



Corporate Greenhouse Gas Emissions Inventory

2018-2019 Fiscal Year

Town of New Glasgow



New Glasgow
flourish



Acknowledgements

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This report was prepared by:

Rachel Mitchell, Climate Change Coordinator

Jordan Gallant, Engineering Student

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- Debbie Greencorn, Accounts Payable Supervisor
- Adam Langille, Civil Engineering Technologist
- Earl MacKenzie, Director of Engineering & Public Works
- Tom Bowden, Chargehand, Mechanical Department

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The Town of New Glasgow is a proud member of the Federation of Municipalities Partners for Climate Protection Program and the Global Covenant of Mayors for Climate and Energy.





TABLE OF CONTENTS

- 1 Municipalities Role in Climate Change
- 2 Partners for Climate Protection (PCP) Program
- 3 Historical Overview - New Glasgow Emissions Inventories
- 4 Building the Greenhouse Gas Emissions Inventory
- 5 Corporate Emissions Inventory
- 8 Buildings
- 15 Fleet
- 17 Streetlights
- 19 Water & Wastewater
- 22 Solid Waste
- 23 Next Steps



List of Figures & Tables

- Figure 1** The PCP Five-Milestone Framework
 - Figure 2** Community & Corporate Inventory Relationship
 - Figure 3** Historical Corporate Emissions (tCO₂e)
 - Figure 4** Breakdown of Carbon Emissions (%tCO₂e)
 - Figure 5** Breakdown of Building Sector Emissions (%tCO₂e)
 - Figure 6** Town Barn Overview
 - Figure 7** Fire Station/Library Overview
 - Figure 8** Police Station Overview
 - Figure 9** Town Hall Overview
 - Figure 10** Breakdown of Fleet Sector Emissions (%tCO₂e)
 - Figure 11** Streetlight Sector Emissions (%tCO₂e)
 - Figure 12** Water & Wastewater Sector Emissions (%CO₂e)
 - Figure 13** Water Treatment Plant Overview
 - Figure 14** Solid Waste Sector Emissions (%tCO₂e)
 - Figure 15** Next Step - PCP Five-Milestone Framework
-
- Table 1** Emissions (tCO₂e) by Sector
 - Table 2** Building Sector Electricity Usage and Cost
 - Table 3** Building Sector Fuel Usage and Cost
 - Table 4** Building Sector Propane and Diesel Usage and Cost
 - Table 5** Fleet Sector Fuel Usage and Cost
 - Table 6** Streetlights & Traffic Signals Electricity Usage and Cost
 - Table 7** Water & Wastewater Energy Usage and Cost
 - Table 8** Tonnes of Waste and Cost



Municipalities Role in Climate Change

Climate change is a global scale issue but the impacts are happening locally at the community level. These impacts vary from one place to another based on the environment, and the socioeconomic conditions of a community such as healthcare, infrastructure, education and the economy. **Our vulnerability to climate change is a function of exposure to climate hazards, sensitivity of the population and the capacity of the community adapt to a changing environment.**

Municipalities play a vital role in both climate change mitigation and adaptation. **Municipalities can support climate resilient communities through the provision of services, planning, infrastructure, and community support particularly for vulnerable populations.** Understanding local climate change vulnerability can help municipalities to effectively plan for changing conditions to ensure reduced vulnerability and increased adaptive capacity.

According to the Federation of Canadian Municipalities (FCM) it is estimated that **municipalities have control or influence over 50% of greenhouse gas emissions.** Taking action locally can lead to reduced energy costs, new job creation, and improved community health and wellbeing. Municipalities can support emission reductions from corporate activities and within the community as a whole. Corporate emissions are generated through the operation of the municipality including the energy to power and heat buildings, the fuel for fleet vehicles, streetlighting and traffic signals, water and wastewater, and waste. Maximizing the energy efficiency of buildings and fuel switching to low-carbon sources can reduce emissions, while the adoption of renewable energy can support long term low-carbon local power generation. On the community side, municipalities can better plan for walkability, public transit and green space to support healthy livable communities where people can live, work and play. Providing infrastructure to support the electric vehicle transition, and community planning that mandates high energy efficiency, or anti-idling laws can also support emission reductions.

Municipalities are at the forefront of climate action in Nova Scotia and across Canada. **Mainstreaming climate action into official plans and policies** can ensure climate change considerations are embedded into decision making frameworks and properly planned for and managed.

Partners for Climate Protection (PCP) Program

The Partners for Climate Protection (PCP) program is a network of over 350 municipalities across Canada working to reduce local greenhouse gas emissions while creating economic and social benefits for their communities. The program has been operating for over 20 years as a joint effort between the Federation of Canadian Municipalities (FCM) and ICLEI Canada— Local Governments for Sustainability. This program provides technical tools, mentorship, and a nationwide network to support climate action locally and across the country. To become a PCP member, local government is required to have council officially adopt a joining resolution.



Figure 1: The PCP Five-Milestone Framework

The PCP five-milestone framework outlines a process to reduce greenhouse gas emissions at the community level. Milestone 1 builds a foundation with the creation of a baseline emissions inventory and business as usual forecast. Milestone 2 involves setting an emissions reduction target. Milestone 3 is the development of a local action plan to achieve emission reductions. Milestone 4 is the implementation of the local action plan, and lastly Milestone 5 is the ongoing monitoring of progress and results reporting.

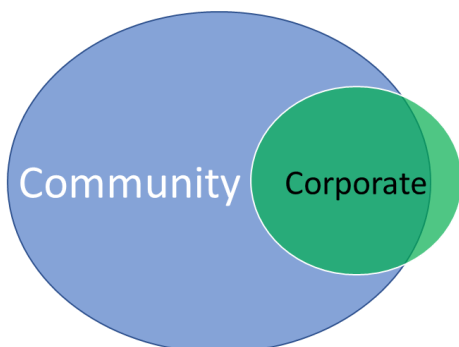


Figure 2: Community and Corporate Inventory Relationship (adapted from the PCP Protocol)

This report presents the findings from the Corporate Inventory, a component of Milestone 1. Milestone 1 features a greenhouse gas emissions inventory which accounts for energy and fuel usage in the Town of New Glasgow. There are two types of local inventories with different parameters. The corporate or municipal inventory measures emissions that the Town of New Glasgow is accountable for through our operation and provision of services. The community inventory represents the community as a whole, of which the corporate inventory is part of. This inventory captures emissions that occur within the Town of New Glasgow boundaries. This includes emissions from residential energy, industry, the commercial sector, waste, and on-road transportation.

