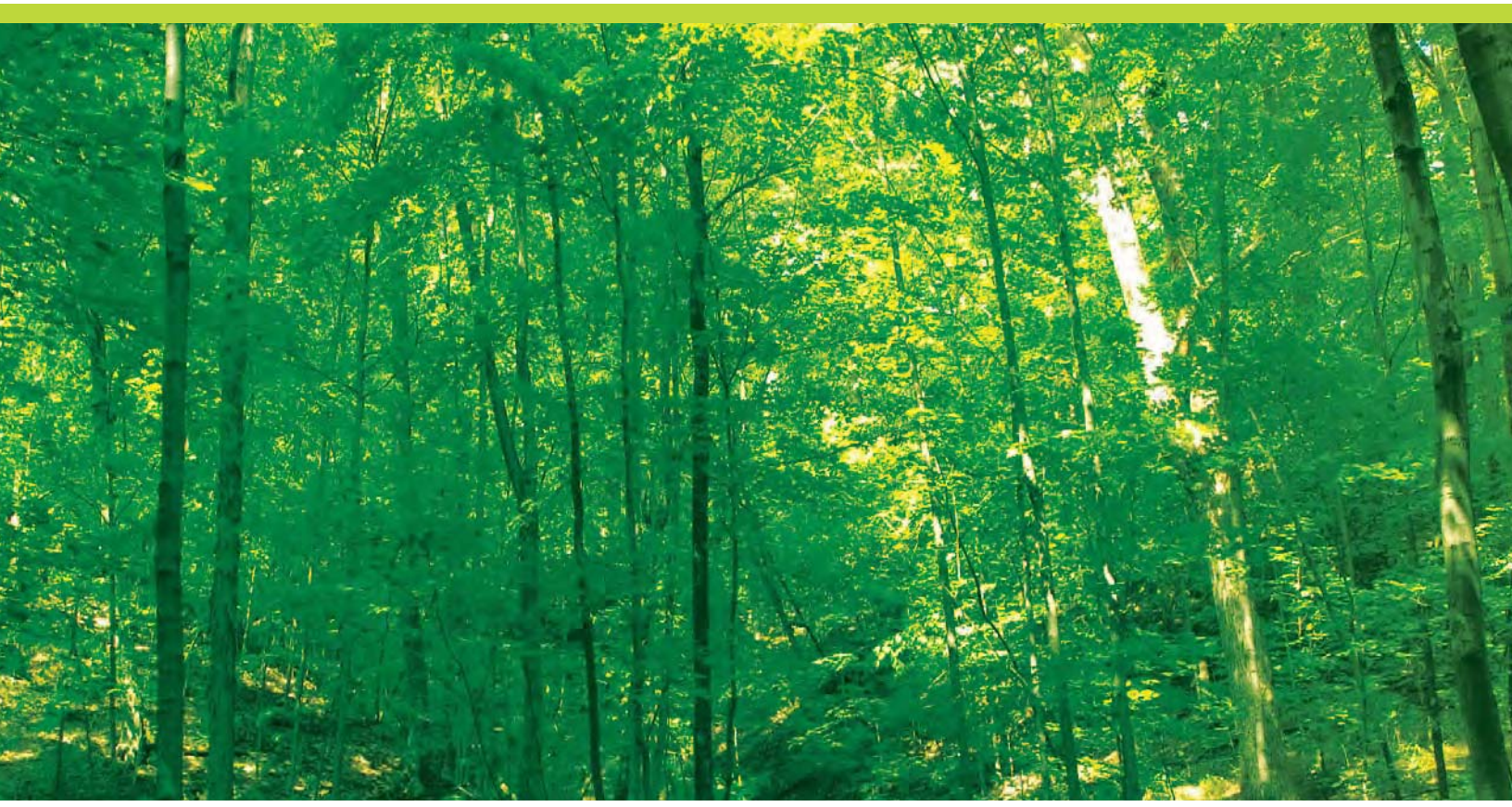


SUSTAINABLE GREEN FLEET GUIDE

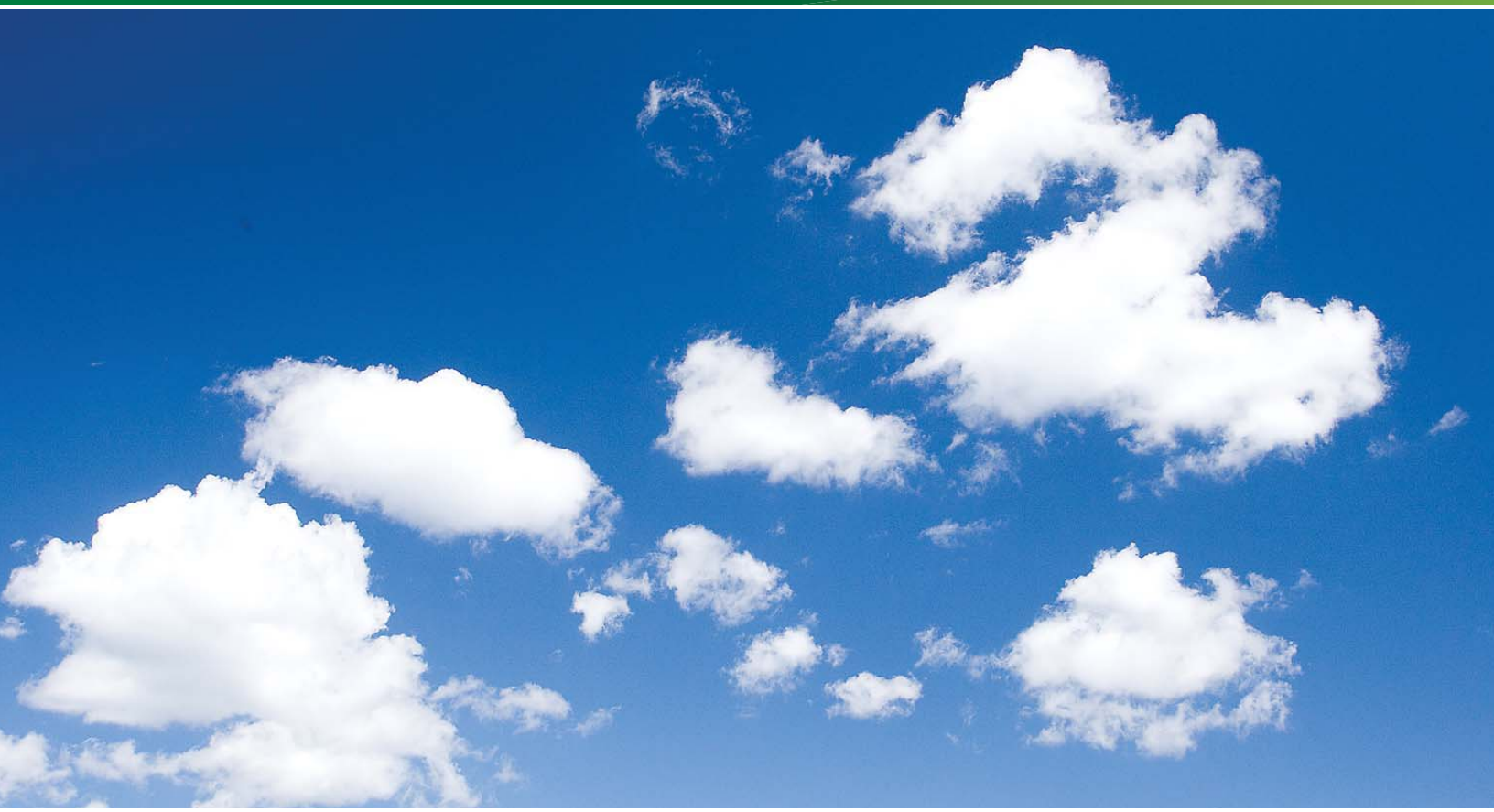
for Procedure EN-GEN-001-001



OAKVILLE

Table of Contents

Introduction



Emissions from vehicles are a major source of Greenhouse Gas (GHG) emissions. Recent studies from Environment Canada suggest GHG from transportation accounts for nearly 30 per cent of total national emissions, and GHG emissions have increased by 25 per cent since 1990.

