Appendix A

Town of Oakville | State of the Environment Report 2014

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1 Introduction





Welcome!

This is the seventh edition of the SOER.

Town staff participate in a number of events each year to support environmental outreach in the community.

We hope you will find the information in this report useful. Together, we can make a difference and we hope you will join us in finding ways to improve Oakville's environment.

Background

In December 2005, Council approved the town's first **Environmental Strategic Plan** (ESP). This document was developed in partnership with the community and updated in 2011. One of the recommendations of the ESP was to develop a state of the environment reporting system and in 2008, the town published its first annual State of the Environment Report (SOER).

Educational display on energy conservation at the Oakville Public Library during Earth Month. One of six environmental-themed displays at the various library branches.

This report, like most State of the Environment Reports, uses indicators. Since the environment is very complex, indicators provide a more practical and economical way to track the state of the environment than if we attempted to record every possible variable in the environment. For example, CO_2 emissions can be an indicator of climate change. While there are many causes of climate change, scientific research has shown a direct link exists between increasing CO_2 emissions and increasing global average temperatures.

Ongoing restoration of the Glenorchy Conservation Area in north Oakville includes a series of constructed wetlands to support a variety of species.

As we increase our baseline data, we can start to see trends which will help us determine the best programs and actions needed to improve our performance.

2 Indicators

GOAL 1: To Sustain and Enhance Our Natural Environment





Objectives

1.1 To protect and enhance our biodiversity
1.2 To protect and enhance our urban forest
1.3 To protect and enhance our waterways
1.4 To protect and enhance our air quality
1.5 To increase ecological landscaping on private and public property
1.6 To reduce and manage the impacts of climate change

Indicators

- Publicly owned green space (total)
- Trees planted by town staff
- Total suspended solids in creeks
- Mean chloride in creeks
- Mean phosphorus in creeks
- Ground level ozone (annual average)
- Fine particulate matter ($PM_{2.5}$) exceedances
- Annual precipitation
- Annual average temperature (winter/summer)

Key Data

Greenspace and Biodiversity

Protecting and enhancing Oakville's greenspace is important in sustaining our flora and fauna. Publicly owned land provides opportunities for protection and restoration to support biodiversity. As shown in Figure 1, publicly owned greenspace increased by 30 ha in 2013, which equates to about 13.25 hectares of greenspace per 1,000 people as shown in Table 1. Although this trend showed an increase this year, it is expected that overall the trend of per capita space will generally decline as the population continues to increase and land acquisition opportunities are more limited.

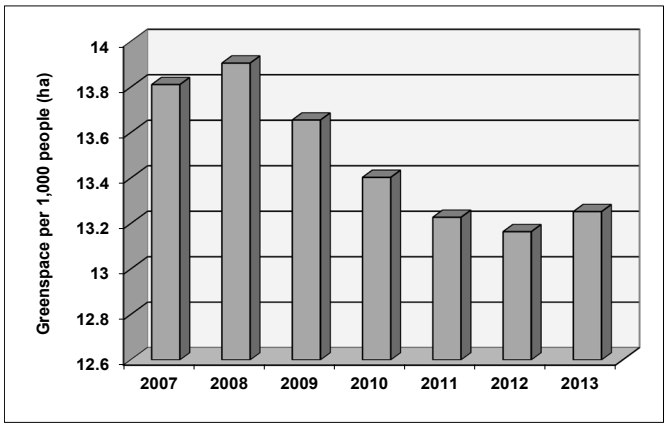


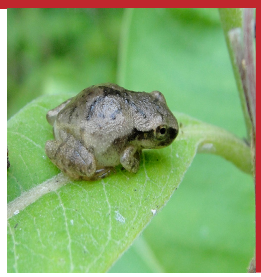
Figure 1: Publicly owned greenspace per 1,000 people
Source: Town of Oakville, Conservation Halton, Province of Ontario

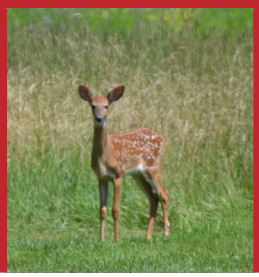
As of 2013, Oakville's land base of 138.5 km² is comprised of 17.7% publicly owned greenspace.

Table 1: Green space in the Town of Oakville

Year	Town (ha)	Province (ha)	Conserva-tion Halton (ha)	Total (ha)
2013	1,474	969	10	2,453
2012	1,444	969	10	2,423
2011	1,435	969	10	2,414
2010	1,422	969	10	2,401
2009	1,421	969	10	2,400
2008	1,418	969	10	2,397
2007	1,355	969	10	2,334

Note: Municipally owned greenspace includes community and neighbourhood parks, tableland woodlots, valleys, and undeveloped parkland. Provincial holdings include Glenorchy Conservation Area and Bronte Creek Provincial Park. Conservation Halton has Wildflower Woods.




As outlined in the town's Urban Forest report (UFORE), trees filter air pollutants and produce oxygen. They provide shelter and food for wildlife and can assist in offsetting impacts from climate change. In recognition of the benefits that trees provide, the town has set a goal to achieve a canopy cover of 40% by 2057.

To maintain a healthy tree population, it is important to continusouly plant new trees to ensure the replacement of old and dying ones. This is particularly important in the face of threats such as the Emerald Ash Borer (EAB) and other invasive species.

As shown in Table 2, between 2007 and 2013, town staff have planted a total of 12,987 trees. In addition, volunteers make significant contributions to the urban forest, with approximately 1,900 trees and shrubs planted by partner groups.

Table 2: Trees planted by Oakville Forestry Staff

Year	Trees Planted
2013	2,441
2012	1,733
2011	994
2010	1,497
2009	3,130
2008	1,898
2007	1,294

Total suspended solids (TSS) consist of fine particles of matter found in waterways. These particles are significant carriers of phosphorus, metals, and other hazardous contaminants. Soil erosion and runoff are the most common sources of suspended solids and TSS levels can increase rapidly during storm events.

Although there are no established standards for suspended solids, a 2001 Environment Canada/ Health Canada assessment report documents toxicity for sensitive aquatic species at 210 mg/L.

TSS can negatively impact aquatic life, including fish, by smothering smaller organisms and eggs, clogging gills and removing oxygen from the water.

As shown in Figure 2, TSS decreased in three Oakville creeks in 2013. Extreme rain events are contributors to runoff and erosion and total precipitation in 2013 increased. Additional water quality monitoring during wet weather would reflect rainfall impacts.

Air Quality

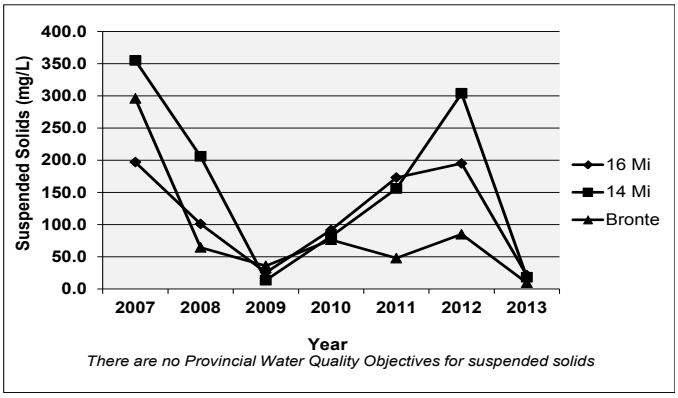
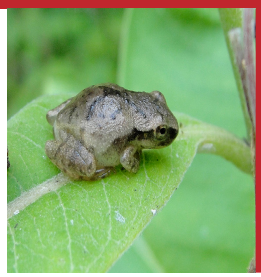
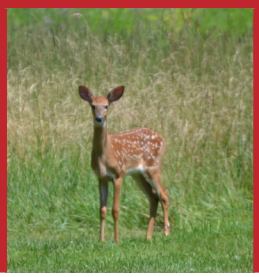


Figure 2: Total suspended solids in Oakville creeks
Source: Conservation Halton

Both ground level ozone and $PM_{2.5}$ (fine particulate matter measuring less than 2.5 micrometers) have been linked to serious health concerns. Ground level ozone is also responsible for the majority of the smog advisories experienced in the town. According to Health Canada, the health reference level for $PM_{2.5}$ is 15ug/m³ and 80 ppb for ozone. These levels have been found to demonstrate quantifiable health impacts in sensitive populations.



