

A Model Idling Control Program for Municipal Fleets

May 2005

Report Prepared For:

Greater Toronto Area Clean Air Council (GTA-CAC)

CLEAN AIR PARTNERSHIP
75 Elizabeth Street
Toronto Ontario
M5G 1P4

Telephone 416.392.6672
Fax 416.338.0616

cap@cleanairpartnership.org
www.cleanairpartnership.org



Principal Researcher and Author:

Jennifer Penney, ScD, Senior Researcher, Clean Air Partnership

Editors:

Stephanie Lane, Manager, Clean Air Partnership

Eva Ligeti, Executive Director, Clean Air Partnership

People Consulted in the Preparation of this Report:

John Bellinger, Fleet Safety, City of Toronto

Bob Boutilier, Toronto Transit Commission

Wayne Carlow, Manager, Operations Division, City of Victoria

Ken Dack, Senior Vice President, Fleet Challenge Canada

Lorraine Fung, Toronto Public Health

Scott Glew, Fleet Manager, City of Ajax

Chris Hill, Manager, Central Fleet, City of Hamilton

Bob Ives, Molson Canada

Richard Parfett, FleetSmart, Natural Resources Canada

Bryan Payne, Supervisor, Fleet Safety, City of Edmonton

Jon Sigurdson, Bison Transport

Joe Werb, Ontario Power Generation

Ajalie Williams, Fleet Manager, City of Winnipeg

CAP would like to thank the members of the Greater Toronto Area Clean Air Council for their time and reflections on the content of this report, and the Toronto Atmospheric Fund for its ongoing financial support.

© Clean Air Partnership, 2005

For more information, contact:

Clean Air Partnership

75 Elizabeth Street

Toronto, Ontario M5G 1P4

Canada

416-392-6672

cap@cleanairpartnership.org

1.0 INTRODUCTION

In recent years, municipal fleet managers have begun to develop and implement idling-control policies and programs.

Fleet idling policies and programs have been developed as a result of many factors, including:

- Concerns about air pollution and climate change;
- Need to make fleet operations consistent with anti-idling by-laws or community idling education programs;
- Response to complaints from the community about idling of municipal vehicles;
- Need to reduce the costs of fuel and vehicle maintenance;
- Participation in “fleet challenges” that have served as eye-openers with respect to amount of time fleet vehicles spend idling, and how much of that is unnecessary;
- Availability of new and rapidly evolving equipment that can track idling in vehicles, shut idling vehicles down, provides alternative power sources, or run off the battery without draining it.

Some municipalities with anti-idling by-laws simply use the by-law as their policy, and periodically inform municipal vehicle operators about the requirements of the by-law. Other municipalities have simply specified a time limit for idling of fleet vehicles and have communicated this limit to vehicle operators. Still others have developed a comprehensive program that includes development of a policy, education and training of operators, incentive programs, and the installation of equipment that reduces idling. More comprehensive idling control activities are often part of a larger “green fleet” program meant to reduce emissions, fuel consumption and costs of municipal fleets.

1.1 The Problem

Municipal fleets typically contain a broad range of vehicle types, which may include: passenger cars, police cars, buses, ambulances, fire trucks, pick-up trucks, dump trucks, garbage trucks, snow removal equipment, and so on. Some of these vehicles idle 20-60% of the time according to Repair Our Air. Some idling occurs to warm up the engine or, in the case of heavy-duty diesel vehicles, when shutting them down.¹ Many vehicles idle in order to provide heat or air conditioning for drivers and passengers. Fleet vehicles also idle to power auxiliary equipment such as safety lights, aerial hoists, or pumps. This idling is usually considered unavoidable, although fuel-efficient auxiliary power sources have been developed recently to avoid much of this kind of idling. However, many municipal vehicles idle mainly for the convenience of the operator. Some vehicles idle for substantial periods in the yard at the beginning or end of the day or when the drivers are taking breaks, eating lunch, or on a cell phone.

¹ Ordinarily, gasoline-fuelled vehicles do not need to warm up more than 30 seconds before driving, as long as the windshield is not fogged up. Diesel vehicles need to idle more on start-up and shut-down than gasoline powered vehicles – but usually no more than 3 to 5 minutes, in accordance with the manufacturer’s specifications.

