



**City of Kingston  
Report to Council  
Report Number 17-292**

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<b>To:</b>	<b>Mayor and Members of Council</b>
<b>From:</b>	<b>Lanie Hurdle, Commissioner, Community Services</b>
<b>Resource Staff:</b>	<b>Peter Huigenbos, Director, Real Estate &amp; Environmental Initiatives</b>
<b>Date of Meeting:</b>	<b>October 17, 2017</b>
<b>Subject:</b>	<b>Municipal GHG Challenge Fund Application</b>

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**Executive Summary:**

The Government of Ontario recently launched the Municipal GHG Challenge Fund, a granting program designed to support community-led action on climate change. This competitive application-based program will fund up to 100% of the eligible costs for greenhouse gas (GHG) emission reduction projects proposed by municipalities. A higher score will be given to applicants that leverage funds for up to 50% of eligible costs (i.e. through federal/municipal governments, private sector, industry partners, etc.). Eligible projects can propose to reduce GHG emissions in any sector, including buildings, energy supply, transportation, water, waste and organics. Projects that are currently underway are only eligible if they were initiated after June 1, 2016, and are limited to funding requests of no more than 25% of eligible costs.

The City of Kingston has an opportunity to take advantage of this funding program through submissions to the Province in four identified project areas:

- Incorporation of a geothermal system and rooftop solar photovoltaic (PV) installations as part of the forthcoming construction of a new fleet maintenance garage at the 701 Division Street municipal campus;
- Purchase of two (2) fully-electric long-range transit buses to be incorporated into Kingston Transit operations;
- Replacement of boiler and heating systems at Rideaucrest Home; and
- Recuperation of costs related to the installation of a series of lighting retrofit projects completed over the past 12 months.

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The above projects as proposed are projected to reduce the corporation's overall GHG output by approximately 2% annually, moving the City significantly closer to its reduction goal of 8% below 2011 levels by 2020.

The Corporate Climate Action Plan (CCAP) is the municipal corporation's contribution to the community carbon reduction goal, and is a component of the City's membership commitment to the Federation of Canadian Municipalities' Partners in Climate Protection program and Sustainable Kingston's Green Economy Kingston program. The CCAP also contributes to Council's Strategic Priorities with respect to Greening the City and creating a Livable City.

Council received Information Report Number [17-004](#) on June 20, 2017, which provided an update on the progress of the CCAP. The CCAP sets out a carbon reduction goal for municipal operations of 8% below 2011 levels by 2020. The 8% reduction goal is in addition to reductions already achieved through the greening of Ontario's electricity generation. Between 2011 and 2015, the City achieved 3% of the 8% of the goal.

The June 20<sup>th</sup> report indicated that future measures to achieve the remaining 5% reduction will be more progressive than past initiatives and will require more financial investment. The collective GHG reduction associated with the four proposed initiatives represents 40% of the remaining reductions needed (as of 2015) to achieve the goal.

Council's resolution of support is time sensitive due to an application deadline of November 14, 2017.

**Recommendation:**

**That** Council approve the submission of a grant application to the Municipal GHG Challenge Fund for incorporation of a geothermal system and rooftop solar photovoltaic (PV) installations as part of the forthcoming construction of a new fleet maintenance garage at the 701 Division Street municipal campus; and

**That** Council approve the submission of a grant application to the Municipal GHG Challenge Fund for the purchase of two (2) fully-electric long-range transit buses to be incorporated into Kingston Transit operations; and

**That** Council approve the submission of a grant application to the Municipal GHG Challenge Fund for the replacement of the boilers at Rideaucrest Home; and

**That** Council approve the submission of a grant application to the Municipal GHG Challenge Fund to facilitate the recuperation of costs related to the installation of a series of lighting retrofit projects completed over the past 12 months; and

**That** the Chief Administrative Officer or designate be delegated the authority to sign applications for the Municipal GHG Challenge Fund for the above noted projects; and

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**That** the Mayor and Clerk be authorized to sign funding agreements, in a form satisfactory to the Director of Legal Services, related to the applications outlined in Report Number 17-292; and

**That** the City Treasurer be authorized to make the necessary budget amendments for any project approved in the Municipal GHG Challenge Fund, as outlined in Report Number 17-292.



