2015 CORPORATE GREENHOUSE GAS INVENTORY REPORT

Jade Schofield, MSc.
Operations & Environmental Services
Town of Ajax
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Background

Greenhouse gases (GHG's) such as carbon dioxide, methane, nitrous oxide, hydroflurocarbons, perflurocarbons and sulphur hexafluoride, have the ability to control temperature by trapping heat from the sun. However, since the 1800's, global GHG's in the atmosphere have increased over 40%. This is as a result of increased human activity that had lead the reduction in the natural balance between GHG emissions and absorption. As a result we are starting to see new trends including shifting weather patterns, an increase in the force and frequency of catastrophic weather events and changes in seasonal migration patterns. As a result global climate change is one of the most significant environmental concern of our time.

The impacts of climate change go beyond environmental; there are also societal and economic impacts. A study conducted by the National Roundtable on the Environment and the Economy suggests that costs associated climate change will increase from $5 billion per year to $43 billion by the 2050's, this is includes, increased health costs associated with degraded air quality, coastline flooding from rising sea levels, and economic losses from the timber industry as a result of increased forest fires and spread of invasive species[1].

Climate Mitigation and Adaptation

There are two ways in which the impacts of the climate change can be reduced: mitigation and adaptation.

Climate Mitigation are actions which reduce GHG's which in turn lower the intensity of climate change and the impacts that it has on us (i.e. phase out of coal generated electricity). Also known as protecting **the climate from us.**

Climate Adaptation are actions put in place to protect us from the impacts of climate change (i.e. larger capacity of stormwater culverts), also known as **Protecting us from climate change**.

Unfortunately the emissions that are already present in the atmosphere will have an impact on our climate. We will be required to take adaptation actions to protect us and our infrastructure over the next 20-30 years.

Climate mitigation and the reduction of emissions is fundamental in preventing further damage and having detrimental impact on human activity. Studies suggest that the threshold for irreversible impacts is if the global temperature increased more than 2^{o}c. In 2015, the United Nations Framework Convention on Climate Change (UNFCCC) met in Paris (COP 21) where it was agreed that the rise in global temperatures needs to be limited to no more than 1.5^{O}c. Canada is currently responsible for 1.95% of total global GHG emissions.

[1] National Round Table on the Environment and the Economy, (2011), Climate Prosperity- Paying the Price: The Economic Impacts of Climate Change for Canada.

Ajax and Climate Change

In 2011, the Town of Ajax joined the Partners for Climate Protection (PCP). This is a program that is supported by the Federation of Canadian Municipalities (FCM) and ICLEI-Local Governments for Sustainability. The Partners for Climate Protection (PCP) program is a network of Canadian municipal governments that have committed to reducing greenhouse gases (GHGs) and acting on climate change.

Using a five Milestone framework, PCP is able to provide recognition to municipalities that have committed to reducing their Greenhouse Gas emissions. These milestones comprise of

1. Create a GHG Emissions Inventory and Forecast
2. Set GHG Emissions Reduction Targets
3. Develop a Plan to reduce GHG Emissions
4. Implement the Plan
5. Monitor Progress and Report Results

Emission Reduction Targets

The Town of Ajax set targets to reduce GHG's by:

- 6% within the community by 2020,
- 20% corporately by 2020,

These targets were based on the greenhouse emission baseline year, 2005.

Data Collection

Data utilized to calculate the 2015 GHG inventory was collected by representatives from the Town of Ajax.

BUILDINGS

In order to determine the GHG emissions for buildings data was extracted from gas and electric utility bills as well as financial records for renewable energy production.

To determine growth of facilities a review of the Towns acquisitions from 2005-2015 were reviewed.

FLEET

Corporate fleet data was extracted from the Towns fuel data base which monitors fuel usage and mileage of vehicles.

To determine the growth of the Towns corporate financial records for the acquisition and release of vehicles were analyzed.

The following assumption were made for the collection of fuel data:

- Personal vehicles comprised of light duty vehicles that are gasoline fuelled
- The type of vehicles used to calculate the fuel consumption is based on each department, therefore the vehicle that is most commonly driven was utilized to calculate the GHG (exact fuel type data is available).

STREETLIGHTS

The GHG emissions for lighting was extracted from the current corporate inventory and the estimated time of use in conjunction with 2015 electric utility bills.

WASTE

Corporate waste audit records from 2015 were obtained to determine the total amount of waste generated, diverted and disposed of corporately.

DATA ANALYSIS

Collected data was analyzed using the ICLEI PCP Milestone Tool set to 2015.

GHG Inventory Inclusions & Exclusions

The Corporation of the Town of Ajax manages various services and facilities to the community. When the original baselines study was completed in 2005 this data analysed included consumption data from waste management, parks and recreation, road and walkway lighting, and the operation of 15 facilities:

1. Town Hall
2. Main Library
3. Ajax Community Centre
4. McLean Community Centre
5. Operations Centre
6. Fire Hall #1
7. Fire Hall #2
8. Mill Street Community Centre
9. St. Andrews Seniors Centre, Community Centre and Gym
10. Village Arena and Community Centre
11. Village Senior Centre
12. Rotary Pavilion
13. Memorial Pool
14. Village Library

To ensure a feasible comparison the same data was collected for the use in the 2015 inventory as was previously used in 2005.