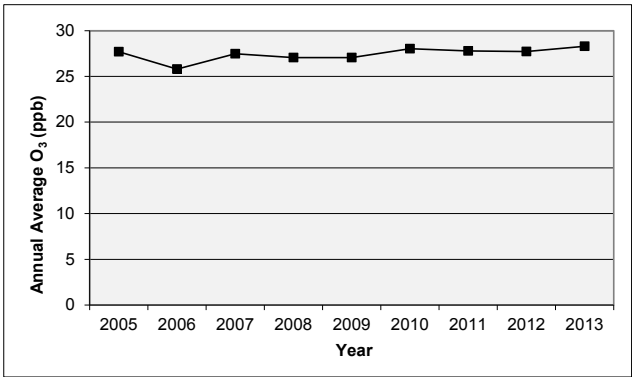



Figure 3: Annual average ground level ozone in Oakville
Source: Ministry of the Environment

Ozone is a secondary air pollutant that is formed when nitrogen oxides (NO_x) react with volatile organic compounds (VOCs) in the presence of sunlight. Therefore, ozone levels tend to vary considerably in response to varying weather conditions. With hotter summers and more cars on the road producing NO_x, ozone levels are expected to trend upwards. However, stable levels have been generally observed as shown in Figure 3. According to the Ontario Ministry of the Environment, it is estimated that during periods of widespread elevated levels of ozone, more than 50 per cent of Ontario's ground-level ozone comes from the United States.

$PM_{2.5}$ is produced when fuels and coal are burned or when other air pollutants react with compounds in the atmosphere. As shown in Figure 4, in 2013 levels were higher than recorded in previous years which is likely due to a change in monitoring technology - new $PM_{2.5}$ analyzers in use across the province measure higher values, particularly in the colder months. Halton Region produces an annual report which can be accessed at *www.halton.ca/cms/One.aspx?portalId=8310&pageId=13747*

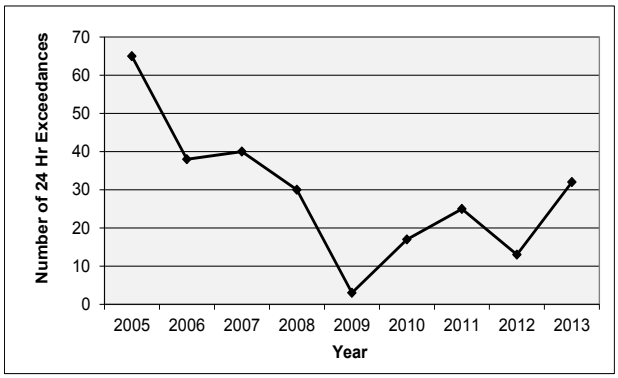


Figure 4: Annual 24 hour exceedance above 15ug/m³ of $PM_{2.5}$ *Source: Ministry of the Environment*

Water Quality

Chloride and phosphorus concentrations are important to monitor since these reflect impacts from runoff with road salts and fertilizers. The Provincial Water Quality Objective (PWQO) for phosphorus to limit excessive plant growth is 0.03 mg/L. For chloride, the PWQO is 250 mg/L.Phosphorus has been a significant water quality issue in Oakville. Sources include lawn fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents and wastewater treatment plant discharges.

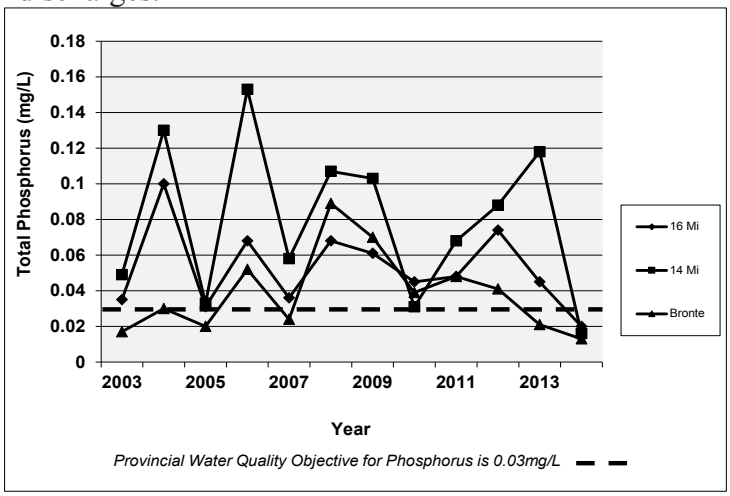
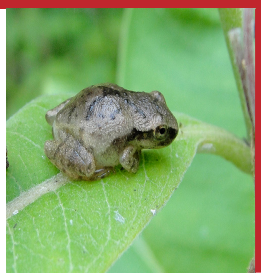


Figure 5: Mean phosphorus levels in Oakville creeks
Source: Conservation Halton

As shown in Figure 5, in 2013, phosphorus levels in all three creeks were below PWQO standards. The general trend of decreasing phosphorus levels is likely in part attributable to a reduction in the use of





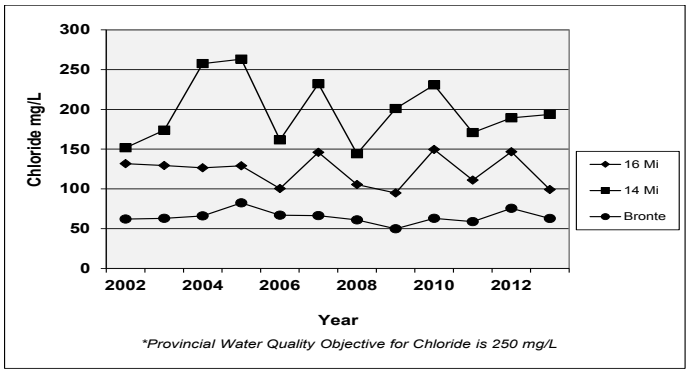


Figure 6: Mean chloride levels in Oakville creeks
Source: Conservation Halton

phosphate in soaps and fertilizers. However, it is also important to keep in mind that phosphorus is carried in runoff following precipitation events and sampling may not coincide with peak phosphorus levels. Many rain events during 2013 occured on weekends, which were not included in the sampling regime.

The primary external impact of chloride levels in Oakville creeks are the result of road salting during winter months. As shown in Figure 6, chloride levels remain below the PWQO of 250 mg/L. Improvements to salt use in winter months may be contributing to these positive results.

Climate Change

Climate change is expected to lead to greater variations in our weather patterns and an increase in extreme weather events. By measuring rainfall and temperature, we can evaluate some of the changes that are taking place over time. Averaging annual temperatures may mask the information that would illustrate climate change impacts as it is expected to produce more extreme temperatures. By taking the average temperature in the summer months (June, July, August) and the winter months (December, January and February) we can better evaluate variations that occur.

Generally, the trend toward warmer summers and lower annual precipitation in Oakville is consistent

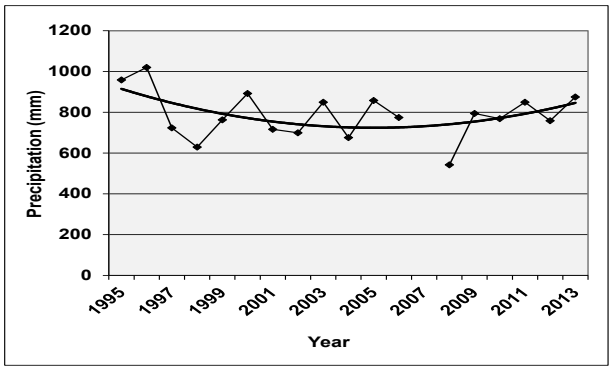


Figure 7: Oakville's annual precipitation
Source: Environment Canada

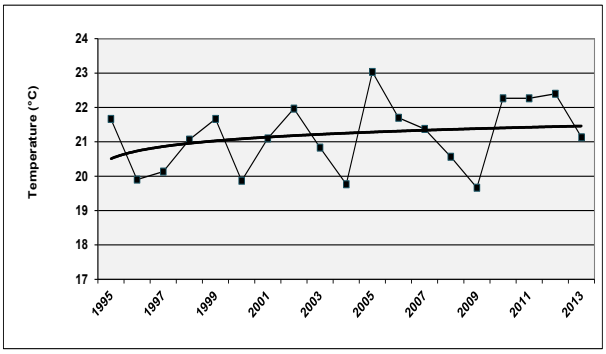


Figure 8: Oakville's average summer temperature *Source: Environment Canada*

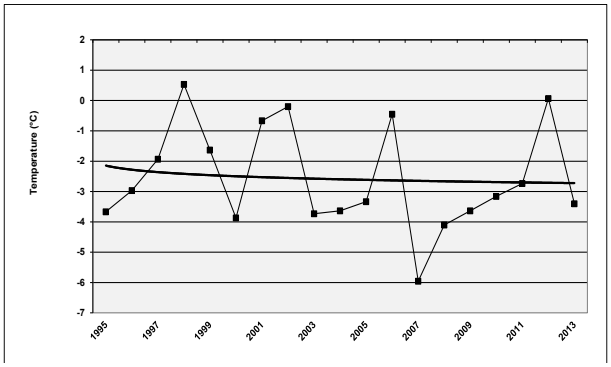
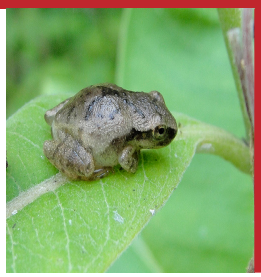


