



# INFORMATION REPORT

<b>TO:</b>	Mayor and Members Board of Health
<b>COMMITTEE DATE:</b>	October 16, 2017
<b>SUBJECT/REPORT NO:</b>	Hamilton Climate Change Actions 2017 (BOH17037) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Trevor Imhoff (905) 546-2424, Ext. 1308  Brian Montgomery (905) 546-2424, Ext. 1275
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## Council Direction:

General Issues Committee (GIC), at its meeting of September 12, 2011 approved Report (PED11150) Climate Change Action Charter that stated:

- (a) City staff will be reporting to Council with an update on the progress of the Corporation and the City of Hamilton in tackling greenhouse gas emissions and reaching the adopted emission targets (PED11149).

Board of Health at its meeting of October 19, 2015 approved the following:

- (b) That Public Health Services staff be directed to work with staff from other City departments, and community members toward implementing actions identified in the Hamilton Community Climate Change Action Plan.

## Information:

Climate change is the altering of long-term weather patterns, with both natural and anthropogenic causes alter the chemical composition of the atmosphere through the build-up of greenhouse gases (GHG) primarily from the burning of fossil fuels. Recent

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climate changes have had widespread impacts on human and natural systems both globally and at a local scale.

The International Council for Local Environmental Initiatives (ICLEI) Canada updated The Science of Climate Change: Climate Data for the City of Hamilton, Ontario report in 2016 predicting climate change impacts in Hamilton based on projected emission scenarios. In general the science report predicts an increase in frequency, intensity and duration of:

1. Heat days causing drought;
2. Microbursts of precipitation causing floods; and
3. Extreme weather events such as wind and ice storms.

As these climate change impacts are predicted to worsen in the future, it is important for municipalities to prepare for this through climate adaptation. For more information on adaptation work that city staff in collaboration with community stakeholders is undertaking, see Hamilton's Climate Change Adaptation Work section on page six of this report or visit the website [climatechangehamilton.ca](http://climatechangehamilton.ca).

In October 2016, Canada along with 195 nations signed The Paris Agreement agreeing to work towards keeping the global temperature rise to two degrees Celsius above pre-industrial levels and to pursue efforts to limit the increase to one and half degrees Celsius (Government of Canada, 2017). By reducing total GHG emissions released into the atmosphere, Canada can contribute to mitigating climate change.

The City of Hamilton has been tracking its GHG emissions since 2006, using 2006 as the baseline year. As a member of the Federation of Canadian Municipalities (FCM) Partners for Climate Protection (PCP) which includes a five milestone framework.

Hamilton is a milestone five municipality completing:

1. Creation of a greenhouse gas emissions inventory and forecast;
2. Setting an emissions reductions target;
3. Developing a local action plan;
4. Implementing the local action plan; and
5. Monitoring progress and reporting results.

Hamilton's Community Climate Change Action Plan sets ambitious GHG emission reduction targets that align with the Province of Ontario's targets. Hamilton aims to reduce community GHG emissions by 20% of 2006 levels by 2020, 50% of 2006 levels by 2030, and 80% of 2006 levels by 2050.