It is estimated that Ontario's municipal fleets, including transit fleets, contribute approximately 0.8 megatonnes (MT) GHG emissions – or about 43 per cent of Canada's' estimated 1.74 MT of municipal fleet emissions.

GHGs not only contribute to environmental problems such as climate change, but also health concerns because of poor air quality. In Halton in 2005, it is estimated that air pollution contributed to approximately 190 premature deaths, 540 hospital admissions, 2,010 emergency room visits, and 1 million minor illness days each year. This has been valued at $17 million in health care costs and $13 million in lost-time for patients and caregivers. Diseases prompted by air pollution include asthma, chronic pulmonary disease, lung cancer, coronary artery disease and heart failure. Those most at risk of developing an illness brought on by poor air quality are the very young, the elderly and those with a history of respiratory or cardiovascular illnesses

As stewards of the natural environment, municipalities such as the Town of Oakville have a responsibility to act as leaders in combating poor air quality.

As such, the objective of this guide is to support the Sustainable Green Fleet procedure EN-GEN 001-001, and accelerate the Town of Oakville's fleet greening initiatives. This document will address opportunities and best practices for the Town's fleet greening.

A "green fleet" is one that optimizes efficiency in many ways such as, mode of travel, fuel, route planning, fleet operation, and vehicle size. As well, a green fleet increases the use of alternative fuels and sustainable technologies.

All Town departments, staff, vehicles, Transit fleet and off-road equipment are affected by this guide.

Background

Environmental Sustainability Policy – (EN-GEN-001)

The Town's Environmental Sustainability Policy was approved by Council in April 2009. The Environmental Sustainability Policy Statement states that:

"The Corporation of the Town of Oakville shall promote environmental initiatives advancing Oakville as a sustainable community."

Appropriate procedures will be developed to advance environmental sustainability encompassing the core sustainability elements of: living within the limits, understanding the interconnections among environment, culture, society and economy, and equitable distribution of resources and opportunities.

The first procedure created under the Environmental Sustainability Policy is the Sustainable Green Fleet Procedure – (EN-GEN-001-001). This procedure outlines continuing support for good fleet greening initiatives and decision factors and actions relating to: sustainable green fleet practices, use of fuel efficient, low emission vehicles, right-sizing vehicles related to job function, use of fuel from alternative renewable sources, promoting fleet and personal vehicle operations to achieve fuel efficiency and anti-idling, monitoring emerging technologies and management options, implementing innovative carbon reduction strategies, and continuing to look at job function related to transportation mode.

This Green Fleet Guide has been created to assist with the implementation of the Sustainable Green Fleet Procedure.

Town of Oakville Strategic Plan 2007 – 2010

In 2007, Council approved the Town's comprehensive Strategic Plan, which includes goals and strategies to enhance Oakville's natural environment. The Town's green fleet strategy supports the Strategic Plan goals to:

- have programs and services that are environmentally sustainable
- enhance our natural environment

A recommended action of the goal, to enhance our natural environment, was to develop a mandatory policy by 2008 that Town departments shall use vehicles and operate facilities in a manner to minimize emissions.

Currently, the Town has many ongoing programs, policies and campaigns that promote transit-friendly, active living and sustainable transportation goals. Below are a breakdown of programs in place that are directly associated with the Sustainable Green Fleet Guide.

Environmental Strategic Plan (ESP)

In 2005, Town Council approved the Environmental Strategic Plan (ESP). Included in the ESP are goals and actions that directly relate to the improvement of the Town's fleet. Below are ESP goals that are associated with fleet greening:

Goal 1

To sustain and enhance our natural resources – airsheds, watersheds, shoreline, landscapes, flora and fauna.

Action 1.3 – To reduce air emissions and improve air quality.

Target 1.3.1 – To increase awareness about smog advisories and causes of smog.

Target 1.3.2 – To reduce vehicular air emissions by continuing to implement the anti-idling public education campaign.

Goal 2

Reduce consumption and increase efficiency in resource and material.

Action 2.1 – Reduce per capita dependence on fossil fuels.

Target 2.1.6 – Develop a Town policy to reduce the use of non-renewable energy resources.

Goal 6

To lead in creating, adapting and applying best environmental and risk minimization practices.

Action 6.2 – To encourage research, development and partnerships to facilitate the implementation of best environmental and risk minimization practices in Oakville.

Target 6.2.2 – To make Oakville a leader in implementing best environmental practices.

Greenhouse Gas (GHG) Emission Reduction Targets

In June 2008, Town Council adopted a target to reduce GHGs:

"A corporate operations GHG emissions target of 20 per cent below 2004 levels by 2014 and a community GHG emissions target of 6 per cent below 2004 levels by 2014."

Active Transportation Master Plan (ATMP)

The Town of Oakville is undertaking an ATMP study. This project will identify links and extensions of existing bikeways, sidewalks and trails, improve walking and cycling connections to public transit, encourage Oakville residents to walk, cycle or use public transit for trips to work and school, reduce traffic congestion and the environmental impacts of automobile use, and improve the quality of life for all residents in the town.

Livable Oakville – Official Plan

Livable Oakville is the Town's new official plan and will implement and set-out strategies to integrate the Town's vision to make Oakville the most livable town in Canada. The guiding principles for the new plan include:

Preserving and Creating a Livable Community

- Preserve, enhance and protect the distinct character, cultural heritage, living environment and sense of community of neighbourhoods.
- Direct growth to identified locations where higher density, transit and pedestrian oriented development can be accommodated.
- Achieve long-term economic security within an environment that offers a diverse range of employment opportunities for residents.

Providing Choice throughout the town

- Enable the availability and accessibility of a wide range of housing, jobs and community resources to meet the diverse needs of the community through all stages of life.
- Provide choices for mobility by linking people and places with a sustainable transportation network consisting of roads, transit, walking and cycling trails.
- Foster the Town's sense of place through excellence in building and community design.

Achieving Sustainability

- Minimize the town's ecological footprint.
- Preserve, enhance and protect the town's environmental resources, natural features and areas, natural heritage systems and waterfronts.
- Achieve sustainable building and community design.

Make Your Move – Active Living

In 2008, the Recreation and Culture department launched Make Your Move. Make Your Move Oakville is the Town's public education and awareness program to promote the benefits of healthy, active lifestyles and encourage residents to become more active through various sport and recreational activities. The program focuses on public transportation and an active, transit first lifestyle.

North Oakville Secondary Planning

The planning for north Oakville represents the largest remaining development area in the town. The area comprises a total of 3,100 hectares (7,660 acres).

Development in north Oakville will balance the preservation of natural resources with sustainable, community conscious development initiatives. North Oakville will integrate a network of planned natural and open spaces, create definable, walkable neighbourhoods with vital neighbourhood centres and introduce an interconnected street and transit network. A greater mix of housing and employment opportunities will also be provided. A planned Natural Heritage System significantly influences the character and pattern of this community.

Current Fleet

The Town of Oakville vehicle fleet size in 2007 was 401. The Oakville Transit fleet size in 2007 was 96. The tables below provide a description of the number of vehicles in each department and type.