Figure 9: Oakville's average winter temperature *Source: Environment Canada*

with what is being seen throughout the province (Figures 7 and 8). There has also been an overall





gradual trend of increased winter temperatures since 2007, with some variation that may be attributable to the polar vortex in winter 2013 (Figure 9).

It is important to distinguish between weather and climate. Weather is highly variable and changes from year to year. Climate looks at average weather patterns over decades or centuries to see what trends are occurring.

In 2013, Oakville initiated a road ecology strategy to help decrease the impact of roads on wildlife.

While we are tracking weather from year to year, it will take some time to see what changes in the local climate are occurring. Years with incomplete weather data have been excluded in the charts.

What we are doing

The town provided partnership support for the development of wetlands in the Glenorchy Conservation Area by Conservation Halton. The wetland was finished in the spring of 2013 and is already supporting a number of waterfowl and amphibian species. It is expected to provide significant habitat opportunities for many species.

As part of its beaver management program, the town protects trees from damage as a preventive measure.

In partnership with Conservation Halton, Evergreen and the Bronte BIA, the town hosted the Bronte Bluffs Community Planting Day on September 27, 2014. Over 100 volunteers planted over 800 trees and shrubs. The event is part of a larger Great Lakes Guardian Community Fund project to restore the Bronte Bluffs at a town owned park on the shores of Lake Ontario. The project aims to enhance local water quality and reduce stormwater runoff into the lake, improve habitat for birds and local species and enhance visitor experiences to the area.

Over 3,000 ash trees were treated by the town in the summer of 2013 to protect against Emerald Ash Borer (EAB). To see whether the public ash trees in your neighbourhood are receiving treatment, please visit *www.oakville.ca/residents/ash-tree-locator-map.html*

In fall 2014, Council endorsed the town's Climate Change Strategy - Technical Report and public outreach document - Oakville's Climate Change Primer. Staff identified over 300 actions to build the town's resiliency to climate change and are starting to track these adaptation actions.

In October 2013 a road ecology symposium was hosted by the town to kick off the development of a new road ecology strategy. The symposium provided an overview of some current initiatives and projects, and supported collaborative inter-municipal and inter-departmental work going forward. The town's road ecology strategy takes a multi-disciplinary approach to improving environmental outcomes related to planning, building and maintenance of transportation corridors, and will be completed by the end of 2014.

GOAL 2: To Reduce Our Resource Consumption and Waste Production

Objectives

2.1 To reduce dependence on fossil fuels
2.2 To reduce energy use and greenhouse gas emissions
2.3 To reduce waste and increase recycling and reuse
2.4 To reduce our water consumption

Indicators

- Electricity use per capita
- Natural gas use per capita
- Natural gas use per sector
- Waste to landfill and diverted
- Residential waste generated per capita
- Water consumption per capita
- Industrial, commercial & institutional water use

Key Data

Energy Conservation

Tracking the amount of energy used by the community can provide insight into our energy efficiency over time, and where improvements can be made. We also need to look at reducing the impact of our energy production.

Figure 10 shows that per capita energy use has been declining since 2008 and reached a record low in 2013, which may be due in part to extensive campaigns aimed at reducing energy use, lower summer temperatures in 2013 which reduced air conditioner use and energy efficiency improvements in appliances.

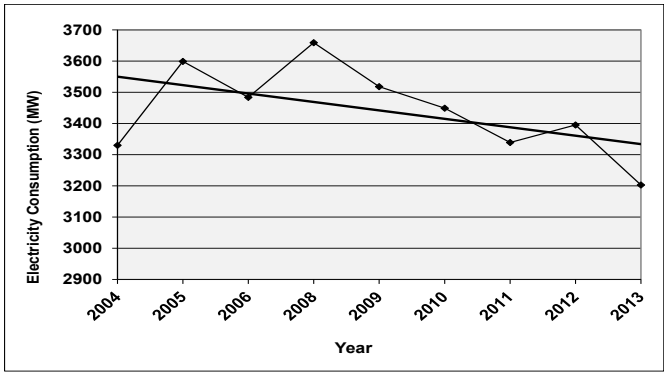


Figure 10: Per capita electricity consumption
Source: Oakville Hydro

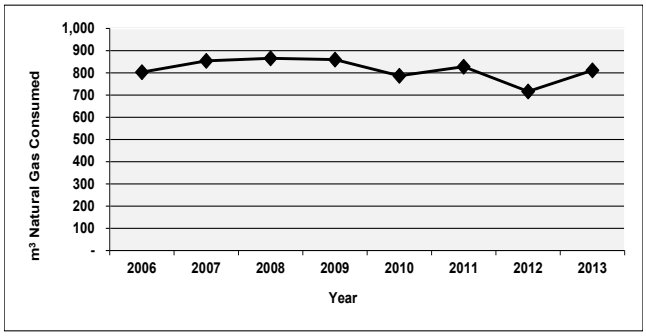


Figure 11: Residential per capita natural gas consumption
Source: Union Gas

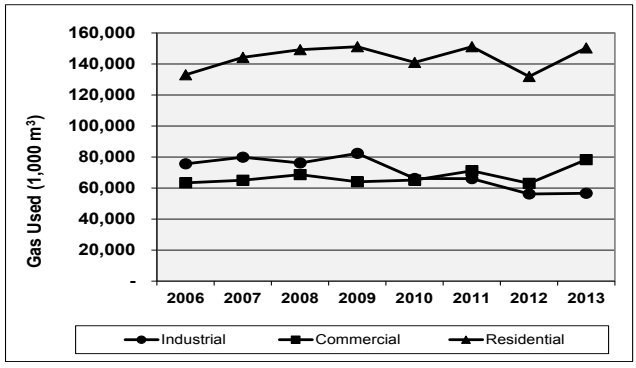


Figure 12: Natural gas consumption by sector
Source: Oakville Hydro




Natural gas consumption is another component of our energy use. Natural gas is the main source of energy for residential heating in Oakville.

Figures 11 and 12 show consumption has increased slightly in all three sectors. Weather is a significant factor influencing natural gas use in the residential and commercial sectors. This may have been a factor in 2013, as winter temperatures were lower than average.

Solid Waste

The amount of waste diverted from landfills provides a measure of the effectiveness of our efforts to reduce, reuse and recycle. Waste going to landfills indicates the degree to which resources are wasted. The amount generated per capita helps to show the public's success in reducing their waste.

Reducing the amount of waste we generate is becoming increasingly important as the remaining capacity of our landfills is quickly being used up.

Figure 13 shows that the overall generation of residential waste per capita has remained relatively steady from 2005 to the present at around 350 kg per person, although waste going to landfill decreased significantly in 2008 when Halton Region introduced composting through the Green Bin program.

