



INFORMATION REPORT

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	October 17, 2016
SUBJECT/REPORT NO:	Hamilton Climate Change Actions 2016 (BOH16019) (City Wide)
WARD(S) AFFECTED:	City Wide
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SIGNATURE:	

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:

- (a) 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.

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Information:

Climate change is the altering of long-term patterns of weather from the natural and man-made releases of substantial amounts of greenhouse gases (GHGs), such as carbon dioxide, methane, nitrous oxide, etc. Human influences on the climate have significantly increased in correlation with the rapid growth in industrialization.

Addressing climate change requires two types of complimentary actions; mitigation and adaptation. Mitigation is actions taken to reduce GHGs, whereas adaptation is actions taken that minimizes citizen and infrastructure vulnerability to the impacts of climate change.

While climate change is a global issue, municipalities have a role to play in mitigating local GHG emissions and supporting the community in adapting to the reality of climate change. Hamilton has established community GHG emission reduction targets of 20% of 2006 levels by 2020, 50% reduction of 2006 levels by 2030, and 80% reduction of 2006 levels by 2050. We have seen climate change occur through the changes in temperature, precipitation, drought, wind and other indicators that have already been affecting the Hamilton community – and we can expect changes in climate to continue in the future.

Community GHG Emissions

Trends from 2006 to 2012 show that overall community GHG emissions had decreased steadily. However, 2013 and 2014 total emissions show an increase compared to 2012. Table 1 below shows the GHG reduction (%) compared to 2006 emissions. GHG reduction for 2013 and 2014 are still well below 2006 levels, however it was less than compared to the 2012 reduction values. It is unclear at this time whether or not this can be considered a trend or an irregularity based on external factors.

Table 1: Community GHG Trends 2008 to 2014

Year	2006*	2008	2009	2010	2011	2012	2013	2014
Emission Reductions (%)*	0 *	-3	-8	-13	-21	-26	-22	-17

* 2006 is the base year, all other years compared to 2006

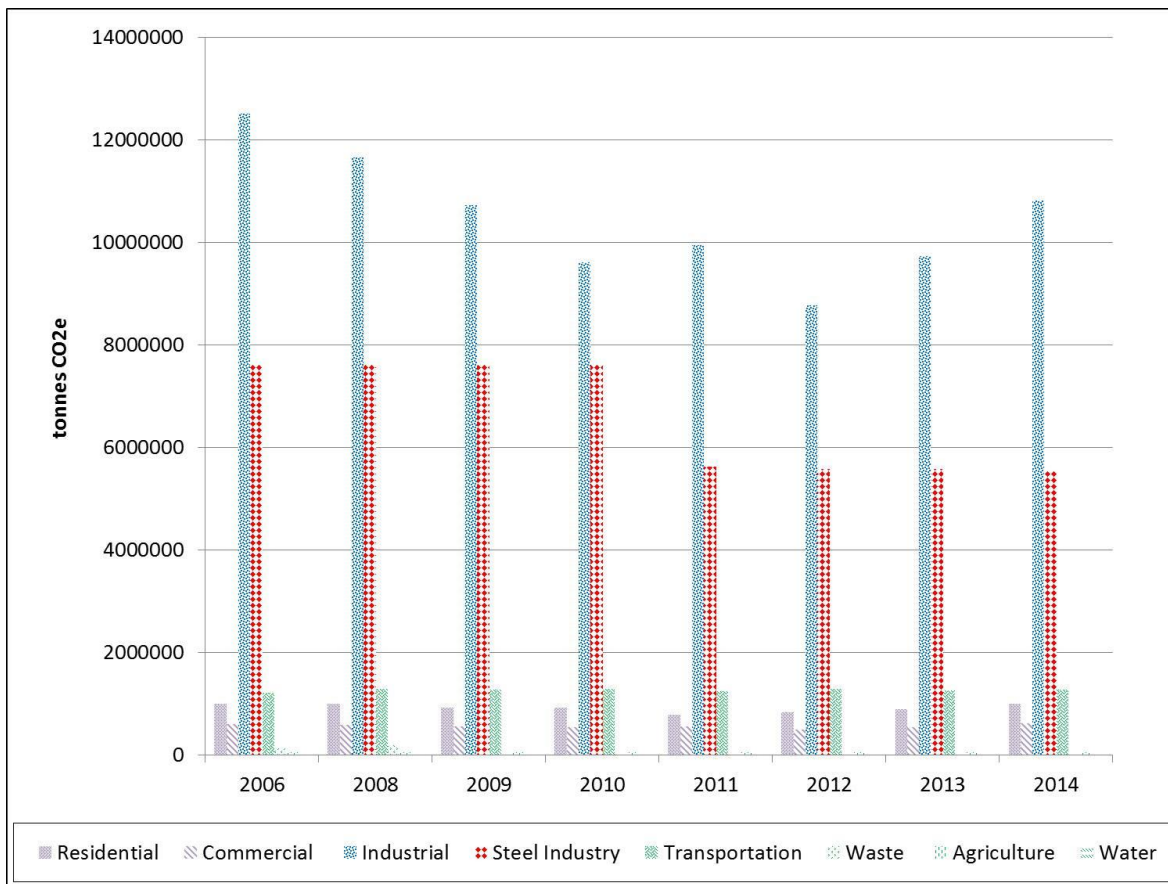
In 2014, Hamilton's main sources of GHGs were (from highest to lowest): industrial energy use, steel industry, transportation, residential energy use and commercial energy use. Agriculture and waste also generate GHG emissions, but are lower than the main sources of emissions (Figure 1). Overall community GHG emissions have been reduced by 17% (~19,251,584 tonnes) in 2014 compared to 2006 GHG emissions of ~23,087,325 tonnes.