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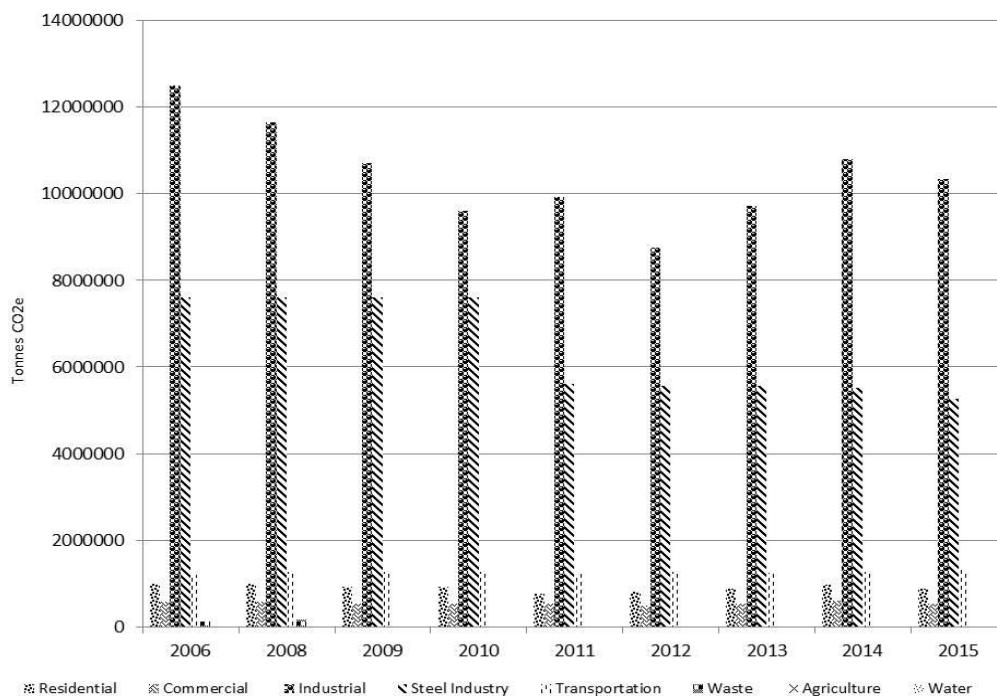
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Community GHG Emissions

The Hamilton community achieved the 2020 20% reduction target in 2011, nine years ahead of schedule. However, in 2013 and 2014 GHG emissions increased, bringing Hamilton’s reductions back down to 17%. This was likely caused by an unusually cold winter related to the polar vortex, which increased demand for heating. This increase in emissions is consistent with other municipalities’ GHG inventories, including the City of London (CDP, 2017). It appears electricity pricing in Ontario has caused customers to switch to natural gas which has a higher CO<sub>2</sub> equivalent than electricity.

In 2015 Hamilton’s GHG emissions reductions are back on track and below the 2020 target at 20.24%. The mild winter in 2015 which resulted in less natural gas use in residential, commercial and industry is likely the main reason for these reductions. The community’s main sources of GHGs were (from highest to lowest): industrial energy use, steel industry, transportation, residential energy use and commercial energy use, agriculture, water and then waste (Figure 1.0).

**Figure 1.0: City of Hamilton’s Community GHG Emissions 2015**



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***In terms of total GHG reductions compared to the 2006 baseline, the two sectors with the largest reductions are solid waste and water at approximately 93.5% and 45.3% respectively. The industrial sector and the steel sector are third and fourth at approximately 17.1% and 30.9% respectively. The transportation sector is the only sector that has not had any emission reductions compared to 2006 levels. Table 1.0 below shows the percent reduction of each sector between the years 2012 and 2015 compared to the 2006 baseline year.***

**Table 1.0: 2012-2015 GHG Reductions for each Sector Compared to 2006 Levels**

Year	2012	2013	2014	2015
Solid Waste Reduction	92.8%	93.4%	93.0%	93.5%
Water Reduction	51.6%	36.2%	42.0%	45.3%
Steel Industry Reduction	26.9%	26.9%	27.5%	30.9%
Industrial Energy Reduction	29.9%	22.3%	13.5%	17.1%
Residential Energy Reduction	11.7%	11.0%	0.5%	11.7%
Commercial Energy Reduction	16.3%	8.4%	+3.2%	7.1%
Agriculture Reduction	2.8%	2.8%	2.8%	2.8%
Transportation Reduction	+6.5%	+3.7%	+5.2%	+9.6%