Table 3: Oakville waste to landfill and diverted (Tonnnes)

Year	Landfill (T)	Diverted (T)	Total (T)
2013	26,544	37,698	64,242
2012	27,882	36,281	64,163
2011	27,717	36,062	63,779
2010	28,402	36,843	65,245
2009	36,076	27,907	63,983
2008	29,317	34,540	63,857
2007	39,352	22,456	61,808

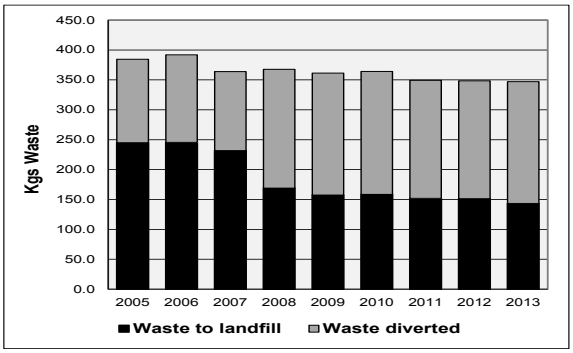


Figure 13: Residential per capita waste and recycling
Source: Halton Region

Water Conservation

Efficient use of water is good for the environment as it reduces our impact on water resources and reduces the energy required to treat and transport the water for our use. It is also good for cost avoidance, because it is cheaper to conserve water than it is to increase treatment capacity. Studies show that water efficiency measures can cost less than new infrastructure.

Table 4: Oakville residential water consumption (Millions of Litres)

Year	Millions of Litres	Year	Millions of Litres
2013	145.2	**2009**	150.3
2012	160.0	**2008**	149.3
2011	Data not available	**2007**	165.2
2010	151.5	**2006**	151.7

Despite a population increase of 11.1% since 2006, total residential water use has remained fairly steady because per capita use has gone down over time (Figure 14), although 2013 saw the lowest water use over this period. While 2013 was a wet summer and likely explains that year's dip, several other factors may be contributing to the overall decreasing trend including the continued water reduction strategies put in place by Halton Region supported by the town such as the Outdoor Water Use Education Program and the annual rain barrel sale held each spring.




Water use in the industrial, commercial and institutional sectors has remained fairly constant (Figure 15).

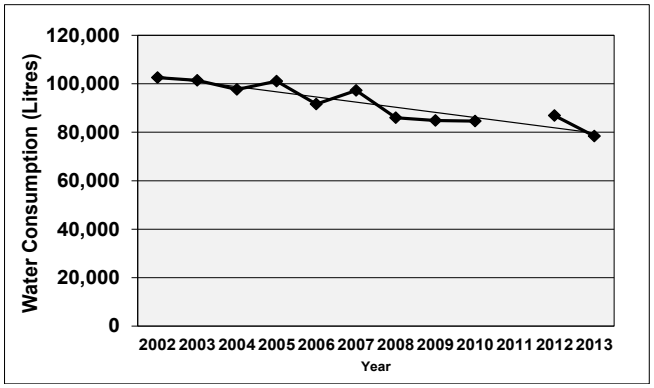


Figure 14: Residential water consumption per capita
Source: ***Figure 14 uses water data from Halton Region and is converted to per capita data using population estimates from the Town of Oakville. The calculation uses estimates therefore, this data may not be accurate and is only meant to support a trend analysis.***

The trend towards hotter and drier summers can contribute to increased water use and it will be particularly important in coming years to monitor this potential scenario.

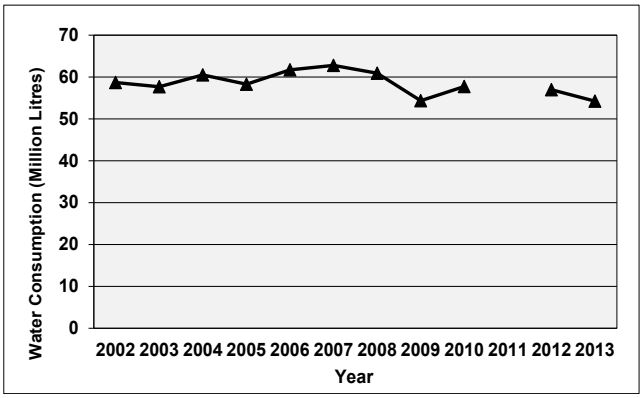


Figure 15: Industrial/Commercial/Institutional water consumption *Source: Halton Region*

What we are doing

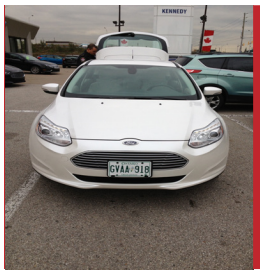
In 2014, the town completed the development of its five-year Corporate Energy Conservation and Demand Management (CDM) Plan and reported on its 2012 energy consumption and greenhouse gas emissions to the Ministry of Energy to meet the requirements of the Green Energy Act. The plan is available on the town's website at *http://www.oakville.ca/environment/corporate-energy-management.html.*

Oakville's Town Hall has received a Silver level 3R Certification from the Recycling Council of Ontario in 2014. The 3R Certification is a voluntary program managed by the Recycling Council of Ontario (RCO), awarded to organizations showing leadership and committment to waste reduction and diversion. Oakville is the first municipality to receive this distinction.

As of 2013, Town Hall has an approximate waste diversion rate of 87%. This is an improvement on the 2012 diversion rate iof 82%. Improvements can be attributed to waste education efforts. Educational posters are present in town facilities throughout the year, and during Waste Reduction Week, town staff learn about proper waste diversion practices in a series of games.

Staff receive 3R Silver Certification for Town Hall

GOAL 3: To Establish and Support an Environmentally Friendly Transportation Network





Objectives

3.1 To enhance public transportation within and connecting to Oakville
3.2 To support bike and walking path infrastructure and connectivity
3.3 To encourage the use of alternative modes of transportation
3.4 To promote and use transportation demand management (TDM)

Indicators

- Oakville Transit trips per capita
- Oakville Transit net cost per passenger trip
- Population growth vs vehicle ownership
- Personal vehicle registrations

Key Data

Transit

We are measuring the number of times a year, on average, residents take Oakville Transit and the cost per passenger trip.

Generally, buses are more fuel efficient than automobiles. Burning one litre of gasoline generates two kgs of carbon dioxide (CO_2). Using a conservative estimate, the average car commuter generates at least 3,300 kg of CO_2/year.

In 2009 Oakville Transit introduced new route designs and numerous service improvements which have resulted in increased ridership as shown in Figure 16. Ridership over a 12 month period is now at approximately 3 million, however this has now stabilized and levels remained steady in 2013.

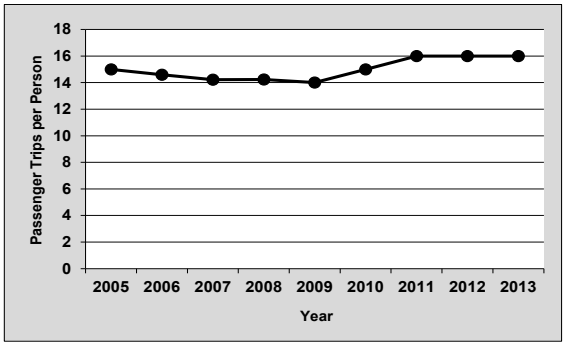


Figure 16: Oakville Transit passenger trips per capita
Source: Town of Oakville

Shown in Figure 17, while operating costs have increased due to rising labour, service and fuel costs, the net cost per passenger trip has levelled since 2009. Initiatives such as alternative fuel/hybrid buses, increased ridership strategies and partnerships with organizations such as Halton Region and Sheridan College will contribute to further stabilizing of costs in the future.

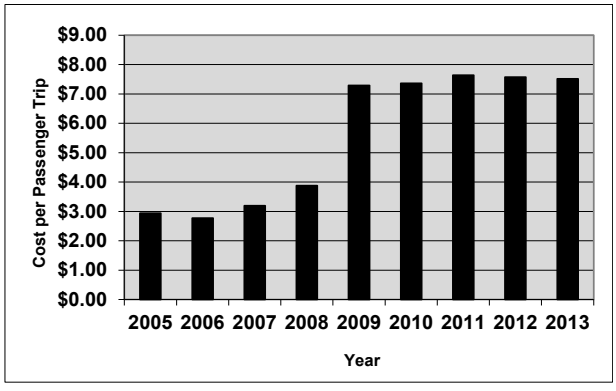
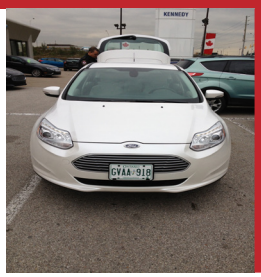


Figure 17: Oakville Transit net cost per passenger trip
Source: Town of Oakville





Transportation Choices

Transportation choices depend on commuting distance, accessibility of alternative transportation modes such as bicycle lanes and the success Transportation Demand Management (TDM).

