

<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON OCTOBER 24, 2017</b>
<b>FROM:</b>	<b>KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL &amp; ENGINEERING SERVICES &amp; CITY ENGINEERING  &amp; ANNA LISA BARBON MANAGING DIRECTOR, CORPORATE SERVICES &amp; CITY TREASURER, CHIEF FINANCIAL OFFICER</b>
<b>SUBJECT:</b>	<b>MUNICIPAL GREENHOUSE GAS (GHG) CHALLENGE FUND APPLICATIONS</b>

<b>RECOMMENDATION</b>
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That, on the recommendation of the Managing Director, Environmental & Engineering Services & City Engineer and Managing Director, Corporate Services & City Treasurer, Chief Financial Officer,

- a) Information about the Province of Ontario's Municipal GHG Challenge Fund **BE RECEIVED**;
- b) Applications for the following five projects **BE ENDORSED** for submission to the Municipal GHG Challenge Fund:
  - i. Renewable natural gas (RNG) production from the landfill gas collection system at the W12A landfill;
  - ii. Vehicle fleet greening, specifically refueling and vehicle maintenance facility infrastructure required to support future compressed natural gas waste fleet vehicles;
  - iii. Building energy retrofits and asset renewal, including building automation and lighting retrofits;
  - iv. Wastewater treatment plant process upgrades, including waste heat recovery for power generation, sludge thickening to reduce transportation fuel use, and aeration blower replacement;
  - v. Bike share system for London, including capital costs for bicycles, bike share stations, and program marketing and promotion; and
- c) Civic Administration **BE DIRECTED** to report back to the Civic Works Committee on the outcome of the Municipal GHG Challenge Fund applications including, where applicable, final business cases or other financial or environmental benefit details prior to final approval of projects.

<b>PREVIOUS REPORTS PERTINENT TO THIS MATTER</b>
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The relevant reports that can be found at [www.london.ca](http://www.london.ca) under City Hall (Meetings) is:

- Report to the October 11<sup>th</sup> 2017 Corporate Services Committee (CSC) Meeting, Single Source Award of Contract for Phase 6 Facility Renewal and Energy Retrofit Program (Agenda Item #2)
- Report to the August 29<sup>th</sup> 2017 Civic Works Committee (CWC) Meeting, Community Energy Action Plan – Update and Status (Agenda Item #11)
- Report to the July 31<sup>st</sup> 2017 CWC Meeting, Corporate Energy Management Program Update (Agenda Item #5)

- Report to the October 4<sup>th</sup> 2016 CWC Meeting, Landfill Gas Utilization Update and Next Steps (Agenda Item #12)

## STRATEGIC PLAN 2015-2019

Municipal Council has recognized the importance of climate change mitigation, climate change adaptation, related environmental issues and the need for a more sustainable city in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)). Specifically, the Community Energy Action Plan (CEAP), addresses all four Areas of Focus, at one level or another, as follows:

### **Strengthening Our Community**

- Healthy, safe, and accessible city

### **Building a Sustainable City**

- Convenient and connected mobility choices
- Strong and healthy environment

### **Growing our Economy**

- Local, regional, and global innovation
- Strategic, collaborative partnerships

### **Leading in Public Service**

- Collaborative, engaged leadership
- Excellent service delivery

## BACKGROUND

### **PURPOSE**

The purpose of this report is to provide Committee and Council with information about the Province of Ontario's new Municipal GHG Challenge Fund, and to seek a Council resolution to support the applications that City staff plan to submit to this funding program.

### **CONTEXT**

The City of London does not have direct control over how much energy is used and associated greenhouse gas (GHG) emissions in London, but it does have influence. The City can lead by example by taking action to reduce fossil fuel energy use in municipal buildings, fleet vehicles, and infrastructure. These actions were outlined in the Corporate Energy Management Program annual update submitted to Civic Works Committee and Council in July 2017.

The new Municipal GHG Challenge Fund, announced in August 2017, is one of the programs funded by revenue from Ontario's Cap & Trade program in support of Ontario's Climate Change Action Plan. This fund is administered by the Ontario Ministry of Environment and Climate Change (MOECC). It complements other programs funded by Cap & Trade revenue, such as the new Green Ontario (GreenON) Fund programs for residents and businesses, the new Ontario Municipal Commuter Cycling Program, and the proposed Green Commercial Vehicle Program.