This means that the comparison for GHG emissions associated with the operation of the following facilities which have been added (not replacing existing) between 2005-2011:

- Audley Recreation Centre (2013)
- Fire HQ (2010)
- Carruthers Marsh Pavilion (2012)
- Greenwood Discovery Pavilion (2010)
- St Francis Centre for Performing Arts (2010)

For the purpose of highlighting total overall GHG consumption, the total overall consumption has been included to allow for future progress monitoring.

As a township in Durham Region, Ajax is not responsible for any of the costs or emissions associated with water and sewage infrastructure. This section of the Corporate Emissions Inventory has been left blank, but is presumably included in the Regional Greenhouse Gas Inventory.

2005 Baseline GHG Inventory Overview

The 2005 baseline inventory shows that the Corporation of the Town of Ajax generated 6,353 t eCO_2

Buildings were associated with the highest eCO_2 emissions followed by Streetlights, Vehicle Fleet, and Waste respectively.

Table 1 2005 Greenhouse Gas Emissions by Sector

Sector	(t) eCO_2)
Buildings	3,741
Vehicle Fleet	833
Streetlights	1,116
Waste	664

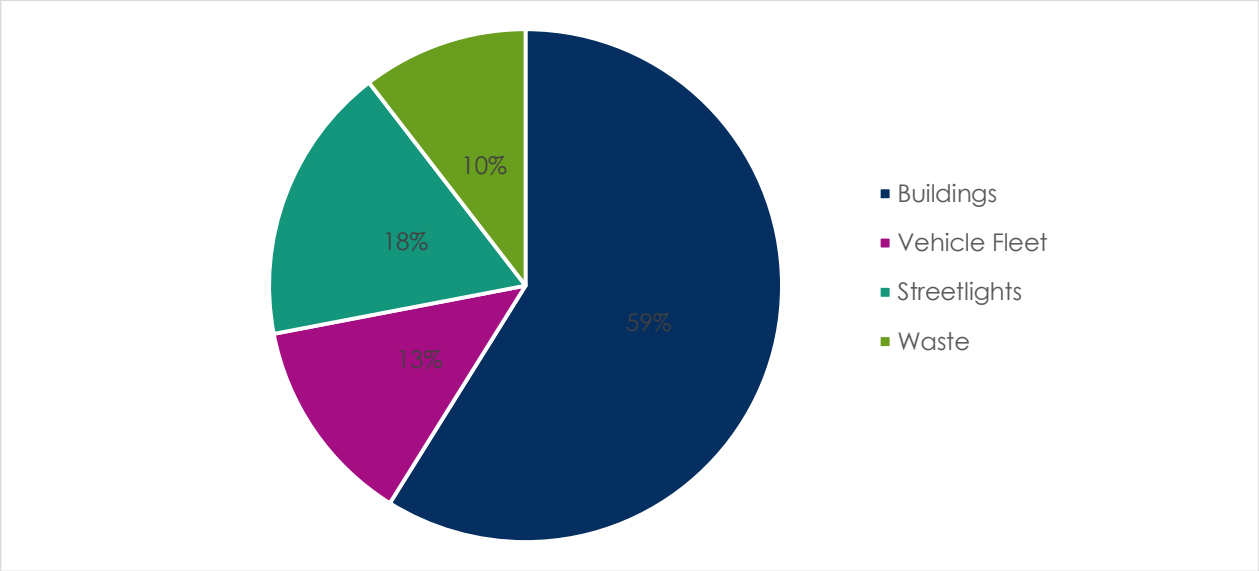

Figure 1 2005 Greenhouse Gas Emissions by Sector

Overall, corporate GHG emissions increased approximately 10% from 2005-2008. This is attributed to an increase in the Town's vehicle fleet, and additional infrastructure to support the growing Town.