Cars can provide an easy means of travel, however their cost economically and environmentally is high. According to Statistics Canada, 80% of residents use a personal vehicle for their commute. Figure 18 shows the relationship between population and vehicle ownership. The data shows that per capita car growth has generally outpaced population growth. As seen in Figure 19, this means the overall number of personal vehicles in Halton continues to rise. In 2009, the town developed an Active Transportation Master Plan (ATMP). This sets out a plan for increasing the accessibility and use of alternative transportation modes such as walking and bicycling.

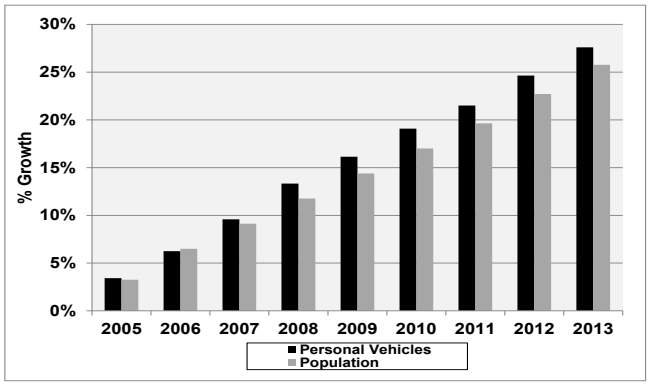


Figure 18: Population growth vs vehicle ownership in Halton
Source: Ontario Ministry of Transportation

To continue to support a desired level of active transportation (cycling and walking), approximately 31 kilometres of active transportation facilities (i.e. on-road cycle lanes, signed cycle routes and multi-use trails) were implemented within the town in 2011, 30 kilometres were completed in 2012, and another 17 kilometres were completed in 2013.

In total, 266 kilometres of cycling, sidewalk and multi-use trails projects have been proposed through the ATMP to be completed by 2019.

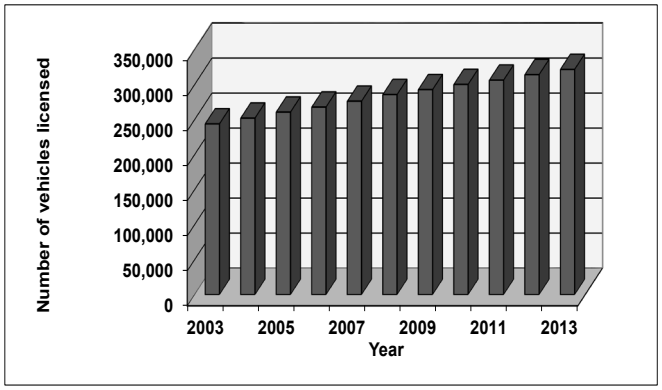


Figure 19: Personal vehicle registrations in Halton
Source: Ontario Ministry of Transportation

What we are doing

The town continues to create dedicated cycle paths that support the Active Transportation Master Plan (ATMP) by providing infrastructure for alternate modes of transportation.

From May 26 to June 26 the town celebrated Bike Month by promoting safe cycling at eight outreach events throughout the community. In an effort to reduce incidents of dooring and increase awareness for safe cycling, the town partnered with CAA to lead a "Watch for Bikes" campaign. Side mirror decals reminding drivers to "Watch for Bikes" were affixed onto 350 non-emergency town vehicles and residents were urged to do the same on their own personal vehicles through a public awareness campaign and social media contests.

GOAL 4: To Create and Support a Healthy Resilient Community



Objectives

4.1 To improve the health and safety of Oakville's neighbourhoods
4.2 To foster and sustain an environmentally sustainable urban form
4.3 To support green building practices
4.4 To support outdoor recreational opportunities in Oakville

Indicators

- Adopt-a-Park (hectares)
- Adopt-a-Trail (kilometres)
- Community garden plot rentals
- Outdoor recreational facility space per 1,000 people
- Kms of trails per 1,000 people
- Housing completions
- Building Permits (Gross Floor Area) issued

Key Data

Community Health & Green Space Access

We are measuring indicators for initiatives that will result in more ecologically friendly neighbourhoods. These include community garden plots, access to open space, the Adopt-a-Trail and the Adopt-a-Park programs.

These indicators reflect some of the elements that create visually pleasing and environmentally friendly landscapes. For example, community gardens offer opportunities for urban agriculture and beautification for residents who might not have access to land. It also offers social opportunities and produce may be donated to foodshare programs, which creates even further benefits. An extensive body of research exists demonstrating the direct link between a healthy environment and human health.

There are approximately 300 kilometres of trails and 1,470 hectares of parkland available for adoption. As can be seen in Table 5, the amount of adopted land has remained relatively stable, however in 2013 the number of people involved in these programs overall increased.

Table 5: Oakville's "Adopt-a" programs

Adopt-a Park		
Year	**Area (ha)**	**Participants**
2013	225	54
2012	185.22	56
2011	208	49
2010	212	46
2009	195.5	42
2008	187.7	46

Adopt-a-Trail		
Year	**Length (kms)**	**Participants**
2013	90	123
2012	80.31	103
2011	82	89
2010	71.57	83
2009	67.22	78
2008	75.8	83

Community garden plots are also available through



the town and Bronte Creek Provincial Park. For a fee, residents can rent a plot of land on an annual basis. As shown in Figure 20, in 2013 a total of 209 plots were available at four locations. As population increases and there is a greater focus on "local food", it is likely future demand will increase.

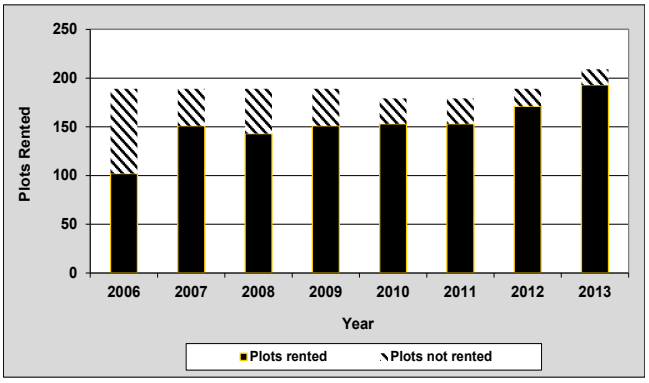


Figure 20: Community garden plot rentals in Oakville
Source: Town of Oakville and Ministry of Natural Resources

Oakville has almost 2,500 hectares of publicly owned greenspaces. In surveys conducted by the town, these resources are consistently cited by residents as a cherished amenity.

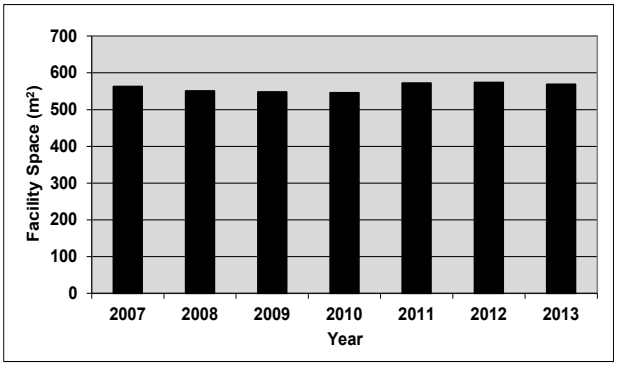


Figure 21: Outdoor recreational facility space per 1,000 people
Source: Town of Oakville

Our outdoor recreational facility space includes built structures for community recreation and leisure such as tennis courts, splash pads and outdoor swimming pools. Although amenities have been added over time, outdoor recreational facilities per capita have remained stable (Figure 21) in part due to increasing population and the greater focus in recent years on adding indoor sports facilities for soccer and skating rather than more amenities for outdoor activities.

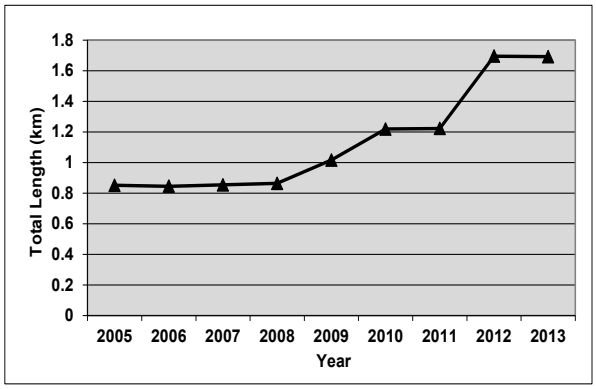


Figure 22: Total kms trails per 1,000 people
Source: Town of Oakville

Trails are another important amenity that connect people with the outdoors. Oakville has one of the most extensive trail systems per capita in Ontario. Despite Oakville's growing population, frequent additions of trail infrastructure have allowed for an increase in trail availability (Figure 22).