Historical Overview—Town of New Glasgow Emissions Inventories

The Town of New Glasgow joined the Partners for Climate Protection (PCP) program in 1998. The premise of the PCP program is based on the idea that in order to manage greenhouse gas (GHG) emissions, municipalities must first measure and report. This initial measurement provides a baseline to understand energy usage and energy intensive activities. From this baseline, local government can set reduction targets and prioritize actions.

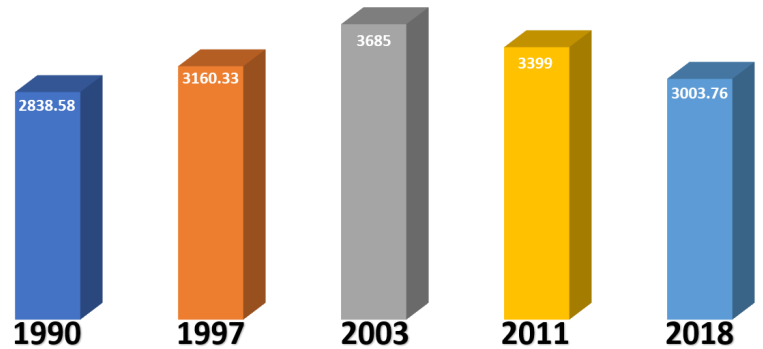


Figure 3: Historical Corporate Emissions (tCO₂e)

The Town of New Glasgow has corporate emission inventories for 1990, 1997, 2003, 2011 and now the fiscal year 2018-19. In 1998 Council passed a motion to join the Federation of Canadian Municipalities 20% Club, the early version of the PCP program. The FCM 20% was a commitment to reduce emissions by 20% from 1990 levels by the year 2008. An inventory of 1990 emissions measured municipal operations to be equivalent to 2,838.58 tonnes of CO₂ equivalent (tCO₂e). There is no data from 2008 to determine if the 20% reduction target was achieved, but the increase in emissions reported in 2011 indicates the target was not met. From 1990 to 2018, emissions have increased 5.5%. The shift from coal to more renewable energy sources to power Nova Scotia's electrical grid is largely responsible for this marginal increase, as overall usage increased at a much higher rate. In order to achieve the 20% Club goal requires a reduction of 24.4% from current levels.



Building the Greenhouse Gas Emissions Inventory

Define the Boundary

The corporate inventory measures the greenhouse gas emissions resulting from the Town of New Glasgow's operations and services. These are emissions for which the Town has operational control. According to the PCP Protocol operational control is defined as the local government having full authority to introduce and implement operating policies and procedures. The 18-19 corporate inventory did not count emissions from contracted services.



Inventory Sectors

There are five sectors in the corporate inventory; Buildings, Fleet, Streetlights & Traffic Signals, Water & Wastewater, and Solid Waste.

Inventory Year

The Inventory Year is generally selected based on the most recent year in which data is available. This inventory timeline spans the fiscal year from April 1st, 2018-March 31st, 2019. Inventories are required to span 12 months, the fiscal year was selected to ease with data collection and to align with budgeting and annual reporting.

Data Collection

The corporate inventory data collection involved calculating energy usage and associated costs. Nova Scotia Power invoices were reviewed for electricity usage and cost for 19 building accounts. The Fleet fuel sales were calculated through the review of Irving invoices (gas and diesel) and Sullivan's (diesel), as well as the year end diesel and gas rebate document. Heating oil and propane litre totals were obtained through Mac-Gillvray Fuels invoices. Waste tonnage was calculated with assistance from Green For Life, and in some cases estimated based on bin dimensions.

PCP Tool

All relevant data was imputed into the PCP online tool under the five sectors. This platform provides a breakdown of energy (GJ) by sources, and greenhouse gas emissions by sector.

Carbon Dioxide (CO2) Coefficients

The PCP tool converts energy usage into tonnes of CO2 equivalent based on the energy source (gasoline, propane, fuel oil, diesel and electricity). The composition of Nova Scotia's electrical grid determines the CO2 equivalent for electricity, with coal production representing close to 60% of electrical generation CO2 coefficients remain high. As coal usage continues to decrease this number improves to reflect the greening of the grid.