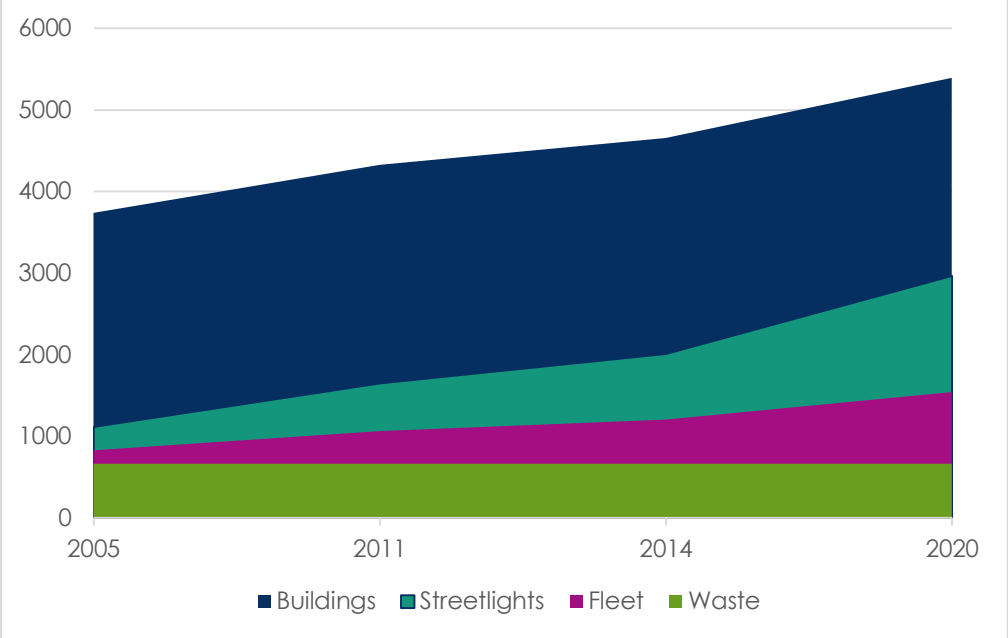

Figure 2 Trends and Business as Usual Forecast

If this same 10% increase occurred every 3 years, by 2020, emissions would be 61% the 2005 levels totalling 10,229 t eCO_2 per year.

Figure 2 illustrates the Business As Usual (BAU) increase for each sector based on GHG emissions calculated using the 2005 & 2008 baseline years.

Target Setting

In 2011, Ajax adopted a corporate GHG target of 20% by the year 2020. This is the FCM suggested emissions reduction target.

This reduction is in absolute emissions and is calculated using 2005 as the baseline year. This method was selected as it aligns with Durham's regional target and the Town believes that the Ajax Local Action Plan (LAP) should coordinate with the Region's plan.

In 2005, Ajax's total corporate eCO_2 was 6,353 t eCO_2. A 20% reduction would equate to 1,271 t eCO_2 fewer emissions - a cap of 5,082T emissions for the year 2020. This means that Ajax is committing to capping emissions at a level that is 50% below the BAU forecast.

Buildings

In 2015, Ajax municipal facilities generated 3,176 t eCO_2 of emissions, this is a reduction of 565 t eCO_2 (-15 %) since 2005.

When removing the growth factor from when comparing to the 2005 GHG inventory, buildings consumed a total 8,905,923 KWh of electricity and 1,029,309 m^3 of gas in 2015. This is equivalent to 2,726 t eCO_2 which is a 27% decrease from 2005.

Table 2 2015 Energy Usage- Buildings

Facility	Electricity Use (kWh)	(t) eCO_2	Gas Usage (m^3)	(t) eCO_2
Ajax Community Centre (ACC)	4,236,685	339	466,246.00	885
Audley Recreation Centre (ARC)*	1,843,166	147	116,550	221
Carruthers Marsh Pavilion*	99,877	8	n/a	0
Central Library Building	409,937	33	26,297	50
Fire Headquarters	428,873	34	29,730	56
Greenwood Discovery Pavilion*	48,578	4	n/a	0
Mclean Community Centre (MCC)	1,450,025	116	205,495	390
Municipal Building	840,843	67	98,212	187
Operations Centre	688,057	55	82,592	157
Outdoor Pool	58,246	5	14,139	27
Rotary Park Pavilion	128,802	10	13,970	27
St Andrews Community Centre & Gym	146,664	12	34,867	66
St. Francis Centre *	103,421	8	15,352	29
Station # 1 - Westney	121,290	10	22,059	42
Station # 2 - Monarch	225,260	18	19,094	36
Village Arena & Building	582,075	47	43,681	83
Village Library Building	18,039	1	2,652	5
Total	**11,429,838**	**914**	**1,190,941**	**2262**
Net total eCO_2 (T)	**3,176**			

*Denotes facilities that were not included in the 2005 baseline GHG inventory (excluded in the growth factor calculation).

Streetlights

Table 3 2015 Energy Usage- Streetlights

Lighting Type	Electricity Use (KWh)	Energy Use (MJ)	Absolute Emissions (t) eCO_2
Streetlights	7,396,863	26,629	592
Traffic Signals	130,469	470	10
General Parks Maintenance	47,199	170	4
Ball Diamonds	147,103	530	12
Soccer Pitches	7,636	27	1
Satellite Washrooms	20,387	73	2
Total	**7,749,657**	**27,899**	**620**

Despite the number of street lighting fixtures within Ajax increasing from 6,273 fixtures in 2005 to 10,697 fixtures in 2015, (Growth Factor +41%), emissions reduced from 1,116 t eCO_2 in 2005 to just 620 in 2016. This is an emission reduction of 44%. This reduction is as a result of both more efficient lighting (e.g. conversion to LED traffic lights, LED walkways lighting) as well as a reduced emission associated with Ontario's electricity due to the phase out of coal for electricity generation in 2012.

Taking the Growth Factor into consideration the 2005-2015 (41%), the total eCO_2 would be 254 t eCO_2. This is a 77% decrease in overall emissions for the lighting sector.

Waste

Table 4 2015 Energy Consumption- Waste

Waste to Landfill (t)	Total (t) eCO_2
767	641

In 2005, it was estimated that waste resulted in 644 t eCO_2 emissions which is approximately 664 t of waste.