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Figure 1: Community GHG Trends 2006 to 2014



It is difficult to convey based on Figure 1 above, however the increase emissions in 2013 and 2014 appear to be caused by commercial and industrial energy consumption, with residential energy consumption closely behind. For example, commercial and industrial energy reduction in 2012 was 19.5% and 42.6% respectively. In 2013, that energy reduction dropped to 9.2% and 28.7% (Table 2).

Table 2: GHG Reductions for 2012, 2013 and 2014

Year	2012	2013	2014
Commercial Energy Reduction	19.5%	9.2%	+3.2%
Industrial Energy Reduction	42.6%	28.7%	15.7%
Residential Energy Reduction	20.29%	12.4%	0.5%

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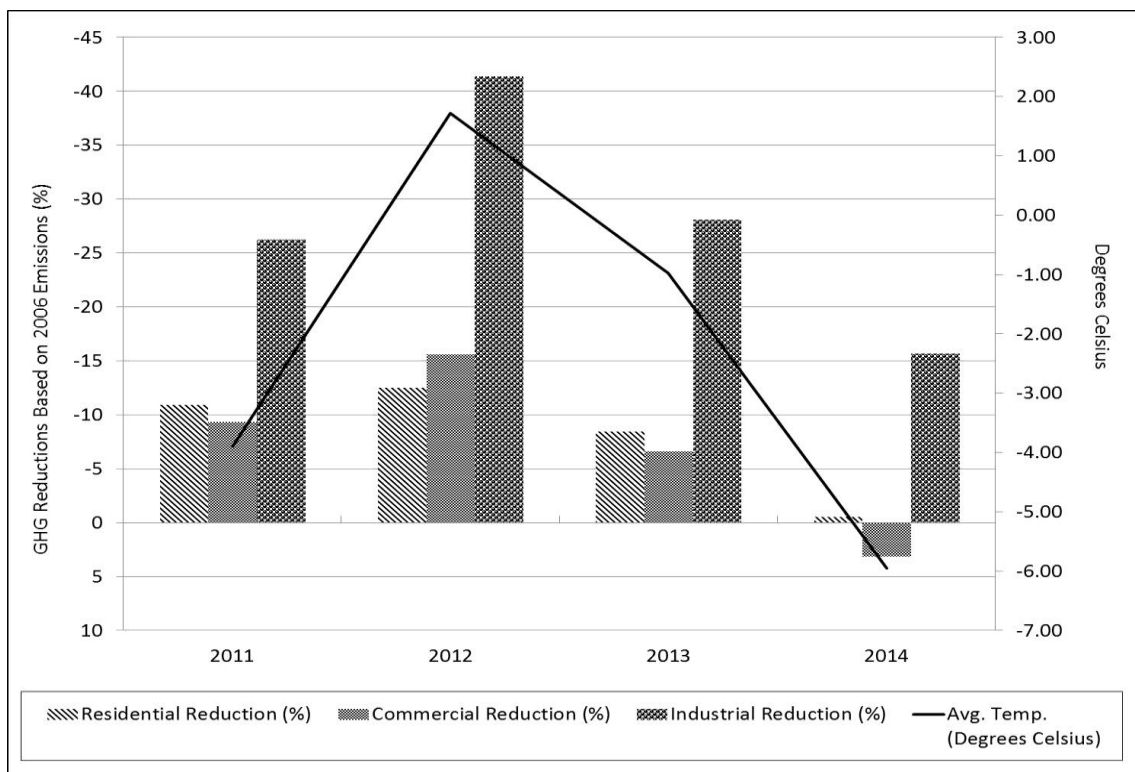
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External factors contributing to this increase could include energy prices and colder winter temperatures. Energy pricing plays a large role in the choice of energy consumed. Although the Province of Ontario removed coal from the Provincial energy mixture in 2014¹, thereby reducing carbon related emissions, the cost of energy in relation to electricity versus natural gas