### **DISCUSSION**

#### **Overview of the Municipal GHG Challenge Fund**

The province has allocated \$100 million to this round of funding, of which at least 30 percent has been set aside for small, rural, and northern municipalities. This leaves about \$70 million for larger municipalities in southern Ontario.

Municipal projects are any project where the municipality makes direct investments that reduce GHG emissions in any sector including buildings, energy supply, transportation, water, waste and organics sectors. Projects that are currently underway are only eligible if they were initiated after June 1, 2016.

For this particular fund, municipal projects that involve offering grants, loans, or other financial incentives to residents or businesses to reduce GHG emissions are not eligible.

Municipalities may request up to \$10 million per project. The Fund will contribute up to 100 percent of eligible costs, but a higher score will be given to applicants that leverage funds for up to 50 percent of eligible costs. Competition is expected to be high given that about 30 municipalities will be competing for \$70 million in funding in southern Ontario.

Applications to the Municipal GHG Challenge Fund are due November 14, 2017. Successful applicants will be notified by February 2018, with funding agreements required to be completed and executed within the short timeframe deadline of March 31, 2018. Projects are also required, at a minimum, to have started construction by March 31, 2019.

Future Municipal GHG Challenge Fund rounds are expected annually with similar timeframes to this current round. Funding amounts are dependent on Cap & Trade revenue, but are expected to be of similar value assuming future Cap & Trade auctions continue to sell out.

### **Municipal GHG Challenge Fund Suggested Projects**

The Municipal GHG Challenge Fund Program Guide includes the following as examples of projects that would be eligible for this fund:

- Renewable energy and energy efficiency retrofits to municipal facilities, such as arenas, community centres, libraries, and other municipal-owned buildings;
- Creating or expanding low-carbon district energy systems using sources such as biomass and waste heat recovery from sewers;
- Making energy-efficiency and renewable upgrades to drinking water or wastewater treatment plants;
- Installing systems to collect, process and treat methane gas from landfill sites to produce energy;
- Building or modifying an anaerobic treatment system for municipal organic waste, where generated renewable biogas is put to beneficial use; and
- Reducing GHG emissions in existing municipal fleets and the transportation network, including the establishment of a bike share system to serve transit riders, commuter cyclists, recreational cyclists, and visitors.

### **Municipal GHG Challenge Fund Evaluation Criteria**

Given the likely high competition for funding, understanding the evaluation criteria is key. The MOECC will be evaluating applications based on the following criteria:

- **Project Focus (10%)** - Higher scores will be given to projects that aim to replace fossil fuels with clean, renewable energy and achieve net zero (or better) emissions buildings, transportation systems, and/or infrastructure.
- **GHG Emissions Reduction Assessment (40%)** - Higher scores will be given to projects that result in significant and cost-effective GHG reductions. Greater weight will be given to projects that yield earlier GHG reductions, which City staff interprets as making contributions towards meeting 2020 and 2030 reduction targets. Cost-effectiveness is defined by the MOECC in its application as being the Total Funding Request divided by the Total GHG Reduction Potential over the entire project lifecycle, including beyond 2050. This cost-effectiveness calculation does not take into account any revenue potential either from providing a product (e.g., RNG for pipeline injection) or a service (e.g., bike share), nor any reduced energy costs from energy conservation.

- **Project Co-benefits (10%)** - Higher scores will be given to projects that result in positive co-benefits, including:
  - Economic Benefits
  - Social Benefits
  - Environmental Benefits (other than GHG reduction)
  - Behavioural Change Benefits
  - Innovation, Science and Technology Benefits
  - Benefits to low-income and vulnerable communities
  
- **Alignment with Municipal GHG Emissions Planning (10%)** - Higher scores will be given to projects that align with a municipality's GHG emissions planning and to municipalities that have a comprehensive GHG reduction plan that meets or exceeds the province's 2020, 2030 and 2050 targets. City staff interpret this as meaning projects that have already been identified within London's Community Energy Action Plan, the City of London's Corporate Energy Conservation and Demand Management (CDM) Plan, and/or Council-approved plans that include projects that will influence GHG reductions such as the Cycling Master Plan.
  