In 2015 this reduced to 641 eCO_2t, this includes the waste generated for Townwide Operations (road sweepings, illegal dumping, ditching material) which accounts for 95.1% of the total waste sent to landfill in 2015.

The Growth Factor is not available for this section of the inventory.

Fleet

Table 5 2015 Energy Usage- Fleet

	Gasoline		Diesel		Propane	
Department	**Total Use (l)**	**Total (t)** eCO_2	**Total Use (l)**	**Total (t)** eCO_2	**Total Use (l)**	**Total (t)** eCO_2
Public Works	49,140	113	202,714	554	0	0
Building Maintenance	3,100	7	315	1	0	0
Recreation & Culture	9,528	22	0	0	32,650	0
Planning & Development	4,862	11	0	0	0	0
Fire	21,035	49	46,703	127	0	0
Library	1,178	3	0	0	0	0
Legislative Information Services	20,981	48	0	0	0	0
Personal Mileage	3160	7		0		0
TOTAL	**112,984**	261	**249,732**	682	**32,650**	49
Net total eCO_2 (t)	**992**					

Emissions as a result of fleet have increased 159 t eCO_2 (+16.1%) between 2005-2015.

Since 2005, the fleet inventory has added an additional 31 pieces of equipment that utilize gasoline and diesel for its operation. This is an equivalent to a Growth Factor 2005-2015 of 10.6%. When excluding the growth factor the emissions are estimated to be 887 **(**t) eCO_2.

2005-2015 GHG Summary

In 2015, the majority of the Town's corporate emissions derive from buildings which are responsible for 58.5% of overall GHG emissions (Figure 3). In 2005, buildings were responsible for 59% of overall emissions. Corporate fleet has seen the largest increase since 2005 as vehicle use is now responsible for 18.3% of overall emissions generated by the Town's corporate operations this has increased from 19% in 2005.

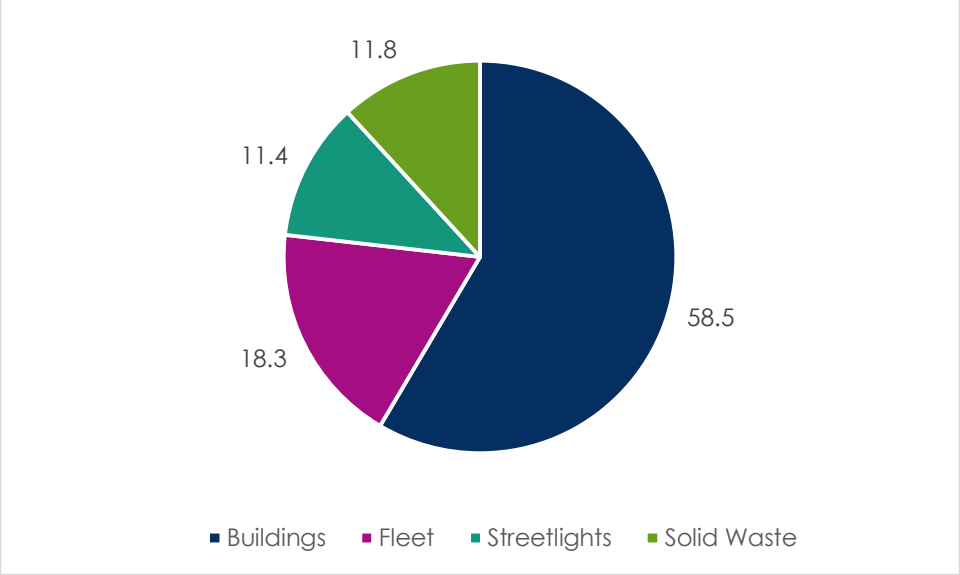

Figure 3 2015 GHG Sources by Sector

Natural gas is the largest source for GHG emission accounting for 47.2% of Ajax corporate GHG emissions (Fig 4). Electricity however is closely followed at 32%.