Town of Oakville Vehicle Fleet Size (2007)

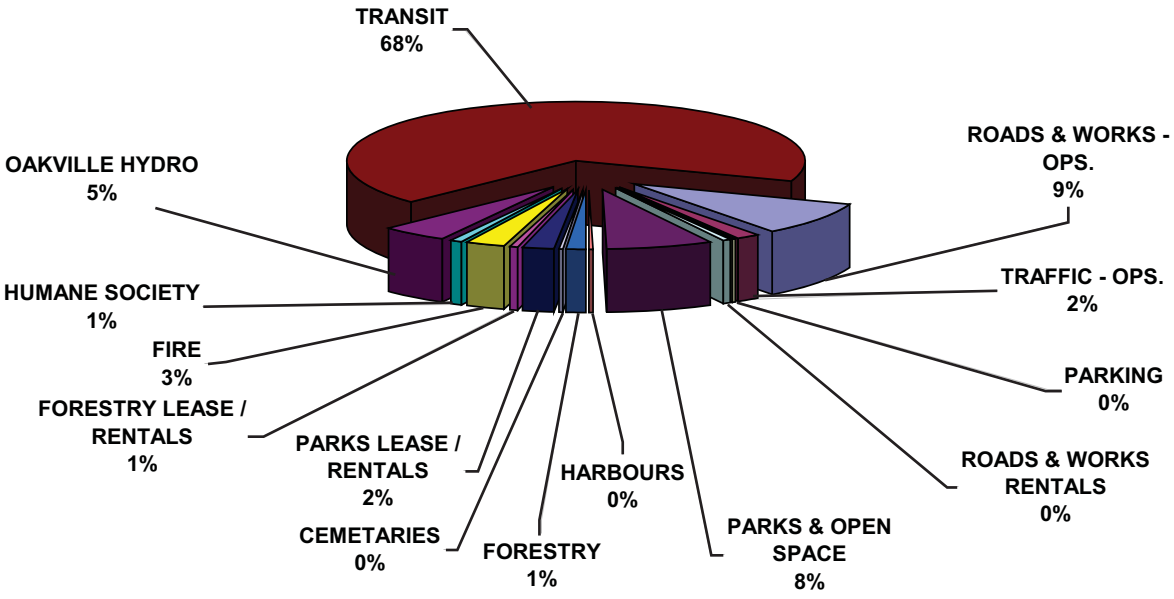
Department	Gasoline			Diesel		
	Light Duty	Heavy Duty	Off-Road	Light Duty	Heavy Duty	Off-Road
Roads and Works Operations	11	2		4	41	53
Traffic Operations	2	1		2	6	
Traffic – Engineering	1					
Parking	6					
Lab/Construction	4					
Road Corridor	1					
Roads and Works (Admin)	1					
Development Engineering	2					
Surveys	3					
Fleet	3					
Fire	19	5	4	2	19	
Parks – Operations	13	9			34	88
Harbours	1				1	
Cemeteries	1				2	
Forestry	6				6	
Oakville Hydro	22	1	4		21	
TOTAL	96	18	8	8	130	141
GRAND TOTAL						**401**

Oakville Transit Fleet Size (2007)

Vehicle Type	Amount Per Type
Conventional Bus	76
care-A-vans	5
Zone Buses	8
SUV Hybrid	2
Van	2
Truck Pick-up	3
TOTAL	**96**

The graph below displays the Town's total fuel used in 2007 broken down by department. Transit is the largest user of fuel at 68 per cent. The two largest departments for fuel consumption outside of Transit are Roads and Works (9 per cent) and Parks and Open Space (8 per cent).

Total Fuel Usage by Department (2007)



Total Fuel Costs for the Town of Oakville (2007)

Department	Total Cost ($) Gasoline	Total Cost ($) Diesel
Vehicle and Off-Road Fleet	$277,969	$501,690
Transit	$ 9,626	$2,316,396
TOTAL	**$287,595**	**$2,818,086**

Total Kilometres claimed by Town Employees 2005-2007

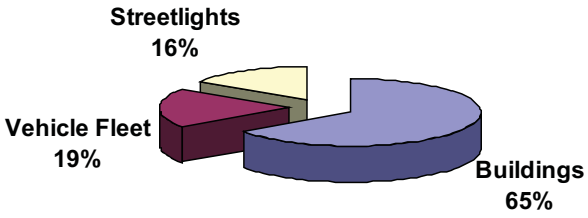
Many Town employees use personal vehicles to perform job related functions. The table below provides total kilometres claimed and total car allowance paid by Town employees.

Year	Total Kilometers Claimed	Total Car Allowance Paid ($)
2005	909 652	$436,100
2006	935 922	$454,500
2007	912 335	$442,488

Corporate eCO2 Emissions

The Town conducted a greenhouse gas inventory for the baseline year 2004. The graph below provides a breakdown of the Town's corporate GHG emissions as eCO_2 and as displayed fleet emissions is second highest.

Corporate eCO2 Emissions Breakdown by Sector



Current Fleet Greening Initiatives

2004-2008

Biodiesel

In 2007, the department of Roads and Works Operations initiated a pilot project to review the effectiveness of B5 (5 per cent) "marked" biodiesel for off-road equipment. Biodiesel has been used during the summer months. The total amount of biodiesel used in 2007-2008 is 248,027 litres.

Drive Clean Results

The Town's light and heavy-duty fleet are operated with emissions levels in the range of 70 per cent to 80 per cent below the Drive Clean criteria and continue to improve. Drive Clean emissions test results are excellent across the fleet in all departments.

Fuel Management Software

The Town purchased the program Computrol. This software program tracks and reports total fuel usage by vehicle ID number. Computrol has the ability to provide daily, monthly and yearly reports of fuel usage statistics by literage, fuel type and unit and department. This system provides sufficient data that enables the Town to investigate if fuel usage on a particular fleet unit has a sudden increase.

Global Positioning System (GPS) technology

The Town, over time, has been implementing the use of GPS/AVL technology to assist with overall production efficiencies relating to its fleet. Increasing production efficiencies generally results in optimizing fleet routes, thereby reducing fuel consumption and emissions. To date, over 50 vehicles have been equipped with GPS units.

Green Fleet Logo

The Town has developed a green fleet logo and has placed this decal on all qualifying green vehicles.

low emission vehicle

Hybrid Vehicles

The Town has been purchasing hybrid vehicles since 2006. To date the Town has purchased seven hybrid vehicles within the departments of Parks and Open Space, Transit, Roads and Works, and Parking Enforcement. In addition, by the end of 2009 all Parking Enforcement vehicles will be low emission or hybrid vehicles.

Low Emission Vehicles

Oakville's Fire department has purchased fuel-efficient Nissan Versa's and two SMART cars for the Oakville Fire Prevention Officers. This was achieved after the Town completed their rightsizing review.

Multi-task Fleet

As new fleet are replaced or purchased, a significant effort is made to secure equipment that is multi-functional and can be used for year-round maintenance activities. This will help to maintain and reduce the size of Oakville's fleet.

Oakville Transit Route New Service Plan

In September 2009, Oakville Transit plans to unveil its new service plan. The new transit service design features combining local service and a grid system, improved convenience, cross-town travel made easier, greater town coverage and, improved connections to GO transit and Mississauga and Burlington Transit. This should contribute to increased use of public transit and reduce reliance on the personal automobile.

Oakville Transit Bike Installations

Bike racks have been installed on all conventional transit buses. This will enhance the accessibility and use of Oakville buses by cyclists.

Pilot Projects

Hydrive transit fleet initiative

Oakville Transit tested Hydrogen Generating Systems (HGS) with Hy-Drive Technologies in 2007. Three HGS were tested on buses in actual operation to verify manufacturer claims of improved fuel consumption and reduced emissions. Transit will be actively seeking pilot project technologies on an ongoing basis.

The Town reviewed fleet vehicles related to job functions. The purpose of right sizing is to ensure that fleet vehicles are sized correctly for the assigned job specific duties. This is an ongoing process and right sizing will be implemented for all new vehicles purchased.

