussions with its financial institution (TD Bank) to secure a loan. Through those discussions it was identified that the terms of the loan arrangement would be much preferable for MEGS if the loan were to be guaranteed by the Town. With the Town's guarantee, MEGS can secure 100% of the initial capital cost (vs. 80% without the guarantee), and the interest rate will be approximately 2.0% lower over the 10-year term of the loan.

As such, and given the Town's equity interest in Milton Hydro, this report has been prepared in order for Council to consider the loan guarantee. The upset limit of the guarantee of \$9.4 million is slightly higher than the current estimated initial cost (\$9.3M) to provide a small contingency as project details are finalized.

## Discussion

The initial capital cost of the project is estimated at \$9,286,899 as follows:

Battery/Inverter/Transformer Equipment	\$ 7,489,225
Hydro One / EPC Cost	1,459,007
Geothermal/Stormwater Management	130,000
Development & Construction	208,667
<b>Total</b>	<b>\$ 9,286,899</b>

Once commissioned, the primary revenue stream will be the monthly funding from IESO which will amount to \$138,996 (at \$69,498 per MW per month). This amount will remain fixed during the 10 year term of the agreement. There will also be some supplemental revenue based on the timing and management of energy distribution, currently estimated at \$7,693 per month.



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Monthly expenses will include maintenance, insurance, hydro delivery, administration etc. Baseload Power Corp. will be retained by MEGS throughout this initiative to undertake several of these tasks. The operating costs are estimated to start at \$23,248 per month and grow over the 10 year period with inflation to \$28,302. In addition, there will also be additional warranty coverage costs which will average \$10,878 per month over the 10 year period.

A more detailed cash flow is included as Appendix 1 to this report. Based on the cash flow described above, the internal rate of return (IRR) of this project is projected to be 7.0% for the initial 10-year period. Given that this rate is higher than the cost of borrowing (estimated at 3.75%), that suggests that from strictly a cash flow perspective this project has a positive return for MEGS during this period.

When the loan anticipated is factored in, payments in the order of \$96,000 per month will be required over the 10-year term (assuming the preferable 3.75% interest rate with monthly compounding and payments). Over the entire period, the estimated net cash generated by MEGS is projected to amount to \$1.65 million.

The estimated life of the VRB is expected to be at least 25 years. After the initial 10-year period, MEGS will retain ownership of the VRB, and therefore have opportunity to further benefit from the asset. This potential future benefit has not been reflected in the rate of return of 7.0% described above.

With respect to risk and sensitivity, on the revenue side since the monthly rate paid to MEGS by IESO is fixed at \$69,498 per MW through the existing contract, the remaining risk relates to the ability ensure the 2 MW capacity throughout the 10 year term. In order to mitigate this risk, MEGS will be retaining additional warranty coverage (as noted above) that should ensure the functionality of the VRB for the 10 year period.

With respect to the costs, the primary capital costs are the direct hard costs for the VRB for which MEGS has already received a quote for the equipment. Similarly with respect to operating costs a quote has been received for the additional warranty coverage and the terms of the bank loan will be finalized at the outset of the project.

The other costs may fluctuate during the time horizon, but are not as significant as the main drivers noted above. A sensitivity analysis is included as Appendix 2.

The timeframe outlined in the agreement with IESO begins in November 2019. Given the timeframe associated with delivery and commissioning of the VRB, timely approval of this initiative would be beneficial.



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## Financial Impact

The Town has outstanding loan guarantees for MEGS amounting to \$5,100,000. These were approved in reports CORS-055-18 and COMS-024-16 and relate to the Solar Panel and Combined Heat Power (CHP) projects. With the additional upset limit of \$9,400,000 for the VRB project, the total guarantees amount to \$14,500,000.