Corporate Emissions Inventory

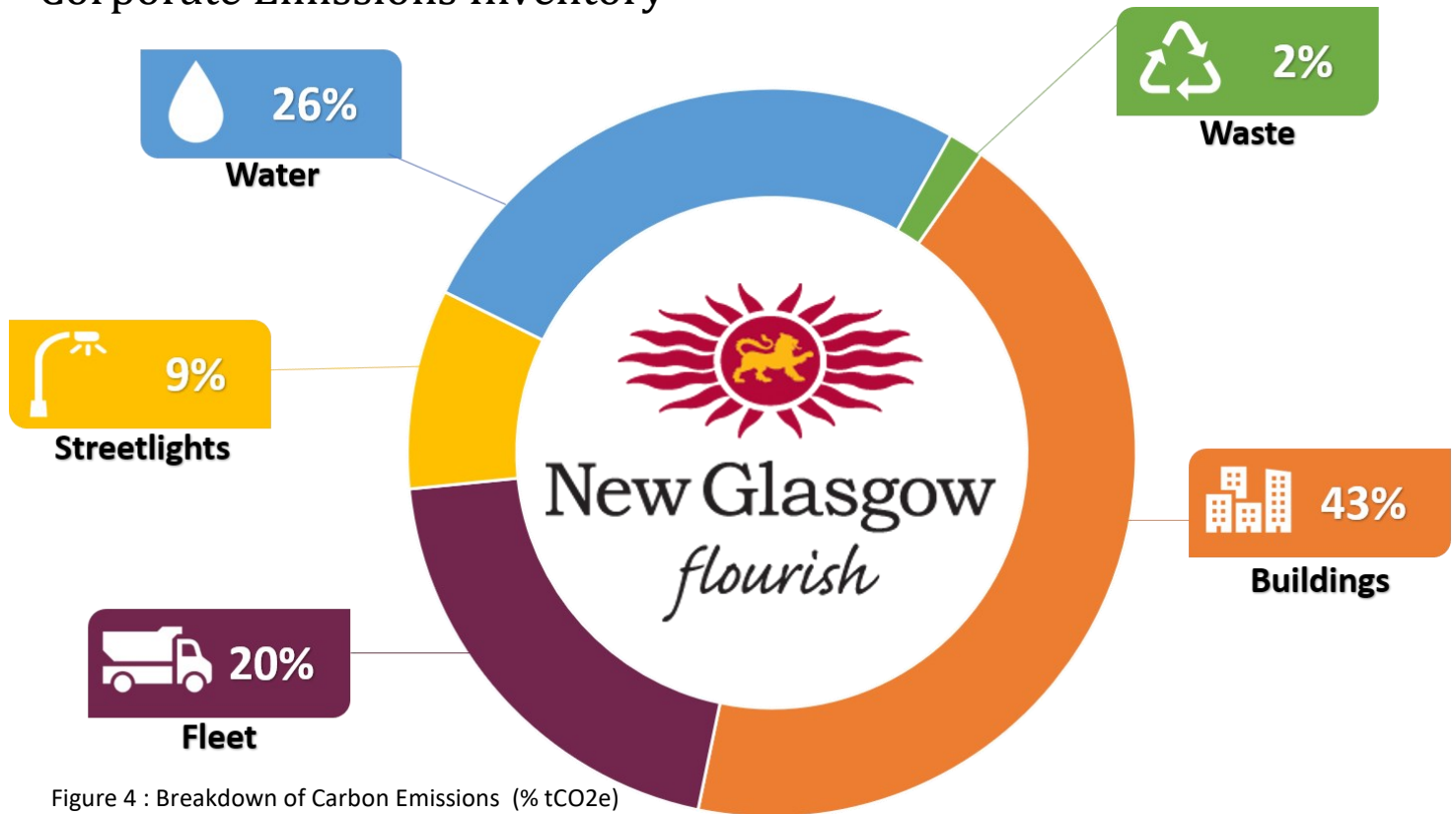
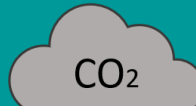


Figure 4 : Breakdown of Carbon Emissions (% tCO2e)

The Corporate Inventory is made up of five sectors; Buildings, Fleet, Streetlights and Traffic Signals, Water and Wastewater, and Solid Waste. The data captures the energy used within each sector, including electricity to power buildings, fuel for vehicles, oil to heat facilities, and the corresponding financial cost and the carbon dioxide (CO₂) equivalent measured in tonnes. In 18/19 the Town of New Glasgow's corporate operations accounted for 3003.76 tonnes of CO₂ equivalent (tCO₂e). The following section breaks down the data by sector.



3003.76

tonnes of CO₂

During the 18/19 fiscal year, energy usage costs were calculated at \$880,804.85, with electricity representing 45% of the cost. As fuel and electricity costs continue to increase, the expense for buildings, fleet, streetlights, water, and waste will continue to grow. This corporate inventory provides insight into the energy intensive activities the Town is currently undertaking. Energy efficiency measures will be needed to reduce demand and usage, to ensure cost savings going forward, and a reduction to greenhouse gas emissions.

Sector	Emissions (tCO ₂)	Energy (GJ)	Cost (\$)
Buildings	1307.37	11154	\$ 338,735.82
Fleet	605.81	8880	\$ 285,834.16
Streetlights	266.16	1423	\$ 63,132.53
Water & Wastewater	777.98	4893	\$ 168,798.90
Solid Waste	46.44	-	\$ 24,303.44
Total:	3003.76	26350	\$ 880,804.85

Table 1: Emissions (tCO₂e) by Sector



Buildings

The corporate buildings sector includes all facilities owned or operated by the Town of New Glasgow. This sector tracks the greenhouse gas emissions generated through energy use to heat, light, and run the buildings. There are 19 buildings included in the 2018-19 Fiscal Inventory. Below is a summary of findings:

- The buildings sector is the largest contributor to GHG emissions, accounting for 43%.
- Town buildings and facilities emitted 1307.37 tonnes of CO2 equivalent.
- Total energy expenditures for buildings: \$338,735.82
- The leased Public Works facility on East River Road known as the “Town Barn” and the Fire Station/Library account for over half of the emissions for the entire building sector.

Fleet



Fleet Vehicles are corporate owned and operated vehicles or equipment, including all on and off-road vehicles, public transit, police and fire services. The emissions that this sector produces stems from the fuel (diesel, gasoline, propane) used for the operation of vehicles or equipment.

- In the 2018 fiscal year, the Town of New Glasgow's Fleet accounted for 20.2 percent of the total corporate GHG.
- The Town Fleet emitted 605.891 tonnes of CO2 equivalent.
- The Fleet sector cost is estimated to equal \$285,834.16 in fuel purchases, this does not include maintenance, repairs, or staff mileage.
- The Transportation department represents the most energy intensive department in regards to fuel usage.
- Total fuel usage and cost decreased from previous inventory years.

Streetlighting



Streetlights sector includes energy use for streetlights, traffic signals, and outdoor public lighting including decorative lighting, and lighting in trails, and parks. In 2004-05 traffic signals were upgraded to LED, and in 2009 the majority of streetlights were upgraded to LED lighting. This switch resulted in significant savings both in usage and emissions, as well as cost to the Town.

- In the 2018 fiscal year, the Town of New Glasgow's streetlights accounted for 9 percent of the total corporate GHG emissions created by the Town.
- The streetlights and traffic signals emitted 266.16 tonnes of CO2 equivalent.
- Total energy expenditure for streetlights: \$63,132.53
- kWh usage decreased by 40.05% from 2003 to 2018.



Water and Wastewater

This sector accounts for all the GHG emissions resulting from municipal water and wastewater infrastructure. This infrastructure includes the water treatment plant, pumping and lift stations, reservoirs, etc. GHG emissions in the water and wastewater section result from electricity and fuel usage.

- The water and wastewater sector is the second largest contributor to GHG emissions, accounting for 25.9%.
- The water and wastewater sector resulted in 778 tCO₂e.
- Total energy expenditure for water and wastewater: \$168,798.80.
- The **Water Treatment Facility is the most energy intensive corporate facility**, accounting for 507.6 tCO₂e.