Unnecessary idling contributes to air pollution and greenhouse gas emissions, increases engine wear, escalates fuel consumption and fuel costs, and aggravates a substantial portion of the public. For all these reasons, it is in the interest of municipalities to reduce vehicle idling in their fleets.

1.2 Potential Achievements of Idling Control Policies for Municipal Fleets

There are two main sources of information that suggest significant positive results from a comprehensive municipal idling control program. One of these is the experience of a number of private corporate fleets that have initiated idling control programs with impressive results. The other is the experience of municipalities that have competed in “fleet challenges” and substantially reduced idling by the fleet vehicles that participated.² These experiences suggest that a concerted idling control program can:

- **Reduce idling in municipal fleets by 50% or more;**

In the 2003 Fleet Challenge, Town of Newmarket vehicles reduced their average idling time from 4.9 to 2.5%, City of Toronto vehicles reduced idling from 9.9 to 5.9% of operating time, and City of Burlington vehicles went from 13.4% to 4.1%.

- **Decrease pollutant and greenhouse gas emissions;**

Over a 14-month period, the London Distribution Centre of The Beer Store was able to reduce idling of its 19 delivery trucks by almost 50%, reducing carbon dioxide emissions by approximately 114 tonnes.

- **Reduce fuel consumption;**

The Toronto Hydro idling control program, in place since 1999, has achieved an estimated 10% improvement in fuel efficiency.

- **Achieve substantial cost savings.**

Molson’s idling control program saves the company an estimated \$225,000 annually. The City of Edmonton saved an estimated \$205,000 in fuel costs in the first year of its “Fuel \$ense” program, which contains a number of measures including idling control.

1.3 Idling and “Green Fleets”

Idling control programs are often initiated as part of an overall “Green Fleet” policy aiming to reduce emissions and save fuel in municipal fleets. A Green Fleet program will achieve significantly larger reductions in emissions and cost savings than an idling control program that is implemented on its own.³

² See www.repairourair.org for descriptions of these activities and their achievements.

³ For more information about green fleets, see materials by the International Council for Local Environmental Initiatives web site at www.greenfleets.org, or the City of Toronto’s *Green Fleet Transition Plan 2004-2007* at www.city.toronto.on.ca/fleet/pdf.

2.0 ELEMENTS OF A MODEL IDLING CONTROL POLICY AND PROGRAM

Ideally, an idling control policy and program would involve the following:

- Evaluation of idling across the municipal fleet and the reasons for it and identification of the potential to reduce idling;
- Preparation and adoption of a written policy;
- Elaboration and implementation of training and communications strategies;
- Phasing in various types of equipment that can reduce idling in different fleet vehicles;
- Evaluation of the impacts of the program.

2.1 Evaluating Idling in the Fleet

It is important to evaluate idling in the municipal fleet in order to understand where it happens most and the reasons for it.

Useful information for evaluating idling and its impacts can come from:

- Self-assessment of idling and the reasons for it by vehicle operators and other fleet staff, by means of informal interviews, meetings to discuss the issue and/or surveys;⁴
- Inventory of fleet vehicles and equipment that is powered by vehicle engines, and general work practices related to vehicle use;
- Observation of idling behaviour in vehicle yards;
- Monitoring of complaints made by the public or city staff about idling of municipal vehicles;
- Monitoring of fuel consumption;
- Use of electronic monitoring equipment on a sample of (or all) fleet vehicles. (This equipment can provide downloadable information on routes driven, vehicle speed, RPMs, idling time and other parameters.)⁵

The information gathered by these tools should allow a municipality to estimate the extent to which fleet vehicles are idling, which vehicles are idling most, and how idling impacts fuel consumption. It should also allow a municipality to ascertain which vehicle idling is unnecessary, which could be avoided by changes to work practices or by the installation of auxiliary equipment, and which is necessary.

Idling that is unnecessary – for example, excess idling while vehicles are in the yard, while drivers are eating their lunch or taking a break, or in other circumstances – will require efforts to change the behaviour of drivers. This is discussed below in section 2.3 on training and communications strategies.