In 2012, Parks and Open Space staff worked with a consultant in order to inventory the trail system to provide more accurate information. A major recalculation was done in GIS, which resulted in the number of kilometres for the trail system increasing significantly from 2011 (223 km) to 2012 (312 km). In 2013, 1 km was added to the trail system, bringing the total to 313 km.

Green Development

Denser development, if planned appropriately, uses fewer resources, is transit friendly and supports a vibrant community. Ensuring an appropriate mix of housing is important in protecting our environment.



In 2013, there were 657 housing completions in Oakville, of which 263 (40.0%) were singles, 221 (33.7%) were row dwellings (townhouses), and 173 (26.3%) were apartment completions. As shown in Figure 23, since 2002 housing densities have been moving away from single family to more dense forms. There were 3,962 completions between 2009-2013 (23.0% of the total completions in the Region).

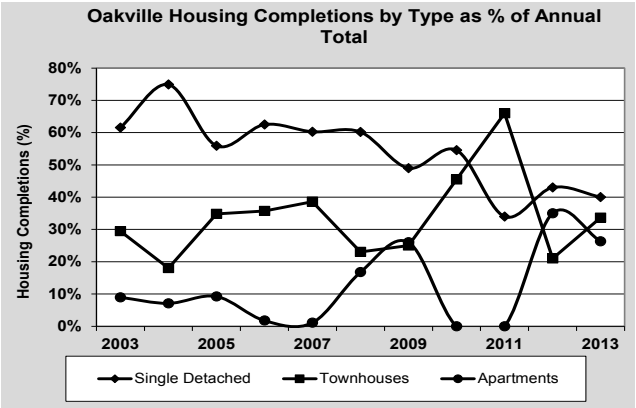


Figure 23: Oakville housing completions
Source: Canada Mortgage & Housing Corp.

The Halton Regional Official Plan (ROPA 38) introduced a housing density target for new housing, stating that at least 50% of new housing units produced annually in Halton be in the form of townhouses or multi-storey buildings. Depending on the lot size and type, townhouse densities can rival that of high rise densities and can also offer more affordable housing choices.

As shown in Figure 24, during the economic downturn in 2009, construction starts declined considerably however, this has seen an overall continous improvement since and in 2013, gains were seen in nearly all sectors. In the institutional sector, the new Oakville Hospital made the greatest impact. Overall investments in expanded floor space has resulted in an additional 900 jobs in Oakville, with the majority of these new jobs being in the Professional and Financial Services sector, which is a targeted sector and the fastest growing in the town.

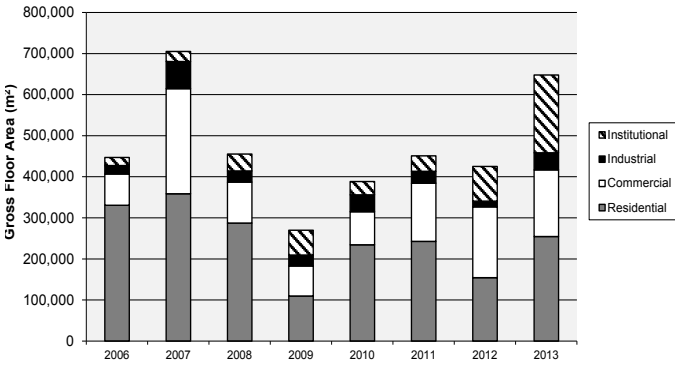


Figure 24: Oakville building permits issued
Source: Town of Oakville

What we are doing

The Town of Oakville, in partnership with the Oakville Horticultural Society, has begun developing a demonstration eco-lawn and daffodil meadow on the east side of Sir John Colborne Park. It will demonstrate alternative options to traditional high-maintenance lawns and is expected to be complete by the end of 2014. A bioswale was recently completed on the west side of the park and provides for improved water quality of surface runoff by filtering sediments and pollutants before releasing the water back into the watershed.

Coyotes play an important role in a healthy ecosystem and can be found throughout Oakville. To reduce conflict situations, the town has developed a comprehensive coyote management program including an online tracking system to report sightings. For more information please visit *www.oakville.ca/environment/featured-wildlife.html*

GOAL 5: To Foster Environmental Stewardship Through Education and Community Involvement

Objectives

5.1 To support and enhance a public education strategy to increase environmental awareness and stewardship

5.2 To support and enhance programs to increase environmental awareness and stewardship

5.3 To support and enhance the town's environmental indicators and monitoring programs

Indicators

- Environmental Policy department outreach and education activities
- Oakville certified EcoSchools

Key Data

Outreach and Education

Education and outreach programs are key components supporting increased community awareness of environmental issues. Monitoring the number of environmentally related public outreach events that are put on by the town each year helps assess the town's efforts in raising the profile of the environment and to identify the need for stewardship with residents and businesses.

As shown in Figure 25, the town holds a significant number of outreach events. While the number of events attended has declined over time, the scale of the events hosted has been increasing, creating better efficiencies with staff resources and numbers of people reached per event. In addition, the town has developed working partnerships with groups such as OakvilleGreen and Evergreen to deliver programs to the community.

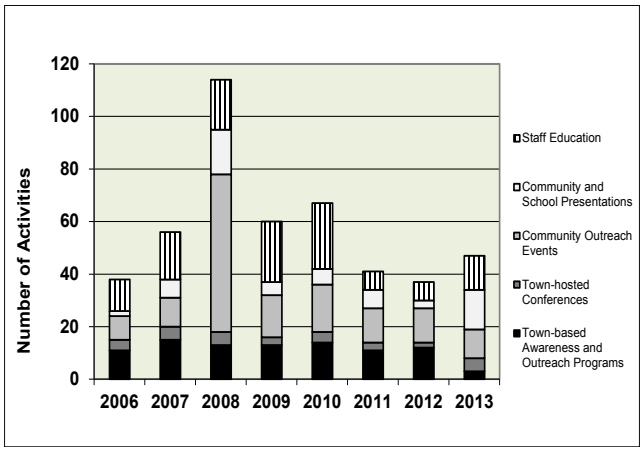


Figure 25: Environmental Policy department outreach *Source: Town of Oakville*

EcoSchools

The EcoSchools program considers environmental management and education in schools. School boards designed this program to incorporate environmentally friendly actions within the school setting. A full outline of this program is available at *www.ontarioecoschools.org*

For the 2013-2014 school year, a total of 20 Oakville schools were certified, up slightly from 2012. A total of 11 schools achieved Gold status and 8 achieved Silver.



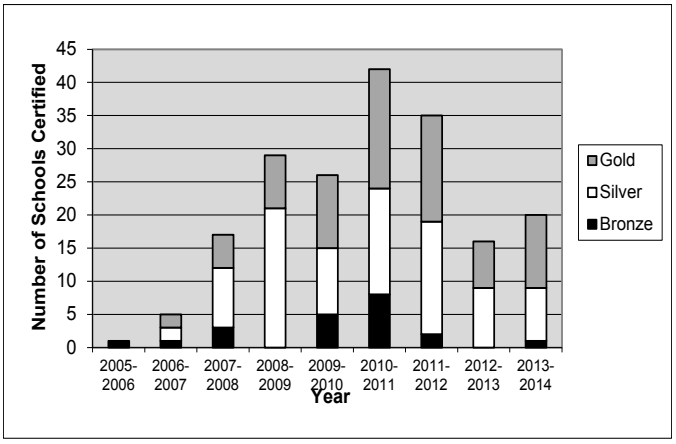



Figure 26: Oakville EcoSchools
Source: Halton District School Board and Halton Catholic District School Board

Individual schools continue to make efforts and these are acknowledged each year at the EcoSchool celebrations which are held in October and hosted by Halton Region. This event recognizes the achievements of Halton's schools, as many positive changes have been realized through the EcoSchool program.

What we are doing

The Town of Oakville partnered with Halton Environmental Network (HEN), HEN's member groups, and the Oakville Public Library system to set up educational displays at each library branch centered around an environmental theme throughout Earth Month - April 2014. These themes included: active transportation, energy conservation, living with wildlife, climate change, community gardens, and water conservation.