Waste

The Solid Waste sector measures the total tonnage of waste produced by Town buildings and facilities, including parks, recreation centers and public receptacles. Recycling and compost are not counted in this measurement, as these items are diverted from the landfill. Waste collection services are facilitated by Pictou County Solid Waste, and are therefore not counted in the inventory. The total GHG emissions associated with the transportation and disposal of Town generated waste is higher than the number below given that waste is transported from households, to the local transfer station, and finally to the landfill in Guysborough.

- The waste sector is the smallest contributor to GHG emissions, accounting for 1.5%.
- The amount of emissions resulting from the amount of waste produced by the Town equals 46 tCO₂.
- Total cost resulting from waste disposal: \$24,303.44
- The total tonnage of waste was provided by Green For Life (GFL) for the Town Barn, Public Works, Fire Station & Town Hall, and the Water Treatment Plant.
- Totals for Glasgow Square and the Police Station were estimated based on the bin dimensions and the number of pickups in the fiscal year.



49,668 tree seedlings grown for 10 years would be required to sequester the annual output of tonnes CO₂ equivalent emitted by the Town of New Glasgow as a corporate entity in one year.

Buildings

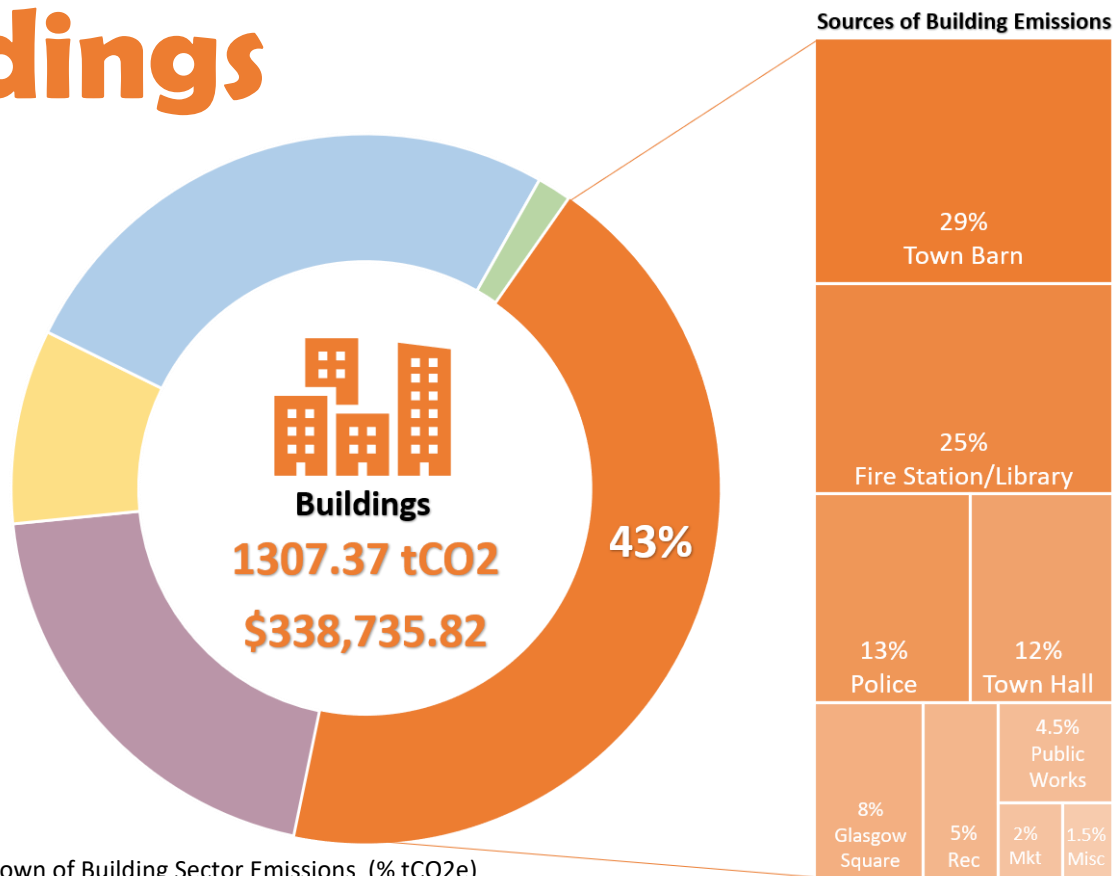


Figure 5 : Breakdown of Building Sector Emissions (% tCO₂e)

Overview

The corporate buildings sector includes all facilities owned or operated by the Town of New Glasgow. This sector tracks the greenhouse gas emissions generated through energy use to operate the buildings. Excluded from this category is the Water Treatment Plant and emissions generated through the operation of water and wastewater services, as these are reported in the Water and Wastewater sector. Energy use comes from electricity (kWh) fuel oil and/or propane (L) for heating, and diesel for generators.

There are a total of 19 buildings in this sector, based on the number of unique Nova Scotia Power accounts for electricity usage. The 19 buildings have been further grouped for the purpose of this report to 9 sub-groupings; Town Barn, Fire Station/Library, Police, Town Hall, Glasgow Square, Recreation, Public Works, Farmers Market, and Miscellaneous.

The Building sector represents the largest sector for total greenhouse gas emissions and costs. Together the Town Barn and Fire Station/Library account for just over half of all building emissions. These priority buildings will need to be addressed in the corporate climate action plan to yield necessary GHG reductions. The Town Barn was relocated to the old K-Mart/Central Supplies Store in 2012, with an anticipated occupancy timeline of 2 years. The building of a permanent facility for the Transportation Department should be a top priority, with net zero energy as the standard for operation.

In order to better understand the energy demands of each of the town owned buildings it is recommended that energy audits be undertaken for the more energy intensive buildings, starting with the Fire Station. This assessment will ensure a clearer picture of inefficiencies, and waste to support necessary upgrades to the facility in order to maximize energy efficiency and comfort for the staff and patrons.

