

GREEN MUNICIPAL FLEET PLAN

How ambulances and other municipal vehicles are helping to reduce greenhouse gas emissions

City of Ottawa's Fleet Services

Commuting to work; road-trips; grocery runs; holiday travel: transporting people, products and things is a fact of life. Within Ottawa, transportation is responsible for around 40% of all local greenhouse gas emissions, second only to the building sector, which accounts for a further 49% of the city's emissions^[2]. In addition to greenhouse gases, transportation is estimated to produce over 85% of total nitrogen oxide emissions, 90% of carbon monoxide, 60% of sulfur dioxide and smaller quantities of assorted carcinogens^[3]. Through its Green Municipal Fleet Plan, the City of Ottawa has taken concrete steps to lead by example when it comes to reducing the harmful emissions associated with their municipal transportation operations^[4].



"Fleet Services is always striving to reduce our carbon footprint. We aim to reduce the greenhouse gas emissions of our fleet of vehicles while still ensuring that services to our residents are maintained."

- Luke Senecal, the Manager of Fleet Lifecycle and Safety at the City of Ottawa

Developing short-, medium- and long-term plans to reduce emissions from City of Ottawa municipal vehicles



Separately targeting emissions from public transit versus the remainder of the municipal vehicle fleet

1 INTRODUCTION

The current Green Municipal Fleet Plan stands on the shoulders of many policy instruments that came before it. In March 2002, the City Council approved the first ever Fleet Emission Reduction Strategy (FERS)^[5]. This strategy, updated in 2004^[6], set out a plan to achieve reduced exhaust emissions from the City's municipal and transit vehicle fleets, focusing on actions such as participation in ethanol-blended diesel trials, researching the potential of biodiesel, adding catalytic converters to older buses, and converting all City fuel sites to ethanol-blended gasoline, as well as laying the groundwork for a zero emissions transit bus fleet^[5,6].

In 2008, Transit Services underwent a reorganization that resulted in the separation of the City's Municipal and Transit Fleets. Thus, post-2008, updates to the emissions reduction strategy were released in the form of a distinct Transit Vehicle Emissions Reductions Strategy (TVERS)^[7] and a Municipal Fleet Emissions Reductions Strategy (MFERS)^[8]. The first MFERS was released in 2009; however, staff soon initiated steps to broaden the scope of this initiative, ultimately incorporating it within the so-called Green Municipal Fleet Plan (GMFP).

The objective of the GMFP is to achieve large-scale greenhouse gas reductions and lessen the environmental footprint of municipal fleet operations^[8].

2 PROJECT DETAILS

This first GMFP contained 24 action plans, focused on 6 priority areas, including the establishment of targets, exploring emission reduction options and monitoring emerging technologies^[9]. To better align with new Council priorities and the 2014 Air Quality Climate Change Management Plan, the GMFP was updated once more in 2016. This most recent update outlined the plan for 2016 through 2018, with three main initiatives identified:

- ▶ Research and acquire alternative vehicle types (e.g. hybrid and electric vehicles)
- ▶ Research and pilot the usage of alternative fuels (e.g. compressed natural gas and biodiesel)
- ▶ Pilot and adopt the usage of vehicle telematics, which, among other things, allows tracking of idling for each individual vehicle in a fleet^[9]

3 RESULTS

Since the development of the very first FERS back in 2002, the City has been setting and achieving important emission reduction milestones. In the 2002 FERS, the City committed to reducing its corporate emissions by 20% relative to 1990 levels, by 2005. This target was met in 2004, one year ahead of schedule. (One cannot ignore the hard work the former, un-amalgamated City of Ottawa had conducted between 1991 and 2001, already resulting in a 19% reduction in emissions relative to 1990 levels^[5].) Subsequently in 2009, a revised corporate target of 30% emission reduction relative to 1990, by 2012 was approved by City Council^[8], which has since been updated to be consistent with Government of Canada and Government of Ontario targets, seeking to reduce community-wide emissions by 80% below 2012 levels by 2050^[10]. Within this larger community-wide target, the GMFP is working towards a 1% reduction in municipal fleet emissions per year^[11].