Smart Commute

In December 2006, Oakville began its participation in the Halton Region's Smart Commute Program. This initiative is designed to help reduce single vehicle occupant trips and help improve air quality. Smart Commute Oakville was launched in May 2007 at Town Hall. Currently, there are 20 registered Smart Commuters, five active carpools, 14 employees actively carpooling and five monthly transit pass holders.

Smog Alert Procedures and Anti-Idling Education

Since 2000, the Town has implemented a Smog Response Plan. Within the plan strategies and actions are provided to help combat smog. Some smog response procedures include: restrict or suspend use of grass cutting equipment, suspend unnecessary vehicle idling, suspend use of oil base paints, solvents, and other volatile organiccompounds, restrict hours of vehicle refueling to before 9 a.m. and after 3 p.m., and street sweeping operations between the hours of 9 a.m. and 3 p.m.

On August 12, 2002, Oakville Town Council passed the Anti-Idling By-Law to make it an offence to permit a vehicle to idle for more than five consecutive minutes, except in certain circumstances.

Smog Alert procedures and the Town's Anti-Idling By-law information are provided each year at yearly, seasonal staff training.

Telework Policy

Framing of the work plan for the preparation of teleworking and work/life policies began in 2007. It is intended that an adaptive work strategy be brought forward referencing the changing environmental, energy, workspace and other pressures facing the Town as well as Council's Strategic Priorities and recommendations within the ESP. Town computer access has provided for home/off-site access that would support teleworking.

Ultra-Low Sulphur Diesel (ULSD) Fuel

In 2006, the use of ULSD was implemented for all fleet diesel fueled vehicles both licensed and off-road. All Oakville Transit buses are currently using ULSD and all new buses purchased since 2007 are equipped with particulate catchers to further reduce emissions. By 2010, newly purchased conventional buses will produce very low emissions; the equivalent to one light-duty vehicle. This represents a reduction of approximately 90 per cent from the emission levels of a diesel bus manufactured in 2002.

Waterless/Dustless Street Sweeper

In 2007, an environmentally friendly street sweeper was purchased and received. The sweeper has an advanced filtration system and provides waterless and dustless street sweeping. It will be operational in 2008. Due to the success of this sweeper, a second unit has been purchased and will begin use in March 2009.

Opportunities and Actions

for Green Fleet Implementation

Specific actions and best practices related to fleet emissions and fuel usage reductions are outlined below:

1 Right Sizing

The purpose of right sizing is to ensure that the size of a fleet vehicle is correctly assigned for job specific duties as required by an employee, equipment, tasks and area requirements.

Action: Conduct a job function and job related needs evaluation before all fleet vehicles are purchased, using the rightsizing checklist (Appendix A).
Lead: Fleet Manager, All departments

2 Fuel – Efficient Vehicles

Natural Resources Canada produces an EcoEnergy Fuel Consumption Guide annually. This information pamphlet provides emission ratings, fuel efficiency and fuel cost for all vehicles.

Action: As replacement of a vehicle is required, use the Fuel Consumption Guide as a reference for choosing vehicles with the highest fuel efficiency and lowest emissions.
Lead: Fleet Manager, All departments

3 Hybrid Technology

Hybrid vehicles produce, on average, half the amount of emissions as a similar sized traditional gasoline model. Hybrid technology is available for many different vehicle types including light duty trucks, SUVs, and passenger vehicles.

Action: Replace specific fleet vehicles with hybrid vehicles in accordance with rightsizing and within budgetary constraints.
Lead: Fleet Manager

Action: Conduct an impact analysis on the reduction of fuel usage and greenhouse gas emissions' from the purchase of hybrids.
Lead: Environmental Policy, Fleet Manager

4 Diesel – Electric Hybrid Buses

Hybrid buses have been used in many municipalities in Canada. The City of Toronto and Hamilton have both piloted and purchased hybrid buses.

Action: Review and monitor hybrid buses and integrate hybrid buses into the transit fleet at the appropriate time.
Lead: Oakville Transit

5 Maintenance and Management Practices

A major component to maintaining a green fleet is regular preventive maintenance inspections and follow-up repairs. A good preventive maintenance program consists of many elements: keeping accurate vehicle and equipment maintenance files, routine inspections to ensure the unit is operating at its optimum level such as: checking engine, transmission oil, and all other fluid levels, checking the integrity of the exhaust system, proper tire inflation, and electronics system check. Currently, the Town has integrated daily circle checks (Appendix B) into the fleet management program. As well, maintenance and fleet managers require continuous training in the newest technologies.

Green management practices include the proper environmental disposal of vehicle fluids, recycling of tires, waste oils and waste oil filters, limiting the use where possible of aerosols, water use, autobody refinishing, filters and particulates.

Action: Review current maintenance and management practices and implement further green maintenance and management activities.
Lead: Fleet Manager, Maintenance Manager, Oakville Transit

Fact:
Underinflated tires can increase fuel consumption by 8%
Source: Government of Canada

6 Technology for Future Consideration

New emission reduction technologies are continuously becoming available for municipal fleets. It is important to remain knowledgeable and pilot up-and-coming technologies.

Action: Continue to investigate emerging emission and fuel reduction technologies. Implement pilot projects where suitable and funds are available in the annual budget.
Lead: Fleet Manager, Oakville Transit Fleet Manager, Environmental Policy

7 Emissions Control Devices

Emissions are released from a vehicle in three main ways: those that are emitted from the crankcase, those that come from the tail pipe, and those that evaporate from the fuel system, rubber and plastic parts of the vehicle. There are many emission control technologies that exist including; catalytic converters, evaporative controls, air injection and many more.

Action: Review and pilot the use of emission control devices.
Lead: Fleet Manager, Oakville Transit

8 Plug-in Hybrid Electric Vehicles (PHEV)

PHEVs contain an internal combustion engine and a battery. The battery can be recharged by connecting the plug to an electric power source. The Toronto Atmospheric Fund and the City of Toronto have initiated a pilot project for PHEVs. Plug-in vehicles produce indirect emissions from fossil-fuelled electricity generating stations.

Action: Review and monitor the City of Toronto's PHEV pilot project
Lead: Environmental Policy, Fleet Manager

9 Full- Electric Vehicles

Full-electric vehicles do not contain an internal combustion engine. These vehicles produce zero emissions while operating. Full-electric vehicles have the same issue as PHEVs as they are plugged into the grid and produce indirect emissions.

Action: Review available full-electric vehicles and implement a pilot program.
Lead: Environmental Policy, Fleet Manager

10 Hydrogen Vehicles

Hydrogen fuel cell vehicles are a zero-emission alternative to the internal combustion engine. Fuel cell vehicles run on 100 per cent hydrogen, can be twice as efficient as similarly sized conventional vehicles, and may incorporate other advanced technologies to increase efficiency. British Columbia Transit has announced that they will be purchasing 20 hydrogen-fuelled buses by 2010. New Flyer collaborated with Vancouver, BC's Ballard Power Systems in 2005 to test the very first hydrogen fuel-cell bus in cold weather on Winnipeg roads.

Action: Review and monitor the BC Transit's hydrogen-fuelled buses test results.
Lead: Environmental Policy, Oakville Transit, Fleet Manager

11 Alternative Fuels

Biodiesel

Biodiesel is a fuel produced from vegetable oils, waste cooking oil, animal fats or tall oil. This is a highly desirable fuel as it needs little to no engine modification to be used successfully, and can be used as a pure fuel or blended with petroleum diesel in any percentage. B20, for example, is a blend of 20 per cent biodiesel with 80 per cent diesel.

Barriers to using biodiesel include issues with weather, temperature, water/humidity, short shelf life, being prone to fungus, cost of storage and voiding manufacturer's warranties.