Data sources

Electricity (kWh)

Every building in the inventory has an account with Nova Scotia Power. Total usage (kWh) and cost (\$) were calculated for each account using invoices from the fiscal year. There are a total of 19 building accounts. The data is presented in the table below (Table 2). For the purpose of this report, Public Works features the Engineering Office, Water Building, and storage area the S.W. Sportsplex. Glasgow Square includes the toll booth, the Town Barn includes the Greenhouse, and the lower usage buildings such as Carmichael House, the Marina and Acadia St. School were grouped under Miscellaneous.

Table 2: Building Sector Electricity Usage and Cost

	Building	Electricity (kWh)	Total Cost (\$)
	Town Barn	275,040	\$ 43,725.71
	Fire Station/Library	301,410	\$ 43,594.39
	Police Station	193,625	\$ 27,768.81
	Town Hall	180,840	\$ 26,490.76
	Glasgow Square	66,108.97	\$ 13,142.27
RECREATION	North End Rec Centre	32,734.84	\$ 5,789.64
	Ward 1 Rec Centre	20,624.27	\$ 3,522.65
	Westside Community Centre	23,411.72	\$ 4,347.47
	Rink	10,345.25	\$ 2,116.72
PUBLIC WORKS	Engineering Office	37,250	\$ 6,110.21
	Water Building Park Street	39,920	\$ 6,714.90
	234 Park St- S.W. Sportsplex/Rec	11,560	\$ 2,407.78
FRMS MKT	Farmers Mkt Dome	809.76	\$ 320.90
	Farmers Mkt Main Building	37,160	\$ 6,190.12
MISC.	Marina	16,518.12	\$ 3,215.27
	Carmichael St Apt	681.56	\$ 243.89
	Acadia Street School	2320	\$ 629.38
	Totals:	1,250,359.312	\$ 196,330.87

Fuel Oil, Propane & Diesel

Invoices from MacGillivray Fuels were reviewed to determine total usage (L) and annual cost (\$) where applicable, for fuel oil, propane and diesel. Total costs across all heating sources is estimated at \$142,404.95.

Six of the nineteen town buildings included in the corporate inventory use fuel oil for heating. The **Town Barn consumes the most oil** in a 12 month period, with a total of 14 deliveries including deliveries in May and August. The **Fire Station is the second highest consumer**, and a total of 35 deliveries during the inventory year.

Propane is used for heating at the Greenhouse located outside the Town Barn, and at Glasgow Square.

Diesel is used for backup generators at both the Police Station and Town Hall.

Table 3: Building Sector Fuel Usage and Cost

Building	Fuel Oil	
	Litres (L)	Cost
Town Barn	68,880	\$ 57,715.55
Fire Station/Library	44,503.3	\$ 37,217.23
Police Station	14,070	\$ 11,783.62
Town Hall	12,054	\$ 9,923.46
North End Rec Centre	4,358.6	\$ 3,709.45
Ward 1 Rec Centre	1,534.4	\$ 1,368.10

Propane			Diesel		
	Litres (L)	Cost (\$)		Litres (L)	Cost (\$)
Town Barn—Greenhouse	4,106.7	\$ 1,814.42	Police Station	225.6	\$ 253.74
Glasgow Square	36,046	\$ 18,410.28	Town Hall	164.7	\$ 209.1

Table 4: Building Sector Propane and Diesel Usage and Cost





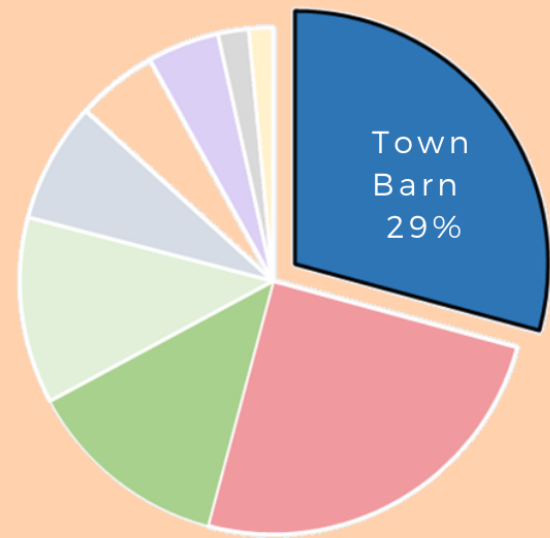
2018/19 Fiscal Year	Electricity		Fuel Oil		Greenhouse	
	Total Use (kWh)	Total Cost (\$)	Total Use (L)	Total Cost (\$)	Propane Use (L)	Total Cost (\$)
Town Barn	275040	\$43725.71	68880	\$57715.55	4106.7	\$1814.42

OVERVIEW

The Town Barn is located in the old K-Mart/Central Supplies Warehouse on East River Road. The Town leases this facility for use by the Transportation Department. This building represents the largest percentage of CO2 emissions in the building sector, it's also the most expensive building operated by the Town.

ANNUAL EXPENDITURE
\$103,255.68

CO2 EMISSIONS BY BUILDING



2003 - 2018 COMPARISON

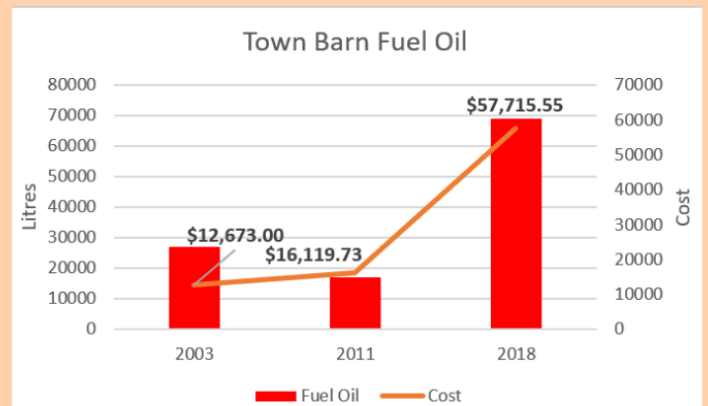
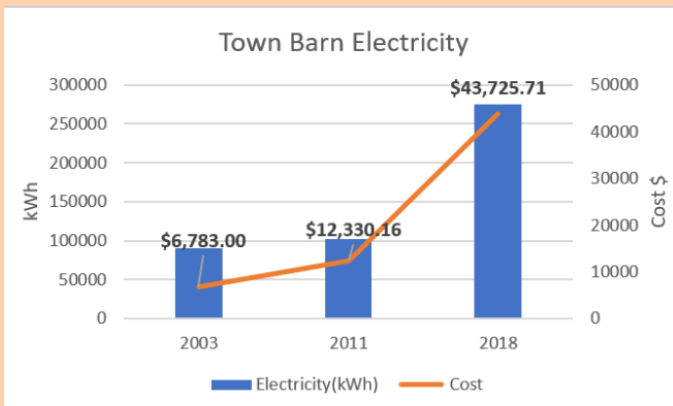
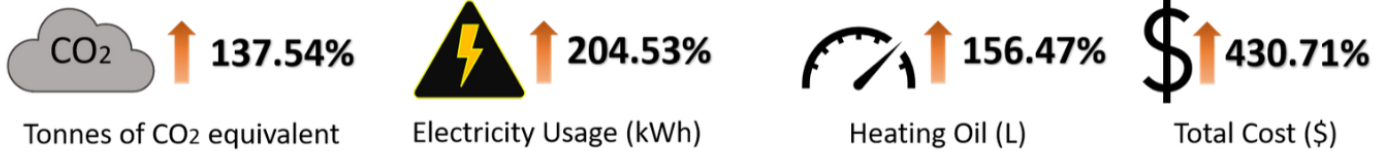