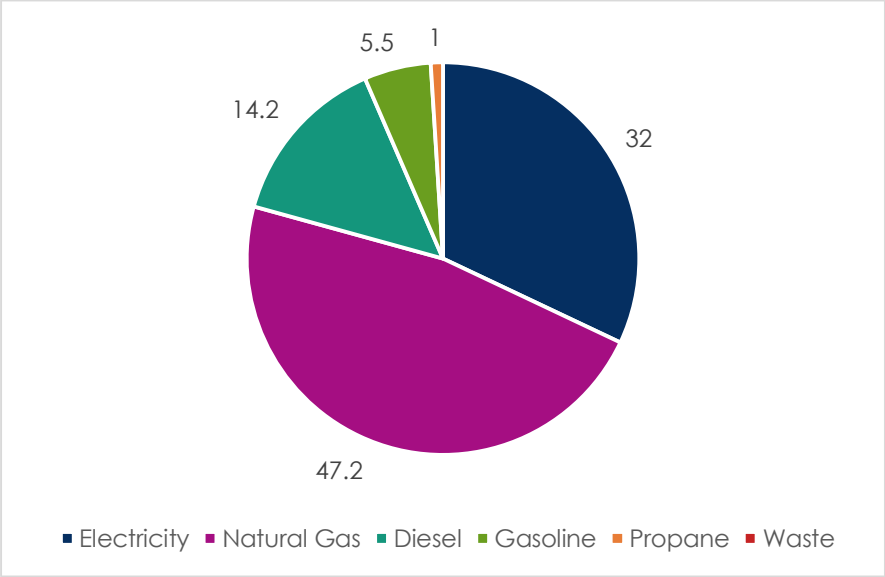

Figure 4 GHG by Energy Source

Since 2005, the Town of Ajax has grown significantly and as a result the municipality has had to increase its operations to meet the service needs of the community. In order to be able to compare GHG emissions in 2005 and 2015 growth factors have been calculated in each sector included within the inventory (Table 6). When including the growth factor in 2005-2015 the GHG decrease is equivalent to 1,476 t eCO_2 or 23 %. However, when the growth factor is removed it suggests a 15% decrease in emissions in 2015 which is equivalent to the removal of 925 t eCO_2.

Table 6 2005-2015 GHG Inventory Comparison

Sector	2005 Absolute Emissions	2015 Absolute Emissions	2015 Emissions (Growth Factor Removed)	2005-2015 Growth Factor	Change in Emissions 2005-2015 GHG	Change in Emissions 2005-2015 (Excluding Growth)
	t (eCO2)	t (eCO2)	t (eCO2)	%	%	%
Buildings	3741	3176	2726	16.6	-15	-27
Fleet	833	992	887	10.6	19	6
Streetlights	1116	620	620	41.4	-44	-44
Waste	664	641	641	n/a	-3	-3
Total	**6354**	**5429**	**4874**	**n/a**	**-15**	**-23**

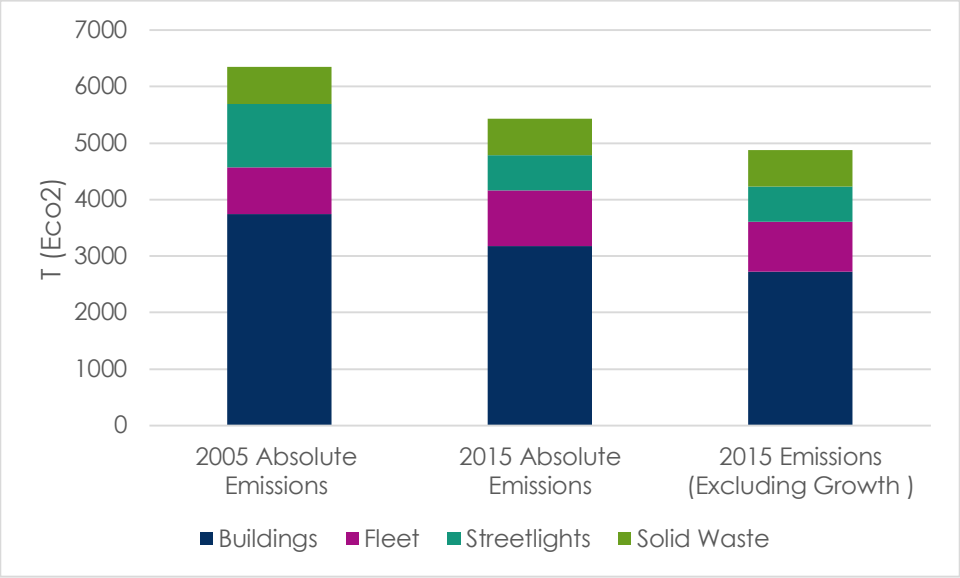

Figure 5 2005-2015 GHG Inventory Comparison by Sector

Progress Summary Corporate Local Action Plan 2013-2015

In 2013, Ajax Council Adopted the Corporate Action Plan as part of the Town's Integrated Community Sustainability Plan. This plan highlights 35 programs and action items that allow Town can reduce its corporate emissions. These programs were split into the follow categories Air, Energy, Transportation and Waste. In the two years that the Local Action Plan has been in place 28 of the 35 action items have been implemented or are ongoing with other additional items highlighted for implementation in the near future.

Table 7 Corporate Local Action Plan Actions- AIR

AIR				
Goal ***In 2055, we will have good quality air that is clean to breathe and supports healthy ecosystems.*** **Strategic Directions** **Strategy 1: Proactively control air pollutants generated from all sectors, including commercial, industrial, institutional (ICI) and residential.** **Strategy 2: Reduce air pollution.**				
Sector	**Potential Actions**	**Potential GHG Reductions**	**Estimated Cost**	**Implementation Status**
Fleet	Develop a strategy to invest in energy efficient vehicles and low emissions equipment.	Approximately 50% reduction in corporate fleet emissions for converting to hybrid	Nominal to develop the strategy; Cost per vehicle noted below	Not yet started
	Reduce emissions from Town fleets and equipment by investigating the use of cleaner fuels.	GHG reduction corresponds roughly to the blend of biodiesel that is used: B20 = ~20% reduction	Nominal to explore options; increased fuel costs, additional infrastructure (tanks)	Ongoing (see Appendix A for a list of alternative fuel fleet acquisitions)
	Create a policy to modify/restrict the use of gas powered grounds maintenance and construction equipment on smog days.	N/A	Nominal	Not yet started
	Expand existing corporate vehicle anti-idling program to include ongoing education and seasonal and new hire training.	Maintain current reductions as staff change	Nominal	Ongoing New brochure and fleet bumper stickers have been created.
	Continue to reduce emissions from Town fleet through routine maintenance.	Efficiency can be improved by as much as 19%	Completed through both life cycle management and equipment	Ongoing