appears to have increased the number of local customer accounts using natural gas. The number of customer accounts for natural gas has increased 7.64% compared to 2006 customers, whereas electricity has lost 3.05% of its customers compared to 2006. This switch to natural gas causes more GHG emissions as natural gas has a higher CO₂ equivalent compared to electricity.

Another important consideration is temperature. Colder winter temperatures can increase the demand of energy for heating. Monthly mean temperatures were averaged for the coldest months (December, January, February and March). Since 2012, the average winter temperatures have decreased from 1.7°C to -6°C (Figure 2)².

Figure 2: Average Winter Temperatures and Total CO₂e Emission Reductions



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 encourage energy conservation and introduction of new energy technology that can help continue economic development while ensuring development

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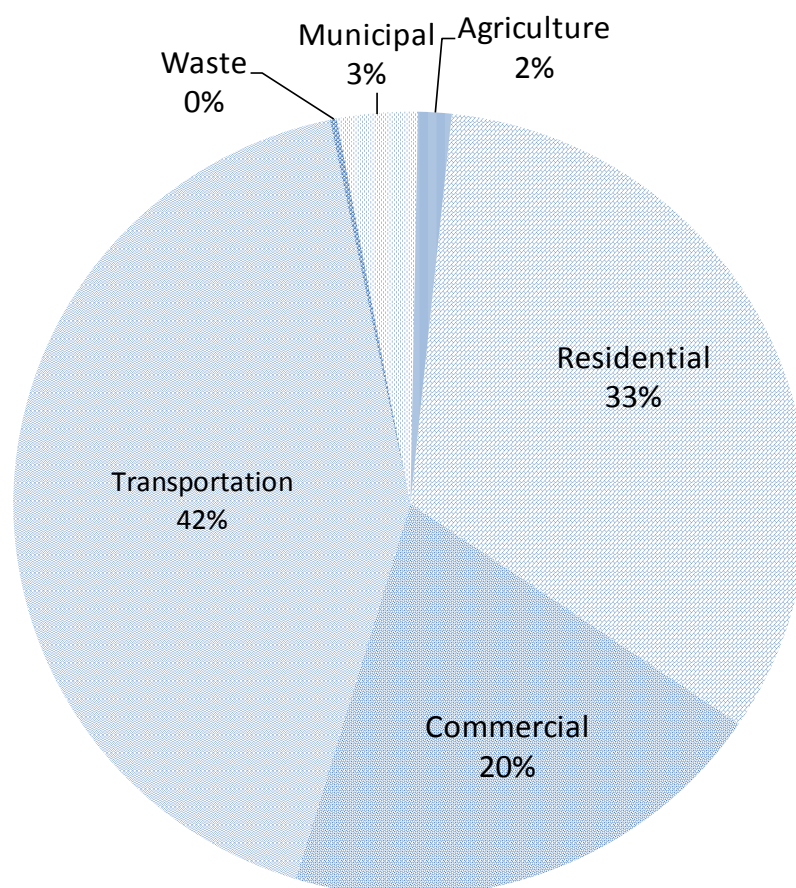
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becomes less carbon intensive in line with the Provincial and Federal climate policies and regulations.