Figure 6 : Town Barn Overview



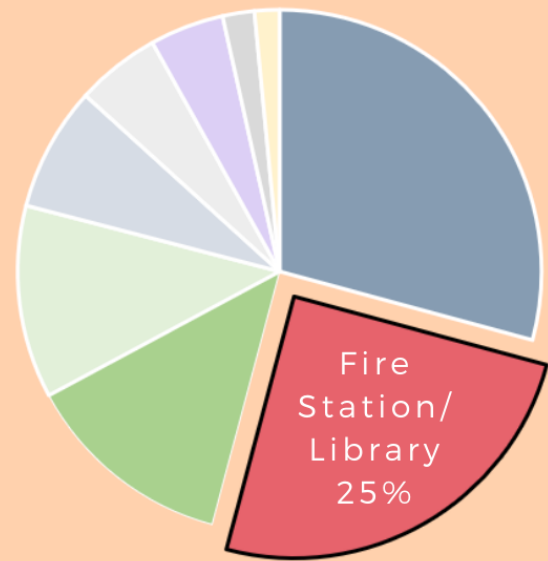
2018/19 Fiscal Year	Electricity		Fuel Oil	
	Total Use (kWh)	Total Cost (\$)	Total Use (L)	Total Cost (\$)
Fire Station	301410	\$43594.39	44503.3	\$37217.23

OVERVIEW

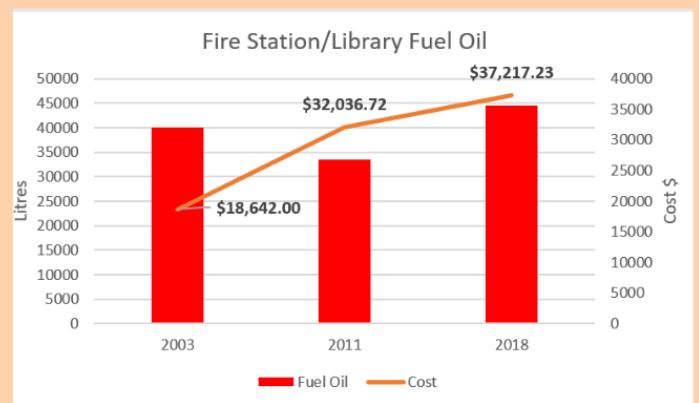
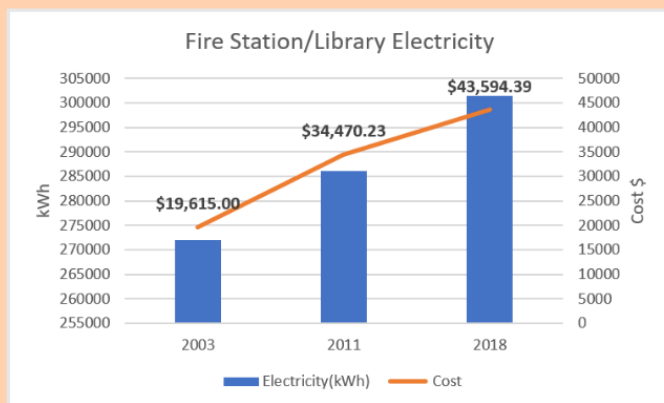
The Fire Station/Library are located on Dalhousie Street. These facilities share a single meter with Nova Scotia Power, and are therefore counted as a single building in the corporate inventory. This facility accounts for 25% of total CO2 emissions from the building sector, approximately 326 tonnes of CO2 equivalent.

ANNUAL EXPENDITURE
\$80,811.62

CO2 EMISSIONS BY BUILDING



2003 - 2018 COMPARISON





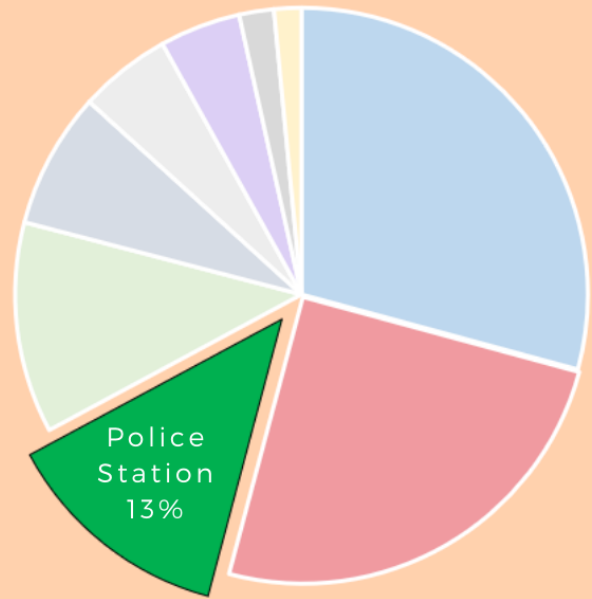
2018/19 Fiscal Year	Electricity		Fuel Oil		Diesel	
	Total Use (kWh)	Total Cost (\$)	Total Use (L)	Total Cost (\$)	Total Use (L)	Total Cost (\$)
Police Station	193625	\$27768.81	14070	\$11783.62	225.6	\$253.74