		through car maintenance.	management plans being funded through the annual budget process	
	Match size of equipment and vehicles to use.	Light duty truck switch to light duty vehicle: 0.4 tonnes/ year/vehicle Light duty truck switch to light duty hybrid vehicle: 2.8 tonnes/ year/vehicle	Nominal – Based on Fleet life cycle policy that is typically funded through the Fleet Reserve	Ongoing
	Require specifications for new acquisitions to reflect the lowest emissions currently available in the industry that is available for that piece of equipment.	Unknown	Completed through both life cycle management and equipment management plans being funded through the annual budget process	Ongoing
Other	Create preferred parking spaces at Town facilities for staff that drive hybrid and electric vehicles.	Non-direct	Nominal	All LEED designed facilities have incorporated Hybrid-Electric vehicles.
	Investigate the feasibility of installing electric vehicle charging stations at Town Facilities.	Non-direct	Charging station approximately $5,000	Ongoing
	Explore the provision of additional incentives for employees to purchase green vehicles.	Non-direct	Nominal to explore; incentive dependent on level	The Province of Ontario offers an Electric Vehicle incentive program that can provide $5,000 to $8,500 towards the purchase or lease of a new plug-in hybrid electric or battery electric vehicle

Table 8 Corporate Local Action Plan Actions- Energy

ENERGY				
Goal ***In 2055, we will conserve the amount of energy we use and will generate most of the energy that we do use from clean and renewable sources.*** **Strategic Directions** **Strategy 1: Reduce the amount of electricity and gas that residents use in their homes.** **Strategy 2: Reduce the amount of energy that the Town, businesses and institutions use in their operations.** **Strategy 3: Meet more of the community's energy needs through renewable sources.** **Strategy 4: Use vehicles that are energy efficient and that use alternative fuel sources.**				
	Potential Actions	**Potential GHG Reductions**	**Estimated Cost**	**Implementation Status**
Buildings/ facilities	Develop a Sustainable Municipal Buildings Policy for new municipal buildings that follows Leadership in Energy and Environmental Design (LEED) principles.	Non-direct; 15 – 500 tonnes/ building)	Nominal to develop policy; incremental construction cost of 1%-15% depending on building type, level of technology	Complete
	Prepare an Energy Conservation and Demand Management Plan for Town facilities that addresses lighting, heating, ventilation, building automation, building envelope, and renewal energy applications).	Non-direct	$50,000 - $100,000	Completed with reduced costs as the plan was developed in house.
	Implement Energy Conservation and Demand Management Plan for Town facilities on an ongoing basis. • Lighting • HVAC • Building automation • Building envelope • Renewable energy • Education/awareness	Approximately 935 tonnes/year (25% reduction from corporate facilities)	$500,000 - $1,000,000/year	Ongoing
	Implement power management on computers and electronic equipment.	10 – 15 tonnes/year	Nominal	Ongoing
	Upgrade to more efficient appliances and technology with the aim of improving building performances.	Unknown	Nominal – Completed through life cycle management being funded through the	Ongoing (Equipment listed in Appendix A)).

			annual budget process	
	Conduct energy audits of Town facilities (8 major facilities) on an as-needed basis.	Non-direct	~$60,000/audit	Complete
	Complete analysis of all Town facilities and identify opportunities for renewable energy generation.	Non-direct	Approximately $5,000/building	Ongoing
	Install renewal energy generating technologies at all facilities (buildings, pools and splashpads) where it is technically and financially feasible.	Solar hot water systems for pools: 20-25% reduction (~50 tonnes/pool)	Solar Photovoltaic (PV) ~$7,000 - $11,000 per KW of installed capacity. Pools: $115,000 - $225,000/pool	Ongoing (five facilities currently have renewable energy technologies).
Fleet	Purchase energy efficient Town vehicles as needed.	Approximately 2-2.5 tonnes/ vehicle/year	Hybrid sedans: $25,000/vehicle Hybrid SUVs: $40,000 Hybrid pick-up trucks: $45,000/vehicle	Ongoing (Appendix A)
	Purchase energy efficient Town equipment to replace aging/obsolete equipment.	Unknown	Nominal – Completed through life cycle management being funded through the annual budget process	Ongoing (Appendix A)
Street lighting	Implement energy efficiency retrofit program for Town's street lighting and parking lot lights.	Approximately 480 tonnes/year	$400-$600/fixture $100,000 - $200,000/year	Report complete implementation 2017-2020
	Switch Christmas lights to energy efficient technologies.	Approximately 2 tonnes/year LED Christmas lights can reduce energy consumption by as much as 90% compared to conventional incandescent lights.	Nominal on annual basis	Complete
Other	Develop and implement program for Town IT staff to become Green IT certified.	Non-direct	Green IT Course: $1,800/person Internal training: Nominal	Not yet complete
	Upgrade current ISO 9001 certification to ISO 50001 standards at the Town of Ajax to recognize efforts in energy efficiency and management	Non-direct		Not yet complete