- **Work Plan and Budget (30%)** - Higher scores will be given to projects that have a detailed, feasible work plan to achieve the project outcomes. A higher score will also be given to applicants that leverage funds for up to 50% of eligible costs (e.g., through federal government funding, private sector, industry partners etc.).

### **Proposed Submissions to the Municipal GHG Challenge Fund**

The initial steps undertaken by City staff included a review of potential City projects with key City of London service areas, a preliminary assessment of potential scoring based on the evaluation criteria, and further discussions with MOECC staff to clarify questions regarding the eligibility of projects including confirmation that multiple GHG-reducing projects within service areas can be aggregated (i.e., bundled) within one Municipal GHG Challenge Fund application.

The following is a high-level summary of the five applications that City staff propose to submit to the Municipal GHG Challenge Fund.

1. **Renewable natural gas (RNG) production** – This project would upgrade the landfill gas (50% methane content) collected at the W12A Landfill, which is currently flared for GHG emission reduction purposes, to pipeline-quality renewable natural gas (>95% methane) for pipeline injection. This RNG could provide about 440,000 gigajoules per year of heat energy, equivalent to the natural gas used by about 5,250 homes. A portion of this RNG could also be allocated for use by City waste collection fleet vehicles to help offset GHG emissions for municipal operations. The RNG production facility would be designed to accommodate potential biogas and/or syngas from future organics management facilities and solid waste management facilities.

The potential to produce renewable natural gas (RNG) from landfill gas currently collected and flared at the W12A Landfill can also play a significant role in reducing greenhouse gas emissions in London and province-wide, as the amount of RNG that we could produce exceeds the amount of natural gas used by the municipal buildings, fleet vehicles, and infrastructure.

A successful application to the Municipal GHG Challenge Fund would have a significant influence on the business case for landfill gas utilization, as the equipment for upgrading landfill gas to RNG is capital intensive and has significant operating costs. Current estimates suggest that a 50 percent capital funding request between \$8 and \$10 million (the maximum submission amount) would assist in creating a sale price for RNG at approximately \$12-14 per gigajoule. Best available comparisons at this stage include British Columbia where long-term contracts for RNG are around \$16 per gigajoule. Shorter term contracts in the United States range from 12 to \$20 per gigajoule (in Canadian funds). The Province of Ontario is also expected to announce its RNG pipeline content mandate later this year.

Should the City be successful in its application to the Municipal GHG Challenge Fund for this project, City staff would then issue a Request for Proposals to design, build, operate, and maintain the RNG production facility with different options for ownership including 100 percent City ownership, 100 percent private developer ownership (selling landfill gas utilization rights), and shared public-private ownership.

2. **Compressed natural gas (CNG) vehicle infrastructure** – This application would address two key prerequisites needed for any future use of CNG vehicles within the City fleet – CNG fuelling and CNG vehicle maintenance infrastructure.

A public–private partnership with Union Gas would involve the expansion of a previously-planned Union Gas CNG fast-fill station to accommodate future City CNG waste collection trucks, but would be available for use by commercial vehicles outside of waste collection hours. This fast-fill CNG fuelling station would have co-benefits such as encouraging greater use of CNG vehicles which have lower noise emissions, lower air pollutant emissions (including the elimination of diesel soot, a known carcinogen), and lower fuel costs for their operators.

This application would also include the upgrades needed to City facilities to accommodate the maintenance of future CNG vehicles within the City fleet.

City CNG waste collection trucks could also make use of the RNG from the landfill as noted above (e.g., a 50:50 blend of CNG and RNG), which would significantly increase the GHG reduction benefits and associated funding cost per tonne while still providing fuel cost savings.