⁴ Self-assessment will likely underestimate idling time, and may justify some unnecessary idling, but can also provide important information for understanding the range of circumstances in which municipal vehicles may idle, and how the issue might be tackled.

⁵ There is substantial variation in the mix of vehicles in municipal fleets, as well as in the conditions under which the vehicles are used, so municipalities should not extrapolate from measurements taken by others.

Some idling of municipal vehicles occurs to provide heating, air conditioning or power for drivers and work crews who must stay in stationary vehicles, who use their vehicles as work stations, or who power auxiliary work equipment from the vehicle engine. Idling for heating or cooling can be addressed by extreme temperature exemptions in an idling control policy.

There are more limited options for reducing idling when vehicle engines are used to power lights, computers, aerial hoists, pumps or other equipment. However, there are a growing number of options for powering these kinds of equipment in ways that can reduce idling and fuel consumption. Some of the options are discussed in section 2.4 below.

2.2 Preparing and Adopting a Written Policy

A written policy for idling control in municipal fleets would ideally contain the following sections:

- Rationale and goals;
- Application;
- Definitions;
- Requirements for vehicles;
- Exceptions;
- Purchase and use of idle-reducing equipment;
- Training and communications;
- Evaluation.

A model policy – adapted from some existing municipal idling control policies – is attached to this report as Appendix A.

One of the critical issues in the policy will be the general time limit put on idling vehicles. Existing idling policies for municipal fleets have a variety of limits on idling, ranging from 10 seconds to 5 minutes. Those municipalities with idling by-laws will usually make their idling time limit consistent with the by-law.

2.3 Training and Communications Strategies

Almost every fleet manager consulted for this report emphasized the importance of ongoing communications with staff in order to make significant inroads on vehicle idling. Anti-idling communications can include information on:

- Adverse health effects of vehicle emissions and their contribution to smog;
- Climate change effects of vehicle emissions;
- Wear and tear on vehicle engines from unnecessary idling;
- The impact of fuel costs on fleet budgets.

This messaging can be more effective if it counteracts the myths about vehicle idling (e.g. that vehicles should warm up for long periods before being driven in winter) and if it demonstrates the savings that fleet operators might achieve by not idling their personal vehicles.

In the most comprehensive idling control programs, the importance of avoiding idling is communicated through the following mechanisms:

- Incorporation of idling-control information and requirements in new driver training programs;⁶
- Including information on idling in operators' manuals;
- Posting idle-free signs in yards and other locations where fleet vehicles are often found idling;
- Providing windshield decals as a visible reminder not to idle;
- Flyers distributed periodically to remind drivers of the policy;⁷
- Incorporating articles in employee newsletters, and through staff intra-mail communications.

Some municipalities have also joined "Fleet Challenges" in which they compete to see which fleet can reduce idling by the greatest amount in a given period of time. These fleet challenges have served to galvanize drivers and fleet management around idling issues, and demonstrated the very positive impacts which a concerted effort to reduce idling can produce.

Municipalities should communicate their internal fleet policies not only to staff, but also to the public. This is not just public relations. Making a public commitment to reduce fleet idling sets a good example, and also makes municipalities more accountable to the public for living up to the goals they set for themselves.

2.4 Equipment to Reduce Idling in Fleet Vehicles

There are many types of equipment that can reduce idling in vehicles, and which municipalities should consider introducing into those parts of their fleets where idling is an ongoing problem. Equipment options include:

- **Automatic Shutdown Devices**

Some fleets install devices that, after a predetermined period, shut down stationary vehicles that are idling. Typically, these systems will shut down a vehicle after 5 minutes of idling.

- **Electronic Vehicle Monitoring Systems**

A number of fleets – especially commercial trucking fleets – have invested in electronic monitoring systems that track a vehicle's route, speed, RPM's, idling time and fuel consumption. The information recorded by these devices is downloaded so that fleet managers can accurately monitor important vehicle parameters. A number of fleets use these monitors to track idling behaviour in drivers. Molson's, for example, will call in a driver who idles for

⁶ The City of Toronto brings into their training program a staff person from the Toronto Public Health to talk about the health effects of idling and vehicle emissions and to introduce the fleet's idling control policy. The City of Edmonton incorporates idling control in its groundbreaking "FuelSense" driver training program.