Driven by these increasingly stringent targets, Ottawa Fleet Services spent a busy few years implementing a variety of different initiatives, before then turning their focus to the monitoring and evaluation of these new initiatives. To everyone's disappointment, they discovered that between 2012 and 2016, the municipal fleet's performance had in fact worsened by 11.9% (as quantified by the performance metric used at the time: liters of fuel consumed per 100 kilometers of driving)^[12]! Closer inspection of these results raised two concerns:

- ▶ First, use of the metric liters of fuel per 100 kilometers ignored the benefit of transitioning from diesel or gasoline to cleaner fuel sources like biodiesel or compressed natural gas. This evaluation metric has since been updated to percentage greenhouse gas emission reduction, which takes fuel type into account and is consistent with other municipal initiatives^[12].
- ▶ Second, the choice of 2012 as a baseline year ignored the fact that 2012 was a particularly warm and snowless year requiring well below normal levels of snow-removal, and the more than doubling of the size of the municipal garbage collection fleet that occurred in late 2012. (Garbage collection trucks are the least fuel efficient vehicle within the municipal fleet due to their size and extreme duty cycle). Both of these factors resulted in the fleet's performance appearing to worsen over time, whereas mild weather in the baseline year and service expansion after the baseline year were in fact to blame. The baseline year has since been updated from 2012 to the more representative 2013^[12].

Looking in more detail at the Green Fleet's achievements of 2017, 11 new hybrid vehicles were acquired this year, further exploration of biofuels and the retrofitting of existing vans and pick-up trucks with hybrid technology was conducted; and 21 telematics devices were installed to track engine idling time. A particularly noteworthy project that is close to completion is the installation of anti-idling devices on all 77 ambulances in Ottawa^[13]. Ambulances traditionally had to keep their engines running during their entire operating shift in order to prevent critical medicines inside the ambulances from either freezing in winter or overheating in summer. At a cost of around \$3,000 each, these anti-idling devices enable automatic temperature control of the interior of the ambulance even when the engine is off. It is estimated that ambulances had been idling their engines as much as 50% of the time, suggesting substantial emission reductions can be achieved by installing these devices^[12].

4 CONCLUSIONS & REFLECTIONS

Having addressed these measurement concerns, monitoring results from 2016 suggest that municipal green fleet initiatives completed to date have reduced vehicle greenhouse gas emissions by 6.3% since 2013^[13].

Significant work has been done over the past few years to reduce Ottawa's greenhouse gas emissions, and the number of initiatives continues to grow. This case study documenting the work of GMFP focuses on just one small portion of a much larger effort, with the City of Ottawa's Complete Streets Policy, Corporate Green Building Policy and light rail transit project just a small sample of the vast array of other emissions reduction initiatives underway in this city. The City of Ottawa's future certainly looks greener as a result.

REFERENCES

- [1] http://shepherdsofgoodhope.com/wp-content/uploads/2015/06/416234900_97cc6f9a0b_b.jpg
- [2] <http://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/air-quality-and-climate-change>.
- [3] <http://ottawa.ca/cs/groups/content/@webottawa/documents/pdf/mdaw/mdc4/~edisp/cap078824.pdf>
- [4] Note that this case study focuses specifically on actions the City of Ottawa is taking to reduce their own corporate emissions, and does not include City-initiated policies and programs focused on reducing emissions from the Ottawa community as a whole.
- [5] <http://ottawa.ca/calendar/ottawa/citycouncil/occ/2002/03-27/ttc-20/ACS2002-CRS-FLT-0001.htm>
- [6] <http://ottawa.ca/calendar/ottawa/citycouncil/occ/2004/06-23/trc/ACS2004-TUP-FLT-0001.htm>
- [7] <http://app06.ottawa.ca/calendar/ottawa/citycouncil/tc/2009/09-01/02-ACS2009-ICS-TRA-0009.htm>
- [8] <https://app06.ottawa.ca/calendar/ottawa/citycouncil/trc/2009/08-26/ACS2009-COS-FLT-0001.htm>
- [9] <http://ottwatch.ca/meetings/file/366358>
- [10] <http://ottawa.ca/en/news/city-ottawa-joins-carbon-613-help-cut-greenhouse-gas-emissions>
- [11] <http://www.cbc.ca/news/canada/ottawa/green-house-gas-fuel-city-vehicles-1.4329609>
- [12] Conversation with Luke Senecal, Manager of Fleet Lifecycle and Safety, City of Ottawa, 6 December 2017.
- [13] Presentation: Fleet Services, Update on Green Fleet Plan, 14 November 2017.