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**Options/Discussion:**

The Municipal GHG Challenge Fund was recently announced by the Province's Ministry of the Environment and Climate Change, and is aimed at supporting community-led action on climate change. This competitive application-based program will fund up to 100% of eligible costs for GHG emission reduction projects proposed by municipalities. Eligible municipalities may request up to \$10 million per project. This round of the Challenge has a total available funding pool of \$100 million. Successful municipalities will be informed in writing by February 2018. Additional rounds of funding are expected to be made available in subsequent years.

To participate, municipalities are required to possess or demonstrate a commitment to completing the following:

- Community-wide GHG emissions inventory;
- Community-wide GHG emissions reduction targets;
- Community-wide strategy/plan to reduce GHG emissions; and
- Up-to-date O.Reg. 397/11 CDM 5-year plans and annual reporting (mandatory for all municipalities).

Any municipal project that can quantify a reduction in GHG emissions is eligible for funding, including building construction or retrofits, energy supply, transportation, water, waste and organics sectors. Project construction must commence by March 2019. Initiatives that are currently underway are only eligible if they were initiated after June 1, 2016.

GHG project applications will be evaluated on project focus, co-benefits, alignment with municipal GHG emission planning, and submitted work plan and budget. The Government of Ontario will contribute up to 100% of eligible costs; however, a higher score will be given to applicants that leverage funds for up to 50% of eligible costs (i.e. through federal/municipal governments, private sector, industry partners, etc.). The assessment and measurement of GHG emissions reduction is heavily weighted by the Province in their evaluation of each project proposal. In other words, projects that result in significant and cost-effective GHG reductions will be favoured. Significant weighting will also be given to projects that yield earlier GHG reductions.

Council received Information Report Number [17-004](#) on June 20, 2017, which provided an update on the progress of the CCAP. The CCAP sets out a carbon reduction goal for municipal operations of 8% below 2011 levels by 2020. The 8% reduction goal is in addition to reductions already achieved through the greening of Ontario's electricity generation. Between 2011 and 2015, the City achieved 3% of the 8% of the goal.

The projects as proposed are projected to reduce the corporation's overall GHG output by approximately 2% annually, moving the City significantly closer to its reduction target of 8% below 2011 levels. The collective GHG reduction associated with the proposed initiatives represents 40% of the remaining reductions needed (as of 2015) to achieve this goal. It should be noted that consideration was given to a funding application for electric vehicle charging stations. This proposal presented significant challenges in accurately quantifying the resulting

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reduction of GHG emissions under the guidelines provided by the Province. Given the significant evaluation weight attributed to this calculation, and the relative strength of the calculations that can be made with the four proposed projects in this report, it was determined that a strong application for EV charging stations with this opportunity could not be made.

**Project #1: Fleet Maintenance Garage Application**

The City is scheduled to build a new 4,000 m<sup>2</sup> fleet maintenance garage at its municipal campus on Division Street. The campus currently houses the Public Works Operations Centre, the existing maintenance garage, Kingston Police headquarters, a sand/salt dome and seasonal maintenance equipment and vehicle storage.

In order to meet the City's GHG reduction targets, the new garage is being designed to achieve as close to a net-zero carbon emission target as is technically and financially feasible. The building will be designed to be highly energy efficient. The City is also evaluating the feasibility of a campus-wide geothermal system, as well as rooftop solar photovoltaic (PV) arrays on several buildings. Collectively, these two systems are expected to significantly reduce the GHG impact of the project. This initiative supports the vision and objectives of the 2015 City of Kingston CCAP.

Geothermal systems have not been widely adopted due to initial capital and ongoing operating costs. While they reduce the consumption of natural gas for heating, they require increased electricity use to operate the pumps. Since electricity in Ontario is significantly more expensive than natural gas, this, along with the initial installation cost, has been a deterrent. However, the switch from natural gas to electricity results in a marked reduction in GHG emissions. This project is expected to demonstrate that a geothermal system in combination with a net-metered solar PV system is a feasible, cost-effective means for a municipality to meet GHG reduction targets, particularly when implemented on a campus-wide basis.