The City can take action outside of industrial emission sources (Figure 3) by providing or supporting information and education campaigns in the community to encourage energy reduction. 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 (Figure 3).

Figure 3: Community Emissions Not Including Industry



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Adapting to Climate Change Impacts

Climate Change impacts have been seen in Hamilton including:

- Significant rain storm events leading to increased flooding,
- Ice storms resulting in power losses,
- Loss and removal of Ash trees due to invasive species, and
- Drought conditions from increasing temperatures leading to water bans or need of support from the public to help maintain tree canopy.

In 2016, City staff began undertaking a risk assessment of the impacts of a changing climate and extreme weather impacts under International Cities for Local Environmental Initiatives (ICLEI) Canada's Building Adaptive and Resilient Communities (BARC) program. A changing climate science report was undertaken for the City as part of the program and revealed the following:

Temperature:

- Increasing temperatures with annual temperature changes of 1.5°C in the 2020s, 3.0°C in the 2050s, and 4.8°C in the 2080s from a mean baseline temperature of 7.6°C.
- Increasing frequency of heat days (>30.0°C) and warm nights of 20 days in the 2020s, 33 days in the 2050s, and 48 days in the 2080s.

Precipitation:

- Changes in precipitation with annual precipitation days of 118 increasing to 126 days in the 2020s and 132 to 137 days in the 2050s and 2080s.
- More precipitation days increasing in the winter and spring with less precipitation days in the summer.
- Increasing rain intensity and flooding.

Extreme Weather:

- Extreme and heavy precipitation (rain, snow, ice) events are expected to become more intense and more frequent with associated increased risk of flooding and damages.
- Increasingly shorter return periods of extreme events.

City staff have begun to assess what these future changes and their related risks mean to the City, and services it provides to the community. In 2017, City staff will be developing actions and programs that the City can begin to undertake to start addressing climate impacts and increase resiliency within the corporation while working with community partners.

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The City of Hamilton has been successful in an application under ICLEI Canada's Great Lakes Climate Change Adaptation Project to train representatives in the Hamilton community to educate their networks and develop actions to reduce community exposure to a changing climate. Hamilton is one of sixteen successful applicants in the Great Lakes area to be accepted in this program to build municipal capacity for integrating climate change adaptation across the municipality and in the community. A train-the-trainer workshop will be held in Fall 2016 to inform and train municipal and community representatives.

In Fall 2016, Hamilton Public Health Services will begin piloting a health vulnerability assessment using tools provided to the City by the Ministry of Health and Long-term Care. This assessment will allow public health officials to identify potential health risks caused by climate change which will help to address and mitigate these risks.

Climate Change Governance (Community Climate Change Action Plan)

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).

Progress and opportunities for the priority actions identified in the Community Climate Change Action Plan are outlined below:

Table 3: Progress of Actions outlined in the Hamilton Community Climate Change Action Plan

Priority Action Under Plan	Insights / Progress
Support local food production / consumption and integrate climate change mitigation and adaptation strategies into existing farm and food plans and initiatives;	Council approved the Hamilton Food Strategy Plan BOH13001(d) Council approved Official Plan Amendment No. 31 to the Urban Hamilton Official Plan Respecting: Urban Agriculture (PED14161)
Establish an ongoing community education and awareness program/campaign for climate change;	Hamilton Climate Change website (climatechangehamilton.ca) and Facebook page continually updated with information and resources.