Public day at the Halton Forest Festival

Several town departments have made datasets available on the town's open data catalogue, which was launched in May 2014. Since then, it has been updated to include 41 datasets, including energy consumption at town facilities and coyote sightings data. To view the catalogue, please visit *http://oakville.ca/data/*

Environmental Policy staff could be seen at several town and community events such as Midnight Madness, Farmers' Markets, the Oakville Children's Festival and many throughout the summer months. The water bar was made available at many of these community programs and has already been reserved for use at 2015 events.

Environmental Policy helped to coordinate and deliver the ninth annual Halton Children's Water Festival at Kelso Conservation Area between September 23 and 26, 2014. This year, the festival featured activities in French, with French elementary and secondary students in attendance. More than 3,800 children in grades two to five were registered to attend, and several hundred high school volunteers led activities for rotating groups of elementary students.

In October, the town partnered with Conservation Halton for the third Halton Forest Festival held at Rattlesnake Point Conservation Area. Based on the highly successful Halton Children's Water Festival model, this event provided hands-on forestry and biodiversity themed educational activities for Halton students in grades six and seven.

GOAL 6: To Lead in Applying the Best Environmental Management Practices





Objectives

6.1 To be leaders in research, development and implementation of innovative environmental programs

6.2 Promote partnerships with local businesses, schools and organizations

Indicators

- Towards Zero Waste
- Sustainable Green Fleet
- Sustainable Purchasing
- Environmental Strategic Plan implementation status

Key data

The town has incorporated a number of innovative environmental programs. Tracking the progress of these programs provides insight into their value and the importance of making changes to town operations to assist in making them more sustainable.

Towards Zero Waste

The Towards Zero Waste procedure was implemented in 2009 and is a comprehensive waste reduction strategy for the town's operations. In 2013, the Recycling Council of Ontario presented the town with a Silver level Ontario Waste Minimization Award. As a result of the Towards Zero Waste program, a number of achievements have been realized as shown in Table 6.

Table 6: Towards Zero Waste achievements
Since 2004, town staff have recycled 2,130 kgs of batteries and over 430 cell phones through the Call2Recycle program. Additionally, to date in 2014, Oakville has sent 1,325 pounds of expired electronic materials to be recycled by OEM Corp.
Over 200 pounds of wine corks were collected for the Jelinek Cork Group for recycling since 2008.
45 gallons of used anti-freeze was collected from boat owners at the town's harbours hazardous waste collection site as part of the Clean Marine program in 2012.
In 2014, 551 lightbulbs were recycled.

Sustainable Green Fleet

The Sustainable Green Fleet Procedure was introduced in 2009. It involves a number of initiatives that save fuel and increase the efficiency of the town's fleet. Examples include restricting staff in town vehicles from using drive throughs, a driver training program (DriveSmart) and enforcing anti-idling rules.

Green Fleet procedures also include supporting use of the most fuel efficient vehicles, including electric, hybrids and right sizing. Right sizing means selecting the smallest most fuel efficient vehicle, based on the task. Since 2006, 12 hybrid vehicles, and two right sized vehicles have been added to the Town of Oakville's fleet.

In 2011, the town joined the EV 300 program to assist with integrating electric vehicles into their fleet. As of 2014, four of the nine vehicles in the Town's Fire Prevention department fleet are electric and more are being added each year. Two regular and two high-speed charging stations have also been installed.





Sustainable Purchasing

The Sustainable Purchasing Procedure (SPP) was also introduced in 2009. This involves an educational and resource program for staff on selecting "green" products and incorporating sustainable language in contracts with vendors. A number of positive changes have been seen as a direct result of this program as outlined in Table 7.

Table 7: Green purchasing improvements

Existing product	Green replacement
Forest Stewardship Council (FSC) certified paper 100% virgin paper	FSC with minimum 30% recycled content. On a smaller scale, Environmental Policy is piloting the use of paper with 100% postconsumer (PC) content, chlorine free, produced with green energy for specific environmental publications.
Bottled water	Water bars (3) for use at town events to support delivery of municipal tap water to the public and at special events. As well, bottled water has been removed from vending machines where municipal tap water is available to reduce the amount of plastic entering the waste stream.
Paper towels	Seven harbour washrooms were equipped with hand dryers since composting is not available for paper towel collection at these locations.
Paint	Incorporate the use of recycled paints.

Environmental Strategic Plan

The town's Envrionmental Strategic Plan was endorsed by Council in December 2005 with a subsequent update approved in December 2011. The ESP provides a road map for the town in working towards environmental goals. Each year, staff report on the progress of the implementation of this plan. Many of the recommended actions outlined in the 2005 ESP were carried over in the update as they are ongoing successful programs. The implementation of the updated ESP builds on the original and reflects the work of both the town and its community partners. To learn more about the ESP, visit the town's website at *www.oakville.ca/townhall/environmental-strategic-plan.html*

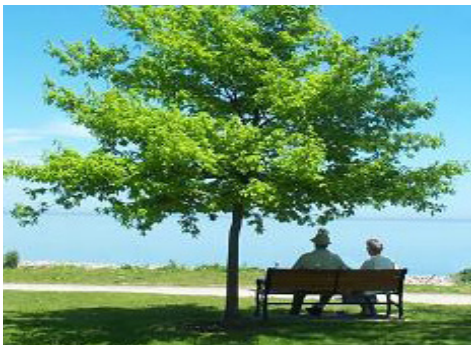
The implementation of the updated ESP is moving faster than expected, and as of the end of 2013 we saw the following actions were either complete or underway:

Table 8: Environmental Strategic Plan Implementation

Action	Implementation rate
Ongoing (OG) actions are existing programs and/or policies that will be continuing (total of 67)	100%
Short Term (ST) actions are recommended for completion by 2014 (total of 23 actions)	61%
Medium Term (MT) actions are recommended for completion by 2013-2016 (total of 19 actions)	37%
Long Term (LT) actions are recommended for completion beyond 2016 (total of 12 actions)	75%

In conjunction with residents and stakeholders, the town has developed the Let's Be Livable Community Sustainability Plan as a resource for the community to guide their actions to support Oakville's sustainability, resiliency and livability. Staff promotes the community's initiatives through outreach and partnerships to foster action and information sharing between residents and community groups.

3 Conclusion



Summary

Oakville is fortunate to have a wealth of natural features such as Lake Ontario, the Niagara Escarpment and numerous creeks and greenspaces within easy reach. Our environment is a key component that goes into making our town vibrant and attractive to residents and businesses alike. In the town's 2013 Citizen's Survey, 83% of respondents indicated they were pleased with the town's efforts to protect the environment and it was noted in discussions with residents at an open house that even further efforts would be welcome. While there wasn't a category strictly for the environment, a full 94% of respondents also indicated that they were very satisfied with the state of the town's green space and parks.

The SOER can assist us in continuing to improve our environment by highlighting where we are seeing positive changes and where we need to improve. In 2013, some good news was seen as indicators for water quality improved in Oakville. Phosphorus levels were below the Provincial Water Quality Objectives (PWQO) in all three creeks for the first time since 2006. Total Suspended Solids (TSS) were well below Environment Canada's guideline of 210 mg/L in all three creeks, and chloride levels in all three creeks were also below the PWQO. Air quality in Oakville has improved overall since 2005, however a moderate rise was seen in $PM_{2.5}$ levels in 2013. Also on a positive note, per capita electricity consumption reached a record low in 2013, which may be in part due to energy conservation educational programs and campaigns. Other indicators related to resource use such as car ownership and recycling habits have remained steady. With an increasing population, we need to work on improving our individual actions even more if we want to decrease our overall impact on our environment.

The actions of individuals, families and businesses are critically important. For this reason, the SOER includes a What you can do section at the end of the book with a full list of resources that residents can utilize. We hope that you find this useful and do what you can to reduce your environmental impact.

While the data we are tracking is local, our choices have an impact not just on ourselves but also beyond our community. The town recognizes that while its own efforts are critical, the supportive actions of residents, community partners and other levels of government are crucial in order to see appreciable improvements. Over time, changes will not likely be the result of one action or program but rather through a combination of efforts. In addition to town based programs and initiatives, changing social norms, changes in consumption patterns due to increasing fuel and energy prices, global climate change and changes in federal or provincial policies will play significant roles in supporting more environmental sustainability.