3. **Building energy retrofits and asset renewal** – This application would aggregate many of the projects already planned by Facilities for 2018 and 2019 identified in the Phase 6 Facility Renewal and Energy Retrofit Program measures list, which includes building automation and lighting retrofits at facilities. Co-benefits include greater physical comfort for Dearness Home residents as well as lower building operating costs.
4. **Wastewater treatment plant upgrades** - This application will include waste heat recovery for power generation using the Organic Rankine Cycle (ORC) Engine and aeration blower replacement, two projects already planned by Environmental & Engineering Services for completion in 2019. Enhanced sludge thickening will also be included in order to reduce heavy-duty truck sludge transportation by over 50 percent. Co-benefits include innovation technology benefits with the ORC power generation project, lower operating costs for wastewater operations, and reduced heavy-duty truck on roads near wastewater treatment facilities.
5. **Bike share system for London** – This application would include capital costs for bike share system of around 350 to 400 bikes, along with the associated bike share stations, marketing and promotion. Co-benefits include the behavioural change benefits (reduced traffic), health benefits (increased physical activity), low-income benefits (increased mobility at low cost and no risk of theft), and environmental benefits (reduced noise and air pollutant emissions) associated with encouraging active transportation.

The following table provides an overview of the estimated project cost, funding request, annual greenhouse gas emission reductions, and requested funding cost per tonne of greenhouse gas emissions over the project's lifespan. These estimates may be refined with updated information by City staff upon submission of the applications by November 17, 2017

Project	Estimated Project Cost	Proposed Funding Request	Assumed Project Lifespan (years)	MOECC Criteria	
				GHG Emission Reduction (tonnes per year)	Estimated Funding Cost-Effectiveness (\$/tonne)
1. RNG production from landfill gas	\$16 to \$20 million	\$8 to \$10 million	30	15,000	\$18-22
2. CNG vehicle infrastructure (assumed 50% CNG/RNG blend)	\$1.4 million	\$700,000	30	950	\$25
3. Building energy retrofits and asset renewal	\$400,000	\$200,000	20	70	\$140
4. Wastewater treatment plant upgrades	\$19 million	\$9 million	30	2,500	\$120
5. Bike share system for London	\$1.5 million	\$750,000	30	90	\$280

It is important to note that applications submitted are not legally binding. Proponents have the option of withdrawing applications should projects no longer become viable. Project funding, if approved, will be provided through a Transfer Payment Agreement between the Province and the City of London, which will set out the terms and conditions governing the grant that may include:

- project budget;
- project management;
- project activities;
- communication strategies for monitoring and reporting requirements, including progress reporting, GHG reporting, audits and financial reports;
- milestone and performance measures;
- mode and schedule of payment; and,
- contract termination and corrective action.

Where applicable, the Transfer Payment Agreement may also require the City to develop formal agreements and/or memorandums of understanding with any project partners to whom funding may be flowed for the purpose of meeting project objectives or addressing obligations.

It is also important to note that these applications may not be successful given the expected high competition for this funding.

### **Next Steps**

As noted above, applications are due by November 14, 2017. The following Service Area Divisions will be taking the lead on the applications:

1. **Renewable natural gas (RNG) production** – Environmental & Engineering Services (Solid Waste Management)
2. **Compressed natural gas (CNG) vehicle infrastructure** – Environmental & Engineering Services (Fleet and Operational Services)

3. **Building energy retrofits and asset renewal** – Finance and Corporate Services (Facilities)
4. **Wastewater treatment plant upgrades** - Environmental & Engineering Services (Wastewater Treatment Operations)
5. **Bike share system for London** – Environmental & Engineering Services (Environmental Programs)

Environmental Programs will be providing support for all five applications, primarily for the quantification of GHG emission reductions as well as demonstrating alignment within London’s Community Energy Action Plan and/or the City of London’s Corporate Energy Conservation and Demand Management (CDM) Plan.

Union Gas staff will also be providing assistance for the applications regarding RNG production and the compressed natural gas (CNG) vehicle infrastructure.

**ACKNOWLEDGEMENTS**

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- Fleet & Operational Services – Mike Bushby, Division Manager, Fleet & Operational Services
- Facilities – Steve MacDonald, Corporate Energy Management Engineer
- Roads & Transportation – Doug MacRae, Division Manager, Transportation Planning & Design
- Water & Wastewater – Geordie Gauld, Division Manager, Wastewater Treatment Operations

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