As previously noted in COMS-024-16, the Town's solicitor has confirmed that the granting of these guarantees is permissible under the *Municipal Act, 2001*. Section 107(1) and (2)(a) clarify that the power to make a grant includes the power to guarantee a loan and make such a grant for any purpose that Council considers to be in the interest of the municipality. This project is in the municipality's interest as the guarantee reduces the interest incurred by MEGS and therefore increases the potential for dividends back to the Town as the sole shareholder. As noted above this project is also part of a broader initiative to better understand energy storage solutions in the Ontario market.

No direct cash flow implications are anticipated to the Town. As outlined above, the major variables have been mitigated through the agreement with IESO, the additional warranty coverage that will be obtained, and the confirmation of the capital cost at the project's outset. In the event a negative financial return were to be incurred for any reason, MEGS would need to identify alternate sources to support the repayment to TD Bank, which could ultimately impact the amount available for dividend to the Town.

Respectfully submitted,

Troy McHarg  
Interim Commissioner, Corporate Services

For questions, please contact: Name: Glen Cowan x2151

## Attachments

Appendix 1 – Project Cash Flow  
Appendix 2 – Sensitivity Analysis

CAO Approval  
William Mann, MCIP, RPP, OALA, CSLA, MCIF, RPF  
Chief Administrative Officer

## Appendix 1 – Project Cash Flow

	Construction Period	Year 1	Year 2	Year 3	Years 4 - 10	Total
<b>1. Cash Flow (excluding financing)</b>						
Revenue						
IESO Payment	0	1,667,952	1,667,952	1,667,952	11,675,664	16,679,520
Other	0	92,316	92,316	92,316	646,212	923,160
<b>Subtotal</b>	<b>0</b>	<b>1,760,268</b>	<b>1,760,268</b>	<b>1,760,268</b>	<b>12,321,876</b>	<b>17,602,680</b>
Expense						
Capital Investment	(9,286,899)	0	0	0	0	(9,286,899)
Warranty	0	(65,266)	(79,769)	(94,272)	(1,066,003)	(1,305,310)
Operating Cost	0	(284,048)	(289,689)	(295,443)	(2,239,168)	(3,108,348)
<b>Subtotal</b>	<b>(9,286,899)</b>	<b>(349,314)</b>	<b>(369,458)</b>	<b>(389,715)</b>	<b>(3,305,171)</b>	<b>(13,700,557)</b>
<b>Total (before financing)</b>	<b>(9,286,899)</b>	<b>1,410,954</b>	<b>1,390,810</b>	<b>1,370,553</b>	<b>9,016,705</b>	<b>3,902,123</b>
Internal Rate of Return		7.0%				
Net Present Value (at 3.75%)	\$	1,500,956				
Breakeven		7 Years				
<b>2. Cash Flow (including financing)</b>						
Net Cash Flow before Financing	(9,286,899)	1,410,954	1,390,810	1,370,553	9,016,705	3,902,123
Loan Proceeds	9,286,899	0	0	0	0	9,286,899
Loan Repayment	0	(1,153,383)	(1,153,383)	(1,153,383)	(8,073,682)	(11,533,832)
<b>Total (after financing)</b>	<b>0</b>	<b>257,571</b>	<b>237,427</b>	<b>217,170</b>	<b>943,023</b>	<b>1,655,190</b>

## Appendix 2 – Sensitivity Analysis

	Estimated Net Cash Flow (over 10 Year Period)	Difference from Base Case	
		\$	%
Base Case	\$ 1,655,190	\$ -	0%
10% Increase in Construction Cost	\$ 502,263	\$ (1,152,928)	-70%
10% Increase in Warranty Costs	\$ 1,524,659	\$ (130,531)	-8%
10% Increase in Operating Costs	\$ 1,346,356	\$ (308,835)	-19%
Cost of Borrowing Increase by 1%	\$ 996,724	\$ (658,466)	-40%
Cost of Borrowing Increase by 2%	\$ 312,768	\$ (1,342,422)	-81%
10% Loss in IESO Revenue*	\$ (12,762)	\$ (1,667,952)	-101%
50% Reduction in other revenue	\$ 1,193,610	\$ (461,580)	-28%

\* Impact only if loss is not recovered via extended warranty.