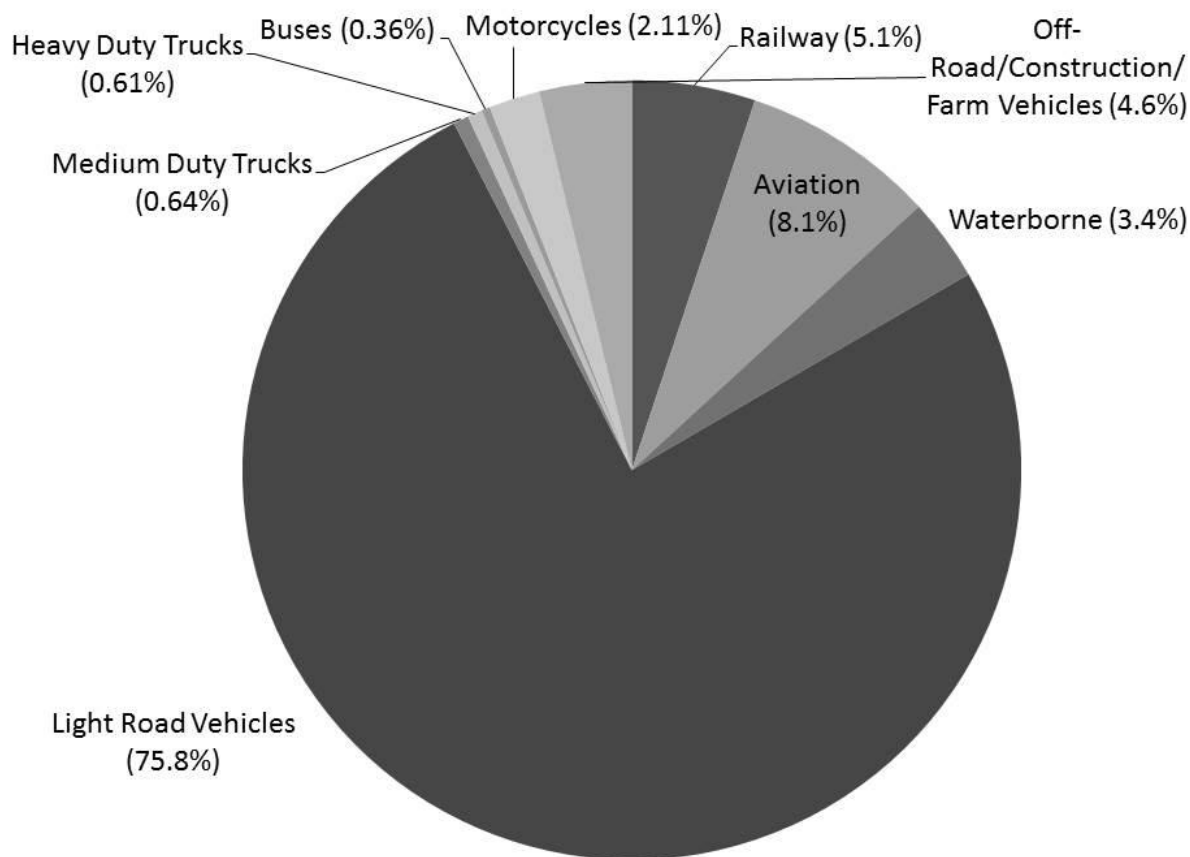
+ indicates increased emissions compared to 2006 levels

Transportation Emissions

The City of Hamilton has been a member of the Covenant of Mayors, formally Compact of Mayors, since 2014. Annual reporting to the Carbon Disclosure Project (CDP) of Hamilton’s community GHG inventory is required to remain a member. In the third year of reporting, municipalities are also required to inventory additional transportation sources including aviation, waterborne navigation and railway. Emissions were taken from the National Inventory Report 1990-2015 Greenhouse Gas Sources and Sinks in Canada, 2017 for the Province of Ontario and prorated based on Hamilton’s population. Information was also taken from Statistics Canada (2017) regarding vehicle registration for the Province of Ontario for the year 2015 and prorated based on Hamilton’s population. Percent fuel use for each type of transportation was taken from Natural Resources Canada Comprehensive Energy Use Database (2017). Note the most up-to-date year is 2014.

Excluding industrial and steel sector emissions, transportation is the largest source of emissions in Hamilton's community at 1,315,770 tCO<sub>2</sub> in 2015. The largest source of transportation emissions are from single occupancy light road vehicles. Figure 2.0 below displays each type of transportation and percentage as compared to the total emissions from transportation.

**Figure 2.0: Transportation Type Emissions as Percent of Total Transportation Emissions, 2015**



### Government Action Moving Forward

The Government of Ontario and the Government of Canada primarily lead regulations and programs to reduce or direct industrial, commercial and residential GHG emissions and energy usage including energy pricing. Municipalities can partner with utilities and industrial partners to track and encourage energy conservation through a community energy plan (CEP) which can promote the introduction of new energy technology. This can help continue economic development while ensuring development becomes less

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carbon intensive in line with the Provincial and Federal climate policies and regulations. A CEP was indicated as one of the priority actions identified in the Hamilton Community Climate Change Action Plan. A CEP is also recognized as a land use planning tool under the new Provincial Places to Grow Act (2016).