Action: B5 is to be used where appropriate. Continue to pilot the use biodiesel without voiding manufacturer's warranties. Review and monitor the use of B10, B20 and B50.
Lead: Fleet Manager, Roads and Works department

12 Driver Training

Vehicle operators can reduce fuel consumption and emissions by altering their driving habits. Providing additional training (beyond safety training) to all vehicle operators on driving techniques can greatly improve fuel efficiency. This may include braking and acceleration techniques as well as idling reduction.

Action: Review current driver training programs. Implement fuel-efficient techniques into training regime.
Lead: Fleet Driver Trainer, Oakville Transit Driver Trainer, Fleet Manager

13 Anti-Idling Program

In 2002, the Town of Oakville enacted the Anti-idling By-law (2002-153). Town owned and operated vehicles are expected to comply. The elimination of unnecessary engine idling reduces both emissions and fuel costs. As well, implementing anti-idling protocol reduces wear and tear on the engine resulting in lower maintenance costs.

Action: Ensure that Town staff are aware of the Anti-idling By-law. Implement anti-idling into new employee and staff driver training.
Lead: Fleet Driver Trainer, Oakville Transit Driver Trainer, Environmental Policy

14 Drive-Thru Ban

Drive-thrus are a major contributor to poor air quality, and encourage idling and waste fuel.

Action: Implement a drive-thru ban for all Town staff using Town owned vehicles. Create an awareness campaign for all staff.
Lead: Environmental Policy, Fleet Driver Trainer, Human Resources

15 Department Fleet Vehicles

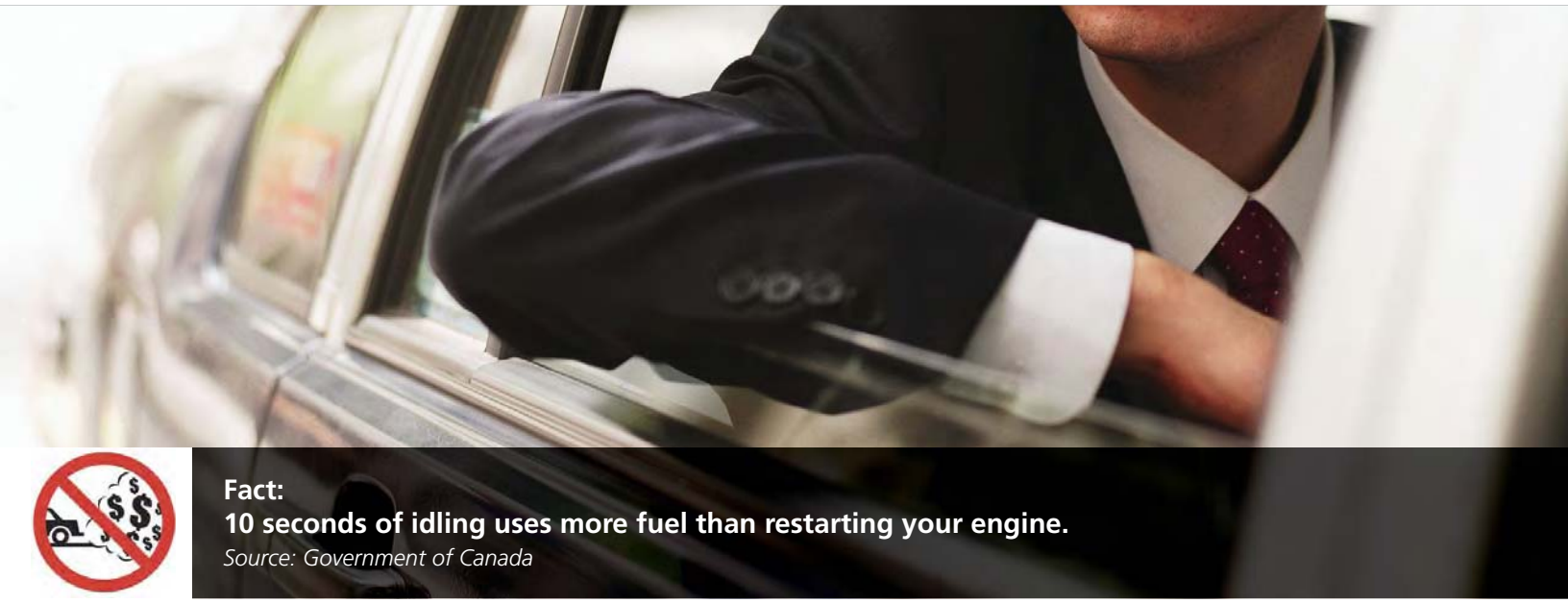
It is recognized that many Town employees use personal vehicles for Town business. This removes the ability the Town has to maintain and monitor the use of vehicles for Town activities. As an example, the City of Mississauga embarked on a financial analysis to convert personal employee vehicles to fleet vehicles. This analysis determined that an employee who drives an annual average of more than 10,000 km may be converted to a fleet vehicle.

Action: Conduct a financial analysis on purchasing fleet vehicles for employees who use personal vehicles for job related purposes.
Lead: Finance, Environmental Policy and Fleet Manager

16 Carbon Offsets for Municipal Employee Air Travel

Air travel presently accounts for 4-9 per cent of the total climate change impact of human activity. If Town employees must travel by air for businesses purposes, purchasing carbon offsets will account for the emissions from the flight.

Action: Develop a carbon-offset program with the partnership of Parks and Open Space and the Tree Preservation Fund to plant trees within Oakville to offset air travel.
Lead: Environmental Policy, Parks and Open Space and Finance



Fact:
10 seconds of idling uses more fuel than restarting your engine.
Source: Government of Canada

17 Green Driving Education and Awareness

Education and awareness campaigns directed to Town staff would consist of smart driver, Tire Smart and vehicle fuel efficiency information sessions and advertising.

Action: Develop and implement vehicle and driving efficiency workshops and information to Town employees.
Lead: Environmental Policy

18 Smart Commute

Smart Commute has been developed to help reduce traffic congestion and improve air quality. The Town of Oakville participates in Halton Region's Smart Commute initiative. Smart Commute Halton is an initiative of Metrolinx aimed at reducing single occupancy vehicle trips across the GTA. Its goal is to provide programs and services that support better transportation options to assist commuters in getting to and from work. This program will encourage telecommuting, use of public transit whenever possible and video/telephone conferencing.

Action: Continue to implement the Smart Commute program
Lead: Sustainable Transportation Program Coordinator

19 Continuous Learning of New Green Fleet Initiatives

Continuous research on new green fleet initiatives is necessary for fleet managers to continue to improve and green their municipal fleets.

Action: Ensure that staff attends green fleet conferences and expos to continue to enhance knowledge of fleet greening technologies.
Lead: Fleet Managers, Environmental Policy

20 Personal Vehicle Fuel Efficient Incentive program

Strategic partnerships with automotive companies will provide Town employees an incentive to purchase green vehicles for a discount price. Possible auto companies of interest include SMART Car Canada, Ford, Toyota and Honda.

Action: Research automotive companies that would be interested in creating a partnership with the Town.
Lead: Environmental Policy, Finance

21 Alternatives to Fleet Vehicles

Using vehicles less can be the first step to reducing fuel usage. Many municipalities have implemented the use of bicycles into job functions. As an example, parking enforcement officers may have the ability to use alternative modes of transportation for designated areas.

Action: Review identified job related functions and possible alternative forms of transportation.
Lead: Fleet Manager, Environmental Policy

22 E3 Fleet Membership

E3 is an independent, non-profit managed system for "greening" Canada's fleets. E3 stands for Energy, Environment, and Excellence. This system was designed by some of Canada's leading fleet managers and identifies how to reduce operating costs, smog and greenhouse gas emissions, and rebalance fleet assets to meet cost and emission targets. E3 is a tool that can assist fleet managers in optimizing fleet operation, reducing fuel costs, and improving environmental performance. E3 provides an integrated analysis and green rating system for fleets.