OVERVIEW

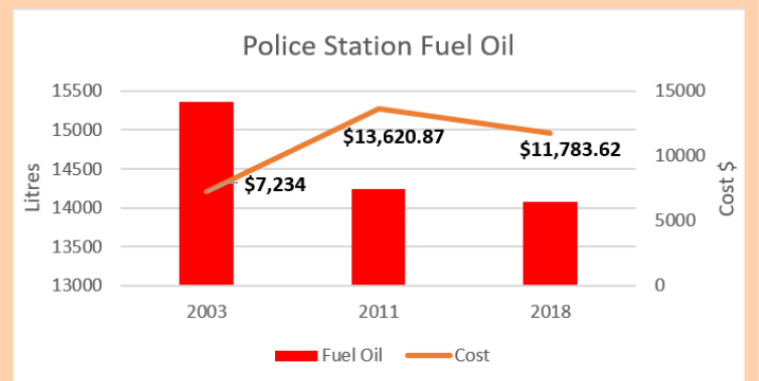
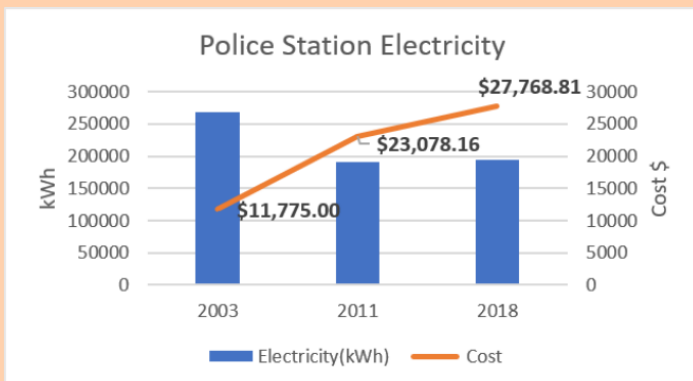
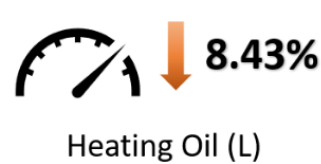
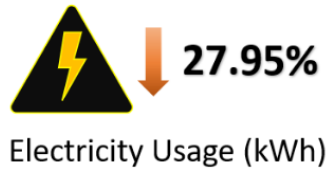
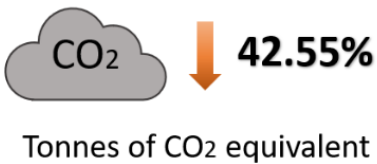
The Police Station located at 225 Park Street is one of the Town's newer buildings. This facility accounts for 13% of CO2 emissions from the building sector, approximately 169.95 tonnes of CO2 equivalent.

ANNUAL EXPENDITURE
\$39,806.17

CO2 EMISSIONS BY BUILDING



2003 - 2018 COMPARISON





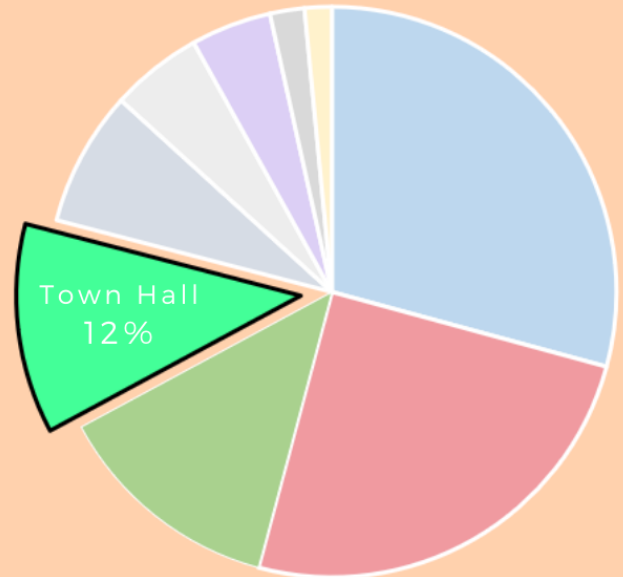
2018/19 Fiscal Year	Electricity		Fuel Oil		Diesel	
	Total Use (kWh)	Total Cost (\$)	Total Use (L)	Total Cost (\$)	Total Use (L)	Total Cost (\$)
Town Hall	180840	\$26490.76	12054	\$9923.46	164.7	\$209.1

OVERVIEW

Town Hall is located on Provost Street, and is the oldest building in the corporate inventory, first built in 1884. Town Hall is the fourth largest source of CO2 emissions from the building sector.

ANNUAL EXPENDITURE
\$36,623.32

CO2 EMISSIONS BY BUILDING



2003 - 2018 COMPARISON

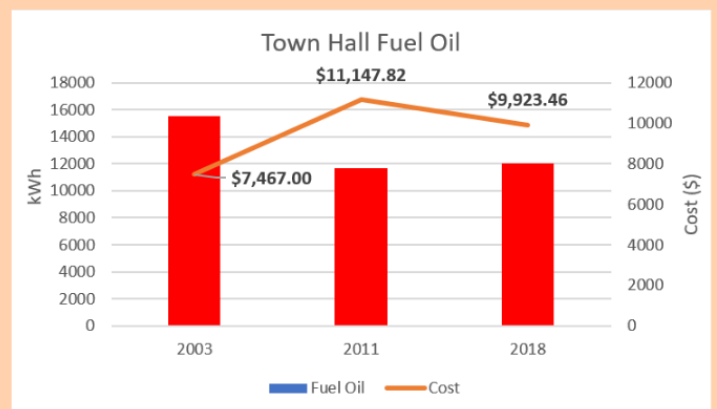
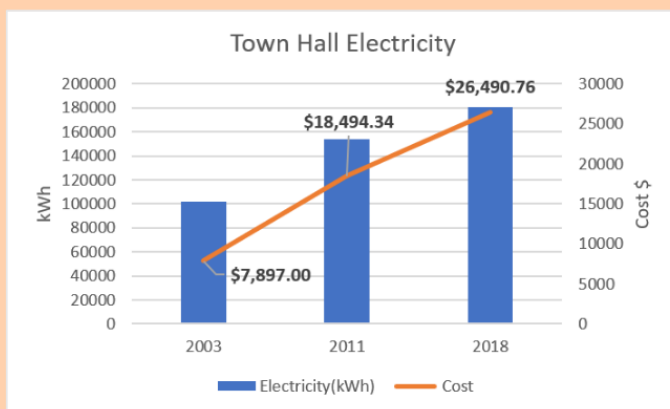
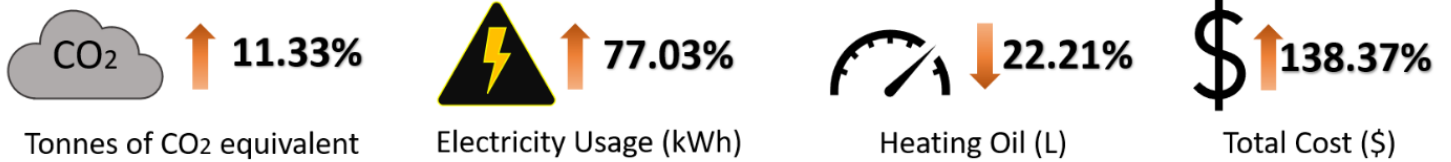