The City of Hamilton can take action outside of industrial emission sources by providing or supporting information and education campaigns in the community to encourage low carbon lifestyles such as taking public transit. The City can also create or update policies and plans that encourage energy reductions through built form and improved transportation and land use planning. These types of policies will support citizens lowering their carbon footprint in the areas of transportation, residential and commercial energy.

#### Hamilton's Climate Change Adaptation Work

In 2016, City staff began undertaking a risk assessment of the impacts of a changing climate and extreme weather impacts under ICLEI Canada's Building Adaptive and Resilient Communities (BARC) program. The City received a grant to deliver workshops to the community on climate change impact adaptation planning, including vulnerability and risk assessment. Staff continues to engage with community stakeholders on climate change impact adaptation planning to gain insight on risks and vulnerabilities in the community, to inform internal adaptation plans and empower the creation of adaptation plans in Hamilton communities.

Climate adaptation planning improves the community's resiliency against a changing climate. Resilience is the capacity to adaptively react to and recover from stressors, including predicted impacts and damages to our social, built and natural infrastructure. A report conducted for the City of Hamilton by ICLEI Canada: *The Science of Climate Change* discusses the predicted climate change impacts for Hamilton, Ontario. The report states that Hamilton can expect, without immediate climate action:

- An annual increase in temperatures of approximately 1.5°C in the 2020s, 3.0°C in the 2050s, and 4.8°C in the 2080s;
- Changes in precipitation with annual precipitation days of 118 increasing to 126 days in the 2020s, 132 days in the 2050s, and 137 days in the 2080s;
- Intensity, duration, and frequency of extreme weather events, such as heavy rain events, ice storms, and windstorms, are expected to increase over the next century; and
- An increase in the frequency of heat days (>30°C) and warm nights of 20 days in the 2020s, 33 days in the 2050s, and 48 days in the 2080s.

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The City of Hamilton has already experienced many of these predicted impacts. Precipitation has increased in Hamilton by 26mm; this equates to approximately 3% increase in annual average precipitation since 1970. Annual average mean temperature in Hamilton has increased by 0.9°C since 1970. In summer of 2016 we experienced hot and dry conditions causing drought which lead to water and open air burning bans. Climate change is projected to cause these conditions to worsen. For example the commonly referred to 100 year storm will occur more frequently and potential catastrophic century storms that we have never experienced before will be more likely.

It is clear that in order for adaptation planning to be successful and effective in Hamilton, it will need the engagement, communication, understanding and supporting partnerships of the Hamilton community at the social, organizational, local economic, academic, and personal level.

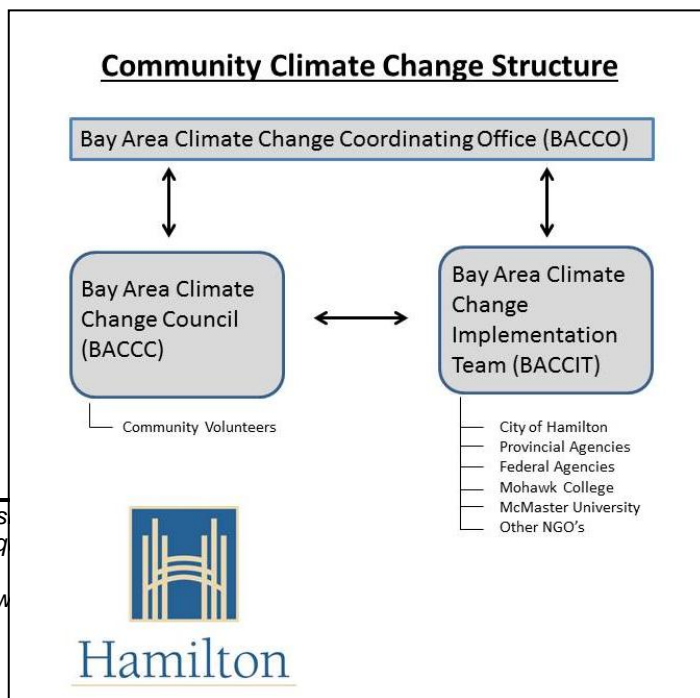
Bay Area Climate Change Partnership

In June 2016, the City of Hamilton passed a motion (Council Report No. 16 - 013) requesting staff to develop a governance model similar to the Bay Area Restoration Council and the Bay Area Implementation Team, in collaboration with staff from the Federal and Provincial offices of the Ministries of Environment and Climate Change, for the implementation of the Community Climate Change Action Plan (BOH15025).