Action: Purchase membership for E3 Fleet. Participate in an E3 Fleet Review and Rating System.
Lead: Roads and Works department, Fleet Manager, Oakville Transit, Environmental Policy

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www.aircanada.com/en/travelinfo/traveller/zfp.html

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www.biofleet.net

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http://biofleet.net/documents/C3_Renewable_Diesel_Characterization_Study.pdf

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City of Mississauga. 2006. City Fleet Emissions Reduction Strategy.

City of Seattle. 2003. A Clean and Green Fleet: An Action Plan for the City of Seattle.

City of Toronto. 2008. Green Fleet Plan 2008-2011.

E3 Fleet
www.e3fleet.com.

FleetChallenge Ontario. 2008. Best Practices Manual 2008.

FleetSmart
www.fleetsmart.nrcan.gc.ca.

Green Fleets British Columbia
www.greenfleetsbc.com

Natural Resources Canada, Office of Energy Efficiency
http://oee.nrcan.gc.ca

Appendix A

Town of Oakville
Vehicle Fleet Rightsizing Checklist

Employee/ Department Requirements

Department Name: _____

Employee Name and Title:_____

1. Does the employee currently use a Town fleet vehicle? Y or N
   If No, Continue on to question 2.
   If Yes, What make and model does the employee currently use?
   _____
   _____

2. What are the main job functions you need to perform with your vehicle? (Inspections, parking enforcement, surveying, deliveries/ moving, transport equipment etc.)
   _____
   _____

3. Does the vehicle require towing capacity? Y or N

4. Are there any specific features you require for the vehicle? (Size, type, mechanical equipment etc.)
   _____
   _____
   _____

Fleet Manager Recommended Vehicle Selection and Comments:

Recommended Size/Type: _____

Is this vehicle size/type available in a hybrid, low emission or alternative fuel vehicle? Y or N

Recommended Make/Model and Comments:

_____
_____

What is the NRCAN Fuel Consumption Guide Rating of the recommended vehicle:
Published: _____ MPG City/Highway _____ _____
L/100 Km City/Highway _____ _____ CO2 Emissions (kg)/ Year: _____

Fleet Manager: _____ Director: _____
Signature Signature

Appendix B

Light Duty Daily Circle Check

Vehicle Inspection Reports

Truck / Trailer Make			Truck Unit #		Date: mm/dd/year
Truck License Plate #	Trailer License Plate #		Trailer Unit #		Odometer Finish _____
☐ Pre -trip	Inspection Location: Oakville, Ontario		Time:	AM PM	Odometer Start _____
☐ Post -trip	Inspection Location: Oakville, Ontario		Time:	AM PM	Total Km's Driven _____
Driver(D) use X if item is not satisfactory			**Mechanic (M) use √ + your initials when defect corrected**		

Truck	D	M	Truck	D	M	Truck	D	M	Trailer / Towed Vehicle	D	M
Air Brake Adjustments + Connections			Wheels, Rims + Fasteners			Defroster / Heaters, Fans & Controls			Air Brake Adjustment / Brake Components		
Air Compressor			Condition of Tires + Proper Inflation			Steering Wheel			Parking Brake		
Air Lines - Supply + Service			Fire Extinguisher			Air / Electric Horn			Electric / Hydraulic Brakes		
Air Brake Pressure			First Aid kit			Doors, Locks, Handles			Ownership / Valid Insurance		
Parking Brake			Reflective Triangles			Body Damage			Annual Inspection Sticker / Certificate		
Low Air Warning Signals			Stop/Brake & Tail Lights			Cleanliness of Cab			Valid License Plate		
Brake Pedal			Clearance Lights / Reflectors			Mirrors			Lights + Reflectors		
Air Tanks			Turn / Hazard Signals			Load Security			Ramps / Tailgates		
Hydraulic Brakes			Auxiliary Lighting			Mud Flaps			Wheel, Rims, Fasteners		
Electric Brake / Controls			Exhaust Systems			Plow Assemblies			Condition of Tires + Proper Inflation		
Chassis, Frames and Cross Members			Radiator & Fluid Level			Body Damage			Suspension, Springs, Air bags + Controlling Attachments.		
Clutch + Adjustment			Fuel Systems			Valid License Plate			Jack / Landing Gear		
Transmission			Engine			Ownership / CVOR			King Pin / Plate		
Rear End / Axles			Battery(ies)			Valid Insurance			Pintle Hook / Ball Hitch		
Suspension, Springs, Air Bags and Controlling attachments			Oil Pressure & Level			Annual Inspection Sticker / Certificate			Load Security		
Drive Line			Windshield + Windows			Seat Belt			Body Damage		
5th Wheel / Pintle / Ball			Windshield Wipers + Washers			Other Attachments			Other		

Driver's Comments:

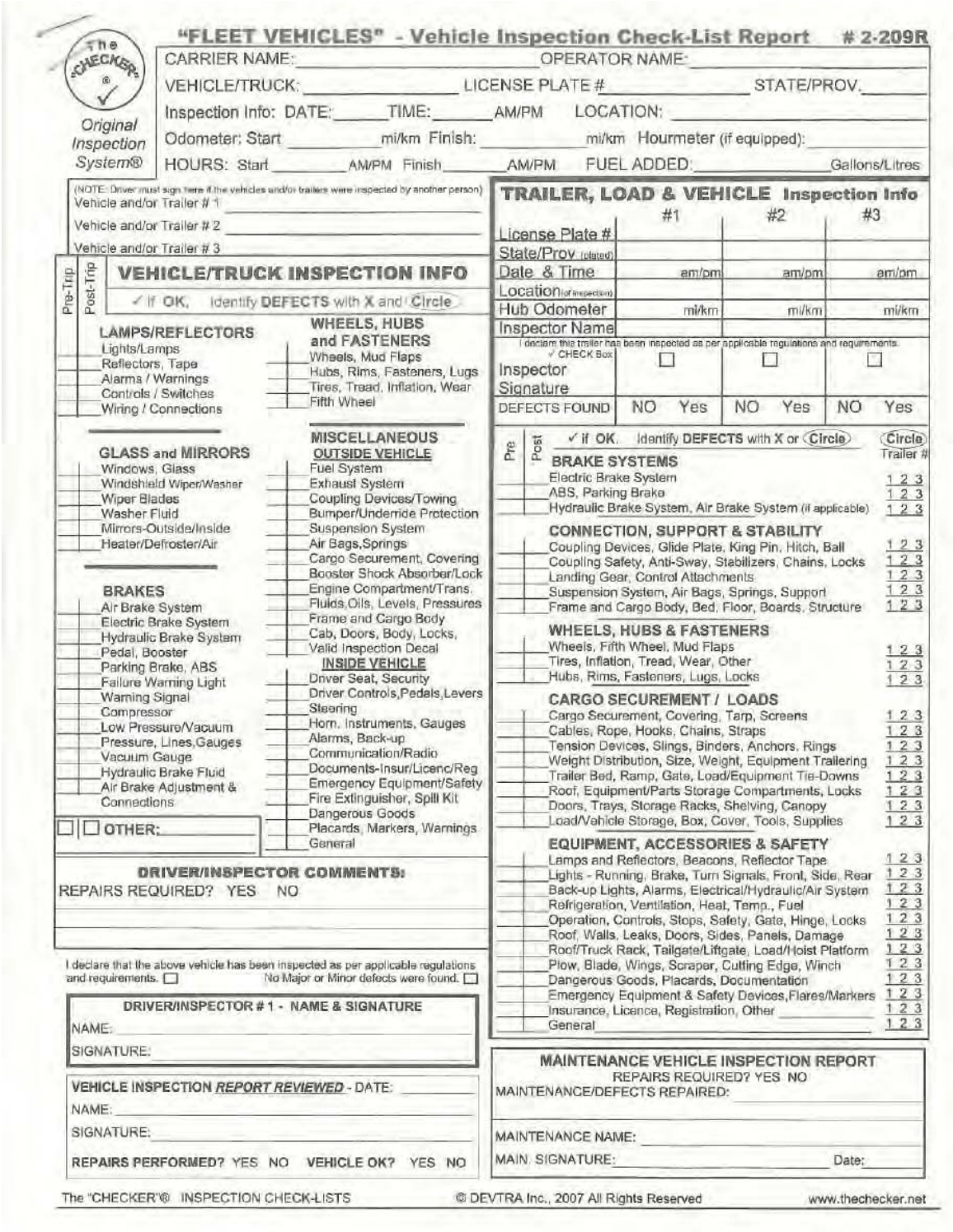
Mechanic's Comments:

☐ Conditions of above vehicle satisfactory. ☐ Above defects corrected.