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Priority Action Under Plan	Insights / Progress
	<p>Environment Hamilton and Hamilton350 have been working on the People’s Climate Plan and a local Climate Action Campaign providing information and education events/workshops in the community. Environment Hamilton also provides programs around local food, trees and energy.</p> <p>Environment Hamilton hosts Greening Sacred Spaces which assists faith communities in taking practical actions towards a more sustainable and energy efficient place of worship and to educate members of the community about ecological issues.</p> <p>Green Venture provides home assessment programs for energy and stormwater, as well as education to schools on topics of transportation, energy and climate change.</p>
<p>Develop a Community Energy Plan to guide the Hamilton community’s energy future;</p>	<p>Opportunity for funding from Province (Ministry of Energy) to develop a Plan. Requires a stakeholder group be formed and application from the City for funding.</p> <p>Provincial Climate Change Plan (2016) and Places to Grow (2016) encourage municipalities should consider undertaking Community Energy Plans.</p>
<p>Revise and update municipal infrastructure guidelines to prioritize Low Impact Development (LID) as a preferred method for stormwater management;</p>	<p>Provincial Climate Change Plan (2016) and Places to Grow (2016) encourage municipalities to prioritize Low Impact Development.</p> <p>Future Flooding and Drainage Master Servicing Study for City of Hamilton of which deliverables include integration of LID as mechanism to improve service and mitigate impact on the natural environment.</p>

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Priority Action Under Plan	Insights / Progress
Establish variable development charges to reflect real costs of buildings and maintain infrastructure;	The Smart Growth for Our Communities Act, 2015 (Bill 73) made changes to the Development Charges Act and Planning Act that “require municipalities to examine the application of varying development charges within different areas of a municipality”.
Create an accessible toolkit for business to assist with impact analysis and business continuity planning;	<p>Sustainable Hamilton Burlington in partnership with Sustainability Co-labs is undertaking a Low Carbon Partnership program for local business. Funding for this work came from the Province.</p> <p>Opportunity for the City with local utilities and Chamber to partner on this program to provide information and resources to help local business reduce emissions and prepare for a changing climate.</p> <p>Opportunity for business to work with Ontario Centres of Excellence.</p>
Conduct a local community vulnerability assessment of public health impacts from climate change;	A public health vulnerability assessment pilot will begin in Fall 2016 using health vulnerability tools provided by the World Health Organization and the Ministry of Health and Long-Term Care.
Expand public transit services to include dedicated rapid transit lanes where possible;	<p>The Province has indicated providing funding for a Hamilton Light Rapid Transit system.</p> <p>Council approved the 10 Year Local Transit Strategy (PW14015a) and is seeking funding from the Province and Federal government through a transit funding agreement.</p>
Secure property that serves as source water storage or preserves wildlife corridors within the catchment; and	There is a significant emphasis being placed on land securement within the Cootes to Escarpment EcoPark System all in an effort to preserve and enhance wildlife corridors within Conservation Halton and Hamilton Conservation Authority’s watersheds.

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Priority Action Under Plan	Insights / Progress
Establish an ongoing oversight and coordination body to guide implementation of the Hamilton Climate Change Action Plan and report back on community progress and success.	The City of Hamilton and the City of Burlington have passed respective motions directing the seeking of funding for the establishment of this group from other levels of government. City staff have been meeting and informing other levels of government of this request.

References:

1. In 2014, the Province of Ontario fully removed coal from the energy mixture, current data is only of the first year (2014) and it is expected electricity emissions should drop further.
2. Government of Canada (2016). Monthly Climate Summaries. Retrieved from: http://climate.weather.gc.ca/prods_servs/cdn_climate_summary_e.html