⁷ The Toronto Transit Commission provides drivers with annual reminders of the TTC's idling control policy.

more than 5% of daily operating time and ask for an explanation. Some fleets use this information to drive incentive programs – providing awards or rewards to drivers who achieve the least amount of idling time.

- **Block heaters on timers**

Installing block heaters on vehicles and providing electrical outlets in municipal yards where vehicles are parked overnight can reduce idling during cold weather. The timers are set to turn on the block heater a few hours before starting time, reducing the electrical load of the heaters.

- **Auxiliary battery systems or power units**

Vehicles serving as mobile workshops that are taken to a work site and parked for long periods, can use auxiliary battery systems or systems powered directly by fuel from the tank, and provide a more fuel-efficient source of heat, air conditioning and electrical power than idling the vehicle engine.

- **LED lighting systems**

Vehicle-mounted LED warning and emergency lights use about one-tenth the power of standard lamps, and can draw power from the engine battery rather than necessitate vehicle idling.

- **Remote ignition controls for aerial lift trucks**

Aerial lift trucks can be outfitted with remote ignition controls, so that the vehicle engine may be shut off or restarted when the operator needs to move the bucket.

2.5 Evaluating the Program

Municipalities should develop a system of monitoring and measuring the impact of their idling control policies and programs. This is important for helping fleets to understand what worked or didn't work in their programs and what needs adjustment or a complete overhaul.

If a municipality has done a systematic evaluation of fleet idling in the first place, as outlined in section 2.1 above, it will be easier to evaluate the impact. Like the initial idling evaluation, fleets can use a number of tools to measure the impact, including:

- Surveys of staff to assess changes in knowledge and attitudes, and to get their subjective assessment of changes in fleet idling behaviour generally and suggestions about what could be done to decrease idling more;
- Observation of changes in idling behaviour in vehicle yards;
- Monitoring of complaints made by the public or city staff about idling of municipal vehicles;
- Monitoring of fuel consumption in comparison to the period before adopting an idling control policy;

- Use of electronic monitoring equipment on a sample of (or all) fleet vehicles. (This equipment can provide downloadable information on routes driven, vehicle speed, RPMs, idling time and other parameters.)

3.0 CONCLUSION

There are a variety of reasons why municipalities may consider implementing an internal idling control policy for their fleets: to be consistent with idling by-laws or public education campaigns; as a response to complaints by the public; or to save fuel, reduce costs and emissions. Whatever the reason, there are clear benefits associated with such a policy and program.

APPENDIX A: A MODEL IDLING CONTROL POLICY⁸

1.0 PURPOSE

To establish guidelines for eliminating unnecessary idling of municipal vehicles. Limiting vehicle idling reduces air pollution and greenhouse gas emissions, and contributes to healthier work environments and the efficient use of city resources.

2.0 APPLICATION

This policy applies to the operation of any vehicles owned by the municipality, vehicles owned by a firm under contract with the municipality, and transit vehicles.

3.0 DEFINITIONS

3.1 Idling

Idling means the operation of the engine of a vehicle while the vehicle is not in motion and not being used to operate auxiliary equipment that is essential to the basic operation of the vehicle.

3.2 Vehicle

For the purposes of this policy, vehicle refers to cars, trucks, vans, SUV's buses, tractors, motorized road cleaners, snowplows, and other equipment operated by a driver and utilizing fuels such as diesel, gasoline, propane or compressed natural gas.

3.3 Alternative Fuels

Alternative fuels include propane and compressed natural gas.

4.0 REQUIREMENTS

4.1 Manufacturers' Guidelines

Always follow the vehicle manufacturer's guidelines for idling unless otherwise advised by Fleet Services.

⁸ This model policy draws on the Idle Reduction Policy developed by the Seattle Parks and Recreation Department. The Seattle policy is available at: www.cityofseattle.net/parks/ParkBoard/minutes/2003/10-09-03_Minutes.htm.