☐ Above defects need not be corrected for safe operation of vehicle. Repair Order #:

Driver's Name: (Print and sign)	Time:	AM PM	Date: mm/dd/year
Mechanic's Name: (Print and sign)	Time:	AM PM	Date: mm/dd/year

Heavy Duty Daily Circle Check



"FLEET VEHICLES" - Vehicle Inspection Check-List Report # 2-209R

The "CHECKER"® Original Inspection System®

CARRIER NAME: _____ OPERATOR NAME: _____

VEHICLE/TRUCK: _____ LICENSE PLATE #: _____ STATE/PROV.: _____

Inspection Info: DATE: _____ TIME: _____ AM/PM LOCATION: _____

Odometer: Start _____ mi/km Finish: _____ mi/km Hourmeter (if equipped): _____

HOURS: Start _____ AM/PM Finish _____ AM/PM FUEL ADDED: _____ Gallons/Litres

(NOTE: Driver must sign here if the vehicles and/or trailers were inspected by another person)

Vehicle and/or Trailer # 1 _____

Vehicle and/or Trailer # 2 _____

Vehicle and/or Trailer # 3 _____

VEHICLE/TRUCK INSPECTION INFO

Pre-Trip / Post-Trip

✓ if OK, Identify DEFECTS with X and Circle

LAMPS/REFLECTORS
- Lights/Lamps
- Reflectors, Tape
- Alarms / Warnings
- Controls / Switches
- Wiring / Connections

WHEELS, HUBS and FASTENERS
- Wheels, Mud Flaps
- Hubs, Rims, Fasteners, Lugs
- Tires, Tread, Inflation, Wear
- Fifth Wheel

GLASS and MIRRORS
- Windows, Glass
- Windshield Wiper/Washer
- Wiper Blades
- Washer Fluid
- Mirrors-Outside/Inside
- Heater/Defroster/Air

MISCELLANEOUS

OUTSIDE VEHICLE
- Fuel System
- Exhaust System
- Coupling Devices/Towing
- Bumper/Underride Protection
- Suspension System
- Air Bags,Springs
- Cargo Securement, Covering
- Booster Shock Absorber/Lock
- Engine Compartment/Trans.
- Fluids,Oils, Levels, Pressures
- Frame and Cargo Body
- Cab, Doors, Body, Locks,
- Valid Inspection Decal

INSIDE VEHICLE
- Driver Seat, Security
- Driver Controls,Pedals,Levers
- Steering
- Horn, Instruments, Gauges
- Alarms, Back-up
- Communication/Radio
- Documents-Insur/Licenc/Reg
- Emergency Equipment/Safety
- Fire Extinguisher, Spill Kit
- Dangerous Goods
- Placards, Markers, Warnings
- General

BRAKES
- Air Brake System
- Electric Brake System
- Hydraulic Brake System
- Pedal, Booster
- Parking Brake, ABS
- Failure Warning Light
- Warning Signal
- Compressor
- Low Pressure/Vacuum
- Pressure, Lines,Gauges
- Vacuum Gauge
- Hydraulic Brake Fluid
- Air Brake Adjustment & Connections

☐ ☐ OTHER: _____

DRIVER/INSPECTOR COMMENTS:

REPAIRS REQUIRED? YES NO

I declare that the above vehicle has been inspected as per applicable regulations and requirements. ☐ No Major or Minor defects were found. ☐

DRIVER/INSPECTOR # 1 - NAME & SIGNATURE

NAME: _____

SIGNATURE: _____

VEHICLE INSPECTION *REPORT REVIEWED* - DATE: _____

NAME: _____

SIGNATURE: _____

REPAIRS PERFORMED? YES NO VEHICLE OK? YES NO

TRAILER, LOAD & VEHICLE Inspection Info

	#1	#2	#3
License Plate #			
State/Prov (plated)			
Date & Time	am/pm	am/pm	am/pm
Location (of inspection)			
Hub Odometer	mi/km	mi/km	mi/km
Inspector Name			
I declare this trailer has been inspected as per applicable regulations and requirements. ✓ CHECK Box	☐	☐	☐
Inspector Signature			
DEFECTS FOUND	NO Yes	NO Yes	NO Yes

Pre / Post — ✓ if OK, Identify DEFECTS with X or Circle — Circle Trailer #

BRAKE SYSTEMS
- Electric Brake System 1 2 3
- ABS, Parking Brake 1 2 3
- Hydraulic Brake System, Air Brake System (if applicable) 1 2 3

CONNECTION, SUPPORT & STABILITY
- Coupling Devices, Glide Plate, King Pin, Hitch, Ball 1 2 3
- Coupling Safety, Anti-Sway, Stabilizers, Chains, Locks 1 2 3
- Landing Gear, Control Attachments 1 2 3
- Suspension System, Air Bags, Springs, Support 1 2 3
- Frame and Cargo Body, Bed, Floor, Boards, Structure 1 2 3

WHEELS, HUBS & FASTENERS
- Wheels, Fifth Wheel, Mud Flaps 1 2 3
- Tires, Inflation, Tread, Wear, Other 1 2 3
- Hubs, Rims, Fasteners, Lugs, Locks 1 2 3

CARGO SECUREMENT / LOADS
- Cargo Securement, Covering, Tarp, Screens 1 2 3
- Cables, Rope, Hooks, Chains, Straps 1 2 3
- Tension Devices, Slings, Binders, Anchors, Rings 1 2 3
- Weight Distribution, Size, Weight, Equipment Trailering 1 2 3
- Trailer Bed, Ramp, Gate, Load/Equipment Tie-Downs 1 2 3
- Roof, Equipment/Parts Storage Compartments, Locks 1 2 3
- Doors, Trays, Storage Racks, Shelving, Canopy 1 2 3
- Load/Vehicle Storage, Box, Cover, Tools, Supplies 1 2 3

EQUIPMENT, ACCESSORIES & SAFETY
- Lamps and Reflectors, Beacons, Reflector Tape 1 2 3
- Lights - Running, Brake, Turn Signals, Front, Side, Rear 1 2 3
- Back-up Lights, Alarms, Electrical/Hydraulic/Air System 1 2 3
- Refrigeration, Ventilation, Heat, Temp., Fuel 1 2 3
- Operation, Controls, Stops, Safety, Gate, Hinge, Locks 1 2 3
- Roof, Walls, Leaks, Doors, Sides, Panels, Damage 1 2 3
- Roof/Truck Rack, Tailgate/Liftgate, Load/Hoist Platform 1 2 3
- Plow, Blade, Wings, Scraper, Cutting Edge, Winch 1 2 3
- Dangerous Goods, Placards, Documentation 1 2 3
- Emergency Equipment & Safety Devices,Flares/Markers 1 2 3
- Insurance, Licence, Registration, Other _____ 1 2 3
- General _____ 1 2 3