The City of Burlington jointly supported this action with a motion on July 4, 2016 (Council Report No. 9 -16).

City of Hamilton staff along with the City of Burlington and Mohawk College is forming the *Bay Area Climate Change Partnership*, which will be based at Mohawk College in the region’s first net-zero energy institutional building – The Joyce Centre for Partnership & Innovation.

**Figure 3.0 Community Climate Change Model**



The new Bay Area Climate Change Partnership is being set up where Hamilton and Burlington communities can work collaboratively on climate change, resulting in investments in energy efficiency mitigation measures, green infrastructure, job creation, extreme weather adaptation actions and clean technologies.

This initiative will bring together leading stakeholders such as academia, utilities, Indigenous populations, non-government organizations and industry to work collaboratively on climate change to ensure Hamilton and Burlington remain prosperous in a low carbon economy.

#### Available Funding for Climate Change Mitigation and Adaptation

The Government of Canada through the Pan Canadian Framework is committed to assisting municipalities mitigate and adapt to climate change. The Province of Ontario through the Ontario Climate Action Plan outlines funding opportunities for programs and projects that mitigate climate change. This funding will be delivered through the proceeds of the provincial Cap & Trade program. The Province of Ontario on April 3, 2017 announced that all the allowances for the first Cap and Trade auction in June, 2017 were sold with proceeds totally \$472,031,155 (Government of Ontario, 2017). This is the first of four auctions planned for 2017. Funds from the Cap and Trade program will be used to support climate change mitigation projects and programs in Ontario through the planned “Green Bank”.

The Federation of Canadian Municipalities (FCM) in 2017 also released the *Municipalities for Climate Innovation Program* (MCIP) which is a five-year, \$75-million program that helps municipalities prepare for, and adapt to, climate change, and to reduce emissions of greenhouse gases (GHGs) (FCM, 2017). Table 2.0 below shows a list of available funding municipalities in Ontario and Canada can apply for:

**Table 2.0 Available Funding to Canadian Municipalities**

<b>Funding/Grants</b>	<b>Objectives</b>	<b>Amount (\$)</b>
FCM Plans and Studies Grants (multiple streams, funding stackable)	To reduce GHG emissions and help your community adapt to impacts of climate change	\$175,000 each project

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<b>Funding/Grants</b>	<b>Objectives</b>	<b>Amount (\$)</b>
FCM Capital Project Grants (multiple streams, funding stackable)	To help communities reduce GHG emissions and adapt to impacts of climate change	80% of costs up to \$1 million each project
FCM Climate Change Staff Grant	To supplement salaries for existing municipal staff to implement climate change programs and projects	TBD
FCM Climate and Asset Management Network	To enable municipalities to integrate climate change consideration into infrastructure decisions	\$175,000 each project
FCM transition 2050	Combination of training and grant funding for a collaborative network of municipalities	TBD
FCM Municipal Asset Management Program	For projects that will help Canadian cities and communities enhance their asset management practices	80% of costs up to \$50,000 each project
FCM Green Municipal Fund	For municipal environmental initiatives that improve air, water and soil and reduce GHG emissions	Variable
Ontario Municipal GHG Challenge Fund	Projects that reduce GHG emissions in any sector	\$10 million per project
Government of Canada Infectious Diseases and Climate Change Fund	To address climate change on human health by increasing access to infectious disease evidence, education and awareness	TBD
The Atmospheric Fund (TAF) Grants	Projects that reduce GHG emissions and air pollution in the GTHA	Variable

City staff and community partners are pursuing projects in areas or energy, transportation, and community engagement and making applications that will reduce GHG emissions further in the community and help adapt to the impacts of a changing climate through these municipal climate change funding and grant streams.

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