Table 9 Corporate Local Action Plan- Transportation

TRANSPORTATION				
Goal ***In 2055, we will have an integrated, efficient, and accessible transportation system that has sustainable options available for the movement of people and goods within the community and beyond.*** **Strategic Directions** **Strategy 1: Create complete streets in Ajax to allow multiple modes of transportation.** **Strategy 2: Design neighbourhoods to facilitate walkability and other active transportation opportunities as convenient alternatives to the use of private automobiles.** **Strategy 3: Enhance public transportation opportunities to make public transportation convenient and a feasible alternative to the private automobile.** **Strategy 4: Reduce congestion and commute times.**				
	Potential Actions	**Potential GHG Reductions**	**Estimated Cost**	**Implementation Status**
Other	Install biker lockers and/or canopies on bike racks at Town facilities for staff.	Low (~1 tonnes/ year/employee)	$1,200-1,600 for 2 bike storage locker	Average employee travel distance about 21km (Commuting Survey, Durham Smart Commute)
	Develop campaign/program to encourage transit ridership amongst staff.	Low (~1 tonnes/ year/employee)[9]	$2,000 – $5,000/ year	Not yet complete
	Promote transit, carpooling, and active options for commuting (e.g., through Smart Commute Durham)	Low (~1 tonnes/ year/employee)[9]	Nominal – align with existing events, programs, etc.	Ongoing

Table 10 Corporate Local Action Plan Actions- Waste

WASTE				
Goal ***In 2055, we will use materials wisely, maximizing the lifecycle of materials and reducing the amount of waste generated.*** **Strategic Directions** **Strategy 1: Reduce the consumption of material things.** **Strategy 2: Provide education and awareness relative to waste management practices.** **Strategy 3: Facilitate reuse and recycling of goods and materials in all sectors that are currently identified as waste.** **Strategy 4: Reduce the amount of waste generated in manufacturing processes.**				
	Potential Actions	**Potential GHG Reductions**	**Estimated Cost**	**Implementation Status**
Solid waste	Develop and implement a Green Procurement Policy.	Low-Medium	Nominal	Complete
	Develop a Green Event Policy.	Low	Nominal	Complete
	Continue to promote the "Quit the Print" campaign (e.g., use collaborate software to edit documents, implement duplex printing, move orientation binders to intranet servers, encourage paperless meetings and electronic agendas, etc.).	Low	Nominal – ongoing	Ongoing
	Coordinate efforts to encourage the use of reusable mugs, water bottles and reusable lunch containers.	Low	Nominal – ongoing	Ongoing
	Continue with staff education and awareness related to waste minimization and management.	Low – maintain participation levels for new hires	Nominal – ongoing	Ongoing
	Continue to support and expand the municipal waste diversion program.	Low-Medium	Nominal – funded through the annual budget process	Ongoing
	Ensure that appropriate waste diversion receptacles are available in all facilities.	Low	$1,600/3-stream receptacle plus related servicing cost	Ongoing
	Recycle concrete and asphalt and reuse it in municipal infrastructure.	Non-direct	Nominal	Ongoing

FUTURE IDENTIFIED PROJECTS

In addition to the action items highlighted within the corporate Local Action Plan an number of large scale projects have been highlighted to be implemented over the next five years to help improve energy efficiency and reduce corporate GHGs. Some projects include:

- Over 13 large scale building upgrades including a roof replacement for the Ajax Community Centre (the corporations largest energy consumer),
- LED streetlight conversion with an anticipated GHG savings of 156 t eCO_2,
- addition of plug in in hybrid electric vehicles to the Town's corporate fleet,
- and, the expansion of the Towns corporate recycling program to include parks.

Next Steps & Recommendations

It is recommended that the Town of Ajax continues to demonstrate leadership in climate mitigation by:

- Submitting the 2015 corporate greenhouse gas inventory to the Federation of Canadian Municipalities in order to fulfil the requirements for Milestone 5 of the Partners for Climate Protection program.
- Complete a 2015-2016 community greenhouse inventory to determine progress as well as the requirements for Milestone 5 of the Partners for Climate Protection program.
- Update the Corporate and Community Local Action Plan which is embedded in Ajax's Integrated Community Sustainability Plan (ICSP).
- Consider setting targets for long term greenhouse gas emission reduction taking into account the target set by the province of Ontario in 2015, of an 80% GHG reduction by the year 2050.

Conclusions

In the baseline year (2005), the Corporation of the Town of Ajax produced 6,353 t eCO_2. These emissions include those associated with the electricity and natural gas used by Town buildings, fuel used by the Town's vehicle fleet, electricity required for street lighting and the indirect emissions associated with corporate Waste.