Based on a conceptual design for the geothermal and solar PV system(s), it is estimated that CO<sub>2</sub>e emissions will be reduced by 250 tonnes annually for the campus. This would represent a reduction of approximately 73% of the GHG emissions estimated for the new facility (340 tonnes of CO<sub>2</sub>e) and approximately 34% for the overall campus (based on a 730 tonnes of CO<sub>2</sub>e baseline for the site, which includes the current Public Works Operations Centre, Kingston Police headquarters and the new Fleet Garage).

**Project #2: Electric Transit Bus Application**

The City of Kingston (Kingston Transit) will be making an application to the Fund to replace two 2008 model year New Flyer diesel 12 metre (40 feet) buses with two (2) 2019 model year long-range fully-electric 12 metre (40 feet) buses. The two electric buses will be utilized on Kingston Transit's 22 conventional transit routes, and will collectively travel an average of 149,604 kilometres and operate 8,000 hours annually. As a result, diesel fuel consumption will be reduced by 82,160 litres<sup>1</sup> each year. The introduction of two long-range plug-in electric buses into the fleet and the removal of two diesel buses are expected to reduce GHG emissions by

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<sup>1</sup> based on 2016 Kingston Transit performance data reported to the Canadian Urban Transit Association

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approximately 209.8 tonnes of CO<sub>2</sub>e annually. Over the expected 12-year useful life of each electric transit bus, GHG emissions are expected to be reduced by approximately 2,518 tonnes of CO<sub>2</sub>e.

### **Project #3: Rideaucrest Boiler Replacement Application**

The City will be assessing the opportunity to replace hydronic heating systems within Rideaucrest Home. The heating for the building is currently provided by three primary boilers installed in 1992. These boilers are past their typical 20-year lifecycle. Additional heating systems are used for Domestic Hot Water loads and Humidification of the building. All of these heating sources are considered standard efficiency appliances and do not meet current manufacturing standard efficiency requirements.

In order to meet the City's GHG reduction targets, a modernized heating system would be designed to operate at peak efficiencies and greatly reduce the output of emissions. In addition, there could be an opportunity to incorporate renewable energies and/or conservation measures to further improve system efficiency resulting in a greater overall impact. The improved heating systems are expected to significantly reduce the GHG impact of the building. Based on preliminary model calculations, it is estimated that a reduction of 89 tonnes of CO<sub>2</sub>e will occur annually as a result of the primary boiler heating system alone.

### **Project #4: Lighting Retrofits Application**

Since June 2016, lighting retrofits have been installed at a number of City-owned facilities, including Rideaucrest Home, 85 Lappans Lane, the INVISTA Centre, 1030 Sunnyside Road and the Robert Bruce Parking Lot. The projects collectively amount to an annual reduction of 18.2 tonnes of CO<sub>2</sub>e. Because the retrofits are already completed, they are eligible for no more than 25% cost recovery through the GHG Challenge Fund.

### **Existing Policy/By-Law:**

Corporate Climate Action Plan: By 2020, the corporation is to achieve an 8% reduction in GHG emissions below its 2011 levels.

Kingston's Strategic Plan 2015-2018

Kingston Climate Action Plan

### **Notice Provisions:**

Not applicable

### **Accessibility Considerations:**

Not applicable

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**Financial Considerations:**

Municipalities may request up to \$10 million per project. The Province will contribute up to 100% of eligible costs; however, a higher score will be given to applicants that leverage funds for up to 50% of eligible costs (i.e. through federal/municipal governments, private sector, industry partners, etc.).

<b>Project</b>	<b>Estimated Cost</b>	<b>Funding Request</b>	<b>Additional Funding Sources</b>
Fleet Maintenance Garage – Geothermal and Solar PV System Components of Project	\$3M	50%	FMCS Capital Budget 2018 - 2020, exploring Federal funding options
Electric Transit Buses	\$2.2M + \$100K charger	75%	Environmental Reserve Fund, exploring the potential for community and/or corporate partnerships to reduce funding request
Rideaucrest Boilers and Heating Systems Enhancements	\$350K	50%	FMCS Capital Budget 2018/2019
Lighting Retrofits	\$140K	25%	FMCS Capital Budget 2016/2017 (work is already complete or underway)

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**Exhibits Attached:**

Not applicable