MAINTENANCE VEHICLE INSPECTION REPORT

REPAIRS REQUIRED? YES NO

MAINTENANCE/DEFECTS REPAIRED: _____

MAINTENANCE NAME: _____

MAIN. SIGNATURE: _____ Date: _____

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Appendix C
Green Fleet Action Plan

Program	Recommended Action	Performance Measures	Lead	Time Frame
Rightsizing	Conduct a job function and job related needs evaluation before all fleet vehicles are purchased, using the rightsizing checklist.		Fleet Manager, All departments	C
Fuel - Efficient Vehicles	As replacement of a vehicle is required, use the Fuel Consumption Guide as a reference for choosing vehicles with the highest fuel efficiency and lowest emissions.		Fleet Manager, All departments	C
Hybrid Technology	Replace specific fleet vehicles with hybrid vehicles in accordance with rightsizing and within budgetary constraints. Conduct an impact analysis on the reduction of fuel usage and greenhouse gas emissions from the purchase of hybrids.	Total litres reduction of fuel usage Total tonnes reduced of GHG emissions	Fleet Manager Fleet Manager, Environmental Policy	C ST
Diesel – Electric Hybrid Buses	Review and monitor hybrid buses and integrate hybrid buses into the Transit fleet at the appropriate time.		Oakville Transit	MT
Maintenance and Management Practices	Review current maintenance and management practices and implement further green maintenance and management activities.	Drive Clean results Maintenance costs	Fleet Manager, Maintenance Manager, Oakville Transit	C
Technology for Future Consideration	Continue to investigate emerging emission and fuel reduction technologies. Implement pilot projects where suitable and funds are available in the annual budget.		Fleet Manager, Oakville Transit Fleet Manager, Environmental Policy	C ST
Emissions Control Devices	Review and pilot the use of emission control devices.	% reduction of GHG emissions	Fleet Manager, Oakville Transit	C, LT
Plug-in Hybrid Electric Vehicles (PHEV)	Review and monitor the City of Toronto's PHEV pilot project		Environmental Policy, Fleet Manager	LT
Full- Electric Vehicles	Review available full-electric vehicles and implement a pilot program.	% reduction of GHG emissions	Environmental Policy, Fleet Manager	C, LT
Hydrogen Vehicles	Review and monitor the BC Transits hydrogen-fuelled buses.		Environmental Policy, Oakville Transit, Fleet Manager	C
Alternative Fuels Biodiesel	Continue to pilot the use of biodiesel without voiding manufacture warranties. Review and monitor the use of B5, B10, B20 and B50. Review and monitor the experience of other transit service providers and consider use of biodiesel at the appropriate time.	% reduction of GHG emissions	Fleet Manager, Roads and Works Operations	ST
Driver training	Review current driver training programs. Implement fuel- efficient techniques into training regime.	Total litres reduction of fuel usage Total tonnes reduced of GHG emissions	Fleet Driver Trainer, Oakville Transit Driver Trainer, Fleet Manager	C

Legend ST = 1-2 years MT = 2-5 years LT = 5 years and beyond C = Continuous

Program	Recommended Action	Performance Measures	Lead	Time Frame
Anti-Idling Program	Ensure that Town staff are aware of the anti-idling by-law. Implement anti-idling into new employee and staff driver training.	Survey employees on awareness of anti-idling program	Fleet Driver Trainer, Oakville Transit Driver Trainer, Environmental Policy	ST
Drive-Thru Ban	Implement a drive-thru ban for all Town staff using Town owned vehicles. Create an awareness campaign for all staff.	Survey employees on awareness of drive-thru ban	Environmental Policy, Fleet Driver Trainer, Human Resources	ST
Department Fleet Vehicles	Conduct a financial analysis on purchasing fleet vehicles for employees who use personal vehicles for job related purposes.	Number of employees that require fleet vehicle Long-term cost savings	Finance, Environmental Policy and Fleet Manager	MT
Carbon Offsets for Municipal Employee Air Travel	Develop a carbon-offset program with the partnership of Parks and Open Space and the Tree Preservation Fund to plant trees within Oakville to offset air travel.	Tonnes of GHG emissions offset	Environmental Policy, Parks and Open Space and Finance	ST
Green Driving Education and Awareness and Smart Commute Program	Develop and implement vehicle and driving efficiency workshops and information to Town employees. Continue to implement the Smart Commute program. Ensure that staff attends green fleet conferences and expos to continue to enhance knowledge of fleet greening technologies.	Survey employees on awareness of drive thru ban Number of employees that attend workshops Number of employees participating in Smart Commute program Number of conferences attended	Environmental Policy Sustainable Transportation Program Coordinator Fleet Manager, Environmental Policy	ST C C
Personal Vehicle Hybrid Incentive program	Research automotive companies that would be interested in creating an incentive partnership with the Town.	Number of incentive programs provided to Town employees Number of employees who have used the incentive program	Environmental Policy, Finance	LT
Alternatives to Fleet Vehicles	Review identified job related functions and possible alternative forms of transportation.	Number of employees using alternative modes of transportation Total litres reduction of fuel usage Total tonnes reduced of GHG emissions	Fleet Manager, Environmental Policy	MT
E3 Fleet Membership	Purchase membership for E3 Fleet. Participate in an E3 Fleet review and Rating System.	Overall fleet rating	Roads and Works department, Fleet Manager, Environmental Policy	ST

Legend ST = 1-2 years MT = 2-5 years LT = 5 years and beyond C = Continuous

Appendix D
Glossary of Terms

Biodiesel
Biodiesel is diesel fuel that includes in its production the use of modified vegetable oils and fats from renewable biological resources. There are varying forms of biodiesel concentrations (2 – 20%).

Carbon Offsets
Carbon Offsets is an emission reduction credit from a project that results in less carbon dioxide or other greenhouse gases in the atmosphere than would otherwise occur. Carbon offsets are typically measured in tons of CO2-equivalents (or 'CO2e'). Many types of activities can generate carbon offsets. Renewable energy such as a wind farm, or installations of solar, small hydro, geothermal, and biomass energy can all create carbon offsets by displacing fossil fuels (David Suzuki Foundation).

Fleet
All Town owned vehicles, off-road equipment and Transit buses.

Green Fleet/ Fleet Greening
A municipal fleet that implements actions and best practices to reduce greenhouse gas emissions, increase fuel efficiency and adopt fuel saving opportunities.

Green Fleet Maintenance and Management
A major component to maintaining a green fleet is regular preventive maintenance inspections and follow-up repairs. As well, example's of green fleet management include, ensuring that facilities are equipped with catch basins, use low energy and environmentally friendly lighting and heating, have fast roll doors, uses environmentally friendly parts cleaning fluids, and has well maintained fuelling infrastructure as well as waste oil and anti-freeze storage tanks, among other options.

Greenhouse gases (GHG)
Greenhouse gases (GHGs) are gases in the atmosphere that trap energy from the sun. Naturally occurring GHGs include water vapour, ozone, carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O). While these naturally occurring gases are what make life possible, a serious concern today is the enhanced effect on the climate system of increased levels of some of these gases in the atmosphere, due mainly to human activities (Environment Canada).

Hybrid Vehicle
Any vehicle that uses a combination of an internal combustion engine and an electric motor.

Right Sizing
The purpose of right sizing is to ensure that the size of a fleet vehicle is correctly assigned for job specific duties as required by an employee, equipment, tasks and area requirements.

Notes

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Town of Oakville staff from the Engineering and Construction department, Environmental Policy department, Oakville Transit, and Roads and Works Operations prepared the Sustainable Green Fleet Guide.

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