In 2015, the Town of Ajax produced 5,429 t of eCO_2. This is equivalent to a 15% decrease. This decrease is despite significant growth in the Town's operations which includes a 16.6% increase in buildings, 10.6% increase in fleet vehicles and a 41.4% increase in street lighting. When removing the growth factor from the 2015 inventory the total GHG reduction is calculated at a reduction of 23 %.

This inventory suggests that the Town of Ajax is on track to meet the 20% GHG reduction target by the year 2020. A number of projects have been identified to support climate mitigation strategies including an LED streetlight conversion strategy, significant building improvements and ongoing fuel efficiency improvements within the corporate fleet.

In order to continue to reduce GHG emissions it is recommended that the Towns Corporate Local Action plan be updated to highlight future projects and programs, as well as consider setting targets that allow for ongoing GHG emission reduction beyond 2050. Thus ensuring that the corporation of the Town of Ajax continues to demonstrate leadership in the battle that is global climate change.

Appendix A List of Completed Projects

Table 11 List of Completed Projects- Buildings

Facility	Project	Year	Cost ($)	Potential Savings
Ajax Community Centre	Chiller Retrofit	2015	544,000	Significant energy efficiencies within the facilities HVAC system.
	Domestic Boiler Retrofit	2015	$40,000	Gas savings.
	Pool VFD Pump Replacement	2014	$30,000	60% energy reduction.
	Arena lighting			
	Pool heat exchanger	2013		
	Pool lighting retrofit	2009 & 2012		
	Boiler retrofit (2008)	2008		
	Arena Refrigeration	2014	$310,000	Significant savings for ice pad refrigeration during summer months.
	Lobby Lighting Retrofit	2015	$55,000	Estimated electricity savings of3,955 kwh
Ajax Town Hall	Lobby lighting	2015		
	Boiler retrofit	2010		
McLean Community Centre	Lighting Retrofit	2015	$45,886.00	Estimated electricity savings of 27,693.00 kwh
	Roof & Skylight Replacement	2015	$2,000,000	Savings not yet measurable.
	Lobby lighting)	2015	$55,000	
	Rooftop skylight replacement	2015	$170,000	Building envelope improvements.
	Pool Pump VFD Replacement	2014	$30,000	A rated reduction in energy consumption by this piece of equipment by 60%/

	Condenser Replacements	2014	$25,000	n/a
	Replacement of heating boilers	2013	$280,000	n/a
	Pool lighting retrofit	2013		
	Gym lighting retrofit	2013		
	Training club lighting retrofit	2010		
	Studio lighting retrofit	2010		
St Andrews Community Centre	Boiler and HVAC replacement	2015	$275,000	Gas and electric energy savings.
Main Library	LED lighting retrofit	2015	$324,320.00	98,819.00 kwh
Village Arena	Evaporative Condenser	2015	120,000	
Multiple Facilities	Hand Dryer Replacements	2013	$38,000	78,173 kWh
Facilities Conditions Assessment	The purpose of this Facilities Conditions Assessment is to itemize all the infrastructure within the Town's major facilities requiring replacement, provide a priority replacement schedule for equipment, provide details on the condition of equipment and provide relevant budget estimates for each item identified.	2013	$80,000	
Rooftop and Skylight Conditions Assessment	The roof and skylight condition assessment be undertaken to identify the existing condition and provide recommendations for repair. The finalized plan with align with the Town of Ajax's Energy Management Plan that outlines a plan to reduce energy and improve building envelope performance through sustainable design and construction.	2015	$110,000	

Table 12 List of Completed Projects- Fleet

Year Purchased	Vehicle	Quantity	Green Feature	Potential Fuel Savings
	Ford Escape	1	HEV	Estimated savings of 2.3 l/100km
2008	Honda Civic	3	HEV	Estimated savings of 2.51 l.100km
2009	Honda Civic	1	HEV	Estimated savings of 2.51 l.100km
2010	Honda Civic	5	HEV	Estimated savings of 2.51 l.100km
2014	Mite E Truck	1	BHEV	Full fuel savings
	Club Cadet	1	BHEV	Full fuel savings
2014	Chevrolet Cruze	1	Green Diesel	Estimated savings of 1.7 liters of fuel/100 km
2015	Hyundai Sonata	3	HEV	Estimated savings of 1.23 l/100 km
2016	Hyundai Sonata	2	PHEV	Estimated savings of 1.71 l/100 km

Table 13 List of Completed Projects- Streetlights

Project	Year	Cost	Savings
Millers Trail LED Conversions	**2014**	**$26,600**	
Greenwood Park Solar Lighting		2013	
Ajax Community Centre wall lights and parking lots	2012	$118,000	
Harkins Park LED Conversions	2011	$18,300	
Lakeside School & Duffins Greenbelt	2010	$38,600	
Greenwood Park Solar Lighting	2013		
Ajax Community Centre wall lights and parking lots	2012	$118,000	
Harkins Park LED Conversions	2011	$18,300	
Lakeside School & Duffins Greenbelt	2010	$38,600	
LED Streetlights Conversion Harwood Avenue (Stn St- Bayly)	2015	$400,000	Estimated 4,560 kw reduction.
Streetlights Pole Conditions Study	2013	$110,000	N/A