4 What you can do



Reduce your impact on natural environments

- Remove invasive species widely found in Oakville such as Dog Strangling Vine and Garlic Mustard. Contact Conservation Halton for more information or see www.conservationhalton.on.ca/ShowCategory.cfm?subCatID=1114
- Think twice before cutting a tree down. Trees offer shade in the summer and protection from winter winds.Check out the town's Private Tree By-law at www.oakville.ca/residents/trees-protection-removal.html if you're thinking of cutting down a tree greater than 15cm diameter.
- When draining pool water, ensure chemicals have not been added for at least 10 days prior.
- Don't wash cars on driveways.
- Choose household products with little or no phosphate.
- In the winter, use either low or no chloride ice melt.
- Don't dump hazardous waste into sewers or drains.See www.halton.ca/waste to find out proper disposal locations.
- Visit http://epa.gov/climatechange/wycd/ for tips and tools to reducing your greenhouse gas emissions.

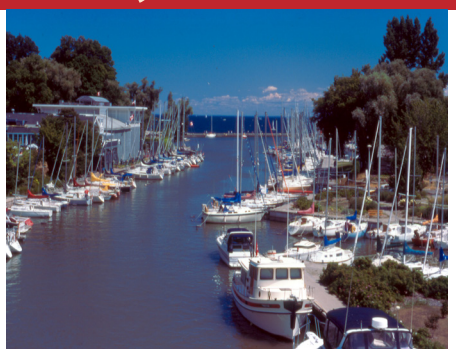
Support healthy neighbourhoods

- Consider implementing a compost program not only at your home, but at your school or work.
- Grow your own garden for a personal supply of fresh fruits, herbs, and vegetables.
- Participate in one of the town's beautification programs or clean up events.
- Enjoy Oakville's trails. Get out for a hike with family and friends. For great walking resources in the town, visit http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=12410 or contact the town for a copy of the Cycle and Trails guide.
- Sign up for an outdoor recreation course or activity. The town's Recreation and Culture department offers a catalogue of programs and events twice a year. You can also check it out online at www.oakville.ca/culturerec/index.html.
- Consider adopting a trail or park. Help keep our parks and trails looking great and get outside for some fresh air and exercise. Visit www.oakville.ca/culturerec/adopt-a-programs.html
- Add "green" features to your home renovating.

Reduce your resource consumption

- Choose washable and refillable containers with little packaging for meals away from home.
- Purchase a stainless steel water bottle in place of disposable plastic bottles.
- Contact Halton Region for recycling and composting bins.
- It is estimated that 17% of a typical garbage bag in Halton is material that could go in the Blue Box. Take the time to separate your garbage into recyclables, compost and garbage.
- Bring your own re-usable bags when shopping.
- Consider belongings you no longer use - can you refurbish, donate or repair them?
- Set your thermostat to 25°C or higher during the summer, and 20°C or lower in the winter.
- Take advantage of the Watt Not Waste Not program to reduce energy, offered through Oakville's libraries. Visit www.oakville.ca/environment/energy-conservation.html to learn more.

What you can do, cont.


- Purchase a portion of your energy through green sources. Visit www.oakvillehydro.com or www.bullfrogpower.com
- Consider adding solar energy or geothermal technologies to your home.
- Replace incandescent light bulbs with LED or fluorescent light bulbs to increase energy efficiency and save electricity costs.
- Only use dishwashers and laundry machines when they are full and at night to reduce water waste and save on energy costs.
- Incorporate xeriscaping in your garden (plants and landscaping that don't require much water).
- Install low flow shower heads and toilets.
- When making purchases, choose "green" whenever possible.

Improve your transportation habits

- Consider biking or walking to work, school, shop or for short errands.
- Choose to live in a walkable neighbourhood with transit access.
- Start a car sharing group in your neighbourhood.
- Ensure the sidewalk in front of your house is cleared of snow in all seasons for pedestrians.
- Take public transportation when possible.
- Purchase a monthly transit pass. You never have to worry about change for the bus and it will encourage you to use the bus more often.
- If you commute, look at the options offered with the new PRESTO fare card. Take advantage of seamless inter-regional travel. Visit www.prestocard.ca
- Avoid using drive thrus and don't start your car until you're ready to go.
- Turn the car off when picking people up from school or work.
- Keep your car running efficiently to save gas and prevent pollution, keep your tires properly inflated, do regular tune-ups.
- If you're looking into purchasing a vehicle consider an electric, hybrid or fuel efficient vehicle.

Get involved in the community

- Get involved in the implementation of Oakville's community sustainability plan. Learn more at www.oakville.ca/environment/integrated-community-sustainability-plan.html
- Support and attend environmental events. Sign up for the Halton Environmental Network's weekly newsletter at http://haltonenvironment.com/?cat=273
- Volunteer at a local school.
- Discuss environmental issues with your family and work together to come up with ways to reduce your ecological footprint.
- Encourage your children to join your school's environmental group or help start one.

5 Resources

Air quality and climate

• Halton Region is one of the pilot communities to roll out the Air Quality Health Index (AQHI). To learn more about this program and other information on air quality in Oakville, visit www.halton.ca/airquality
• For a list of anti-idling resources and information visit http://idling.gc.ca
• For information on the town's Health Protection Air Quality By-law, visit www.oakville.ca/environment/health-protection-air-quality.html

Energy

• Interested in learning more about solar or wondering if solar is right for your home? To learn more about renewable energy in Oakville, vist www.oakville.ca/environment/green-power.html

Healthy neighbourhoods

• For detailed information on Oakville's trails, including maps, photographs and a historical perspective, visit www.oakville.ca/culturerec/trails.html or pick up a copy of Oakville's trail and cycle guide at town facilities.
• For information on Halton Conservation's *Halton Hikes: 50 Great Trails* visit www.haltonhikes.ca
• Visit one of Halton's many farmers markets and support Halton farmers. Visit www.halton.ca for listings.

Natural areas

• For information on Halton's conservation areas and waterways, visit Conservation Halton www.conservationhalton.ca or call 905-336-1158.
• Want to know more about the town's wildlife and biodiversity? Visit www.oakville.ca/environment/wildlife-biodiversity.html
• The Halton Natural Areas Inventory (2006) was completed in partnership with Halton Conservation Authority and local field naturalist clubs. A copy of the report is available through Conservation Halton for a fee.
• For a listing of local naturalist clubs, visit www.ontarionature.org

Transportation

• Need a bus schedule or know where to buy tickets? Visit Oakville Transit at www.oakvilletransit.ca

Waste

• Do you want to drop off a used item or recycle something but don't know where to go? Visit www.halton.ca/waste for an easy to use directory.

Water

• Halton Region provides resources to help you conserve water. Visit www.halton.ca/toiletrebate to learn about low flush toilet rebates or www.halton.ca/WaterConservation to access their information on water efficiency.

General

• Oakvillegreen is an Oakville community association that has been working to protect our environment, promote sustainable planning and make sure that new development pays for itself. Visit www.oakvillegreen.com for more.
• For a listing of local environmental organizations, businesses and activities, the Halton Environmental Network (HEN) produces the Halton Enviro Guide: http://haltonenvironment.com
• For fact sheets on environmental topics, visit the town's website at www.oakville.ca/townhall/environmental-strategic-plan.html
• For general environmental information regarding the town, pick up a copy of the Environmental Stewardship Guide in the Environmental Policy department at Town Hall or at one of our many public outreach events or online at www.oakville.ca/environment/environmental-stewardship.html

6 Note for educators

Beyond the information provided in the SOER, there are many helpful links to programs and events throughout the Region. By accessing the *What you can do* or the *Resources* section you will find a wealth of programs catering to different audiences and many topics.

For links to curriculum information you can contact Trisha Henderson (trisha.henderson@oakville.ca) or Donna Doyle (donna.doyle@oakville.ca) for more information.

For general information from the Environmental Policy department regarding this guide you can email environment@oakville.ca

There are a number of great environmental education resources you can bring into your classroom. Some of our favourites are:

- OakvilleGreen educational programs www.oakvillegreen.com (go to the "for teachers" tab)
- Get to know www.get-to-know.org
- EarthDay Canada www.earthday.ca or www.ecokids.ca
- 52 tips for biodiversity http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/biodiversity_tips/en.pdf
- BioKits program (Government of Canada) www.ec.gc.ca/biotrousses-biokits/default.asp?lang=En&n=B8362F13-1

We are always interested to hear when educators use the SOER as an education tool for their classrooms. If you have any additional comments and input for future guides please email the Environmental Policy department at environment@oakville.ca and share your ideas!

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