4.2 Initial Warm-up

4.2.1 Diesel Fueled Vehicles:

Idle times up to 5 minutes are allowed for diesel fueled vehicles during their initial shift warm-up, and at subsequent times when the car or truck is being restarted after a prolonged period of shut down that results in vehicle conditions similar to those prior to initial shift warm-up.

4.2.2 Gasoline and Alternative Fuel Vehicles:

Idle times up to minutes are allowed for unleaded fueled cars or trucks during their initial shift warm-up and at subsequent times when the car or truck is being restarted after a prolonged period of shut down that result in vehicle conditions similar to those prior to initial shift warm-up.

4.3 Operation of Vehicles in the Field

4.3.1 Diesel Fueled Cars and Trucks:

No operator shall idle the engine of a diesel-fueled vehicle that is stopped for a foreseeable period of time in excess of (three to five) minutes.

Diesel fueled vehicles should only be turned off after enough time has passed to allow the proper circulation and cooling of engine oil (and/or other engine fluids), not to exceed five minutes.

4.3.2 Gasoline Fueled Vehicles:

No operator shall unnecessarily idle the engine of an unleaded fueled car or truck that is stopped for a foreseeable period of time in excess of _____.⁹

Operators making frequent and multiple stops that require their car or truck to be stationary for time periods up to three minutes may idle up to three minutes during these circumstances.

4.3.3 When engines must be left running for any reason, the operator will remain with the vehicle.

⁹ Municipalities should enter their own time limit here. Existing municipal fleet policies in Canada allow a range of idling times from 10 seconds to 5 minutes. For example, the Region of Waterloo and City of Hamilton have limits of 10 seconds, the Town of Whitby has a 1-minute limit, the Town of Ajax, 2 minutes, City of Brampton allows 3 minutes and the City of Calgary and Mississauga Transit have 5-minute limit.

5.0 EXCEPTIONS

This policy does not apply to the following vehicles or in the following situations:

- 5.1 Police, fire or ambulance vehicles are exempted while engaged in operational activities;
- 5.2 Vehicles assisting in an emergency activity are exempted;
- 5.3 Where engine power is necessary for an associated power need such as, but not limited to, electrical or pressure generation, inverter or tool use, hoist or winch use, lift gate or boom operation;
- 5.4 Vehicles may idle for the purpose of defogging, defrosting or de-icing windows. Idling must end once fog, frost, or ice conditions have been eliminated. When window ice or frost conditions are present, attempts to remove the ice or frost from windows with a scraper must take place before idling begins.
- 5.5 Staff may idle a vehicle for up to 15 minutes for the purpose of getting warm and/or dry if indoor accommodations are not available in the work area. To reduce carbon monoxide accumulation in the cab, window(s) must remain partially open.
- 5.6 During extreme cold weather or heat alerts, idling may be necessary for the well-being of the operator and/or passengers;¹⁰
- 5.7 This policy does not apply to vehicles being serviced or inspected;
- 5.8 Where safety may be compromised by shutting down the engine, vehicles may idle at the discretion of the operator.

6.0 PURCHASE AND USE OF IDLE-REDUCING EQUIPMENT

All attempts shall be made to purchase equipment that will 1) eliminate the need for excessive engine idling and 2) save money through reduced fuel use. Appropriate purchases may include, but are not limited to, auxiliary power units, auxiliary batteries, LED lighting and where necessary and automatic shutdown devices.

7.0 TRAINING AND COMMUNICATIONS

This policy and the reasons for it will be communicated to all operators during driver orientation and training sessions, as well as through periodic communications in crew meetings, staff bulletins and newsletters. Signs will be posted in municipal yards and other locations frequented by

¹⁰ It would be useful to specify the temperatures at which this exemption kicks in. The City of Ajax allows idling when the temperature drops below -10°C or rises above 30°C. Many anti-idling by-laws allow idling when the temperature is below 5°C or above 27°C.

municipal vehicles. Decal “prompts” will be provided for every vehicle windshield.

8.0 EVALUATION

Idling in municipal vehicles will be subject to periodic evaluation, which may require the participation of operators. The results will be shared with operators and may lead to changes in this policy.