Figure 9: Town Hall Overview

Fleet

Sources of Fleet Emissions

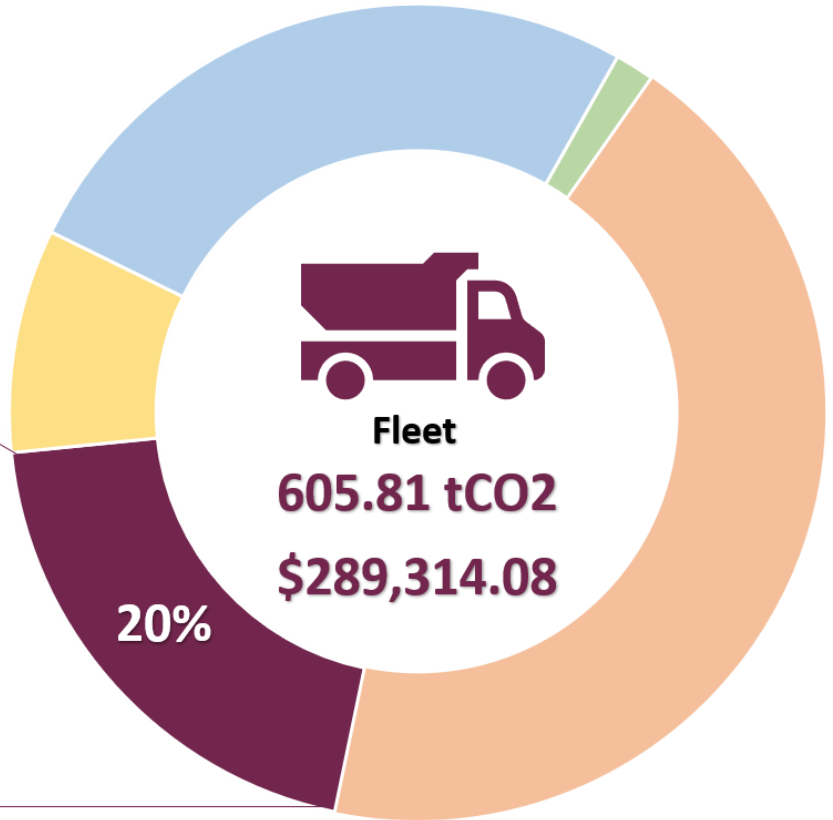
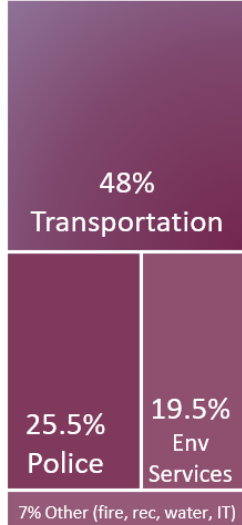


Figure 10 : Breakdown of Fleet Sector Emissions (% tCO₂e)

Overview

The Fleet sector includes all town owned and operated vehicles and equipment. Emissions are generated through gasoline, diesel, or propane used to power the vehicles. This sector includes both on and off road vehicles, as well as public transit operated by the Town. The Town of New Glasgow purchases fuel for the **CHAD transit fleet**, but the emissions are not counted in this inventory given that the service is not operated by the Town.

There are seven departments included in the Fleet sector; Transportation, Police, Environmental Services, Fire, Recreation, Water and General (including IT, CAO, etc). The Transportation Department represents the largest contributor to greenhouse gas emissions from the Fleet sector, accounting for almost half of all fleet sector emissions. Police is the second largest sector, accounting for 25.5%, followed by Environmental Services at 19.5% of emissions. Fire, Recreation, Water and General together make up the remaining 7%.



Data sources

Sullivan Fuels and Irving Oil are the two companies that supply fuel for the Town of New Glasgow fleet. The total liter amounts for each department were obtained through the annual gas and diesel rebate report submitted by the Corporate Services Department. The annual cost for fuel had to be estimated for the inventory. The cost was calculated using the contract fuel rate with Irving (average savings of 2 cents per litre) and the average price of gasoline and diesel in New Glasgow during the fiscal year (Gasoline: \$1.17, Diesel: \$1.22). All costs are estimated with the exception of the Water Department's total diesel purchased*.

The transportation department used 100.3 litres of propane for a forklift. This value is counted in the inventory, but not included in the data tables below.


Fleet 	Gasoline		Diesel	
	Litres	Total Cost (\$)	Litres	Total Cost (\$)
Transportation	55945.8	\$ 65,414.63	61182.82	\$ 73,275.02
Police	62408.85	\$ 72,971.55	-	-
Environmental Services	24209.59	\$ 28,307.06	23315.14	\$ 28,487.22
Fire	2444.14	\$ 2,857.81	3008.33	\$ 3,675.68
Recreation	4466.95	\$ 5,222.98	255.23	\$ 311.85
Water	-	-	4574.2	\$ 5,272.56 *
General	2861.18	\$ 3,345.43	-	-
Totals:	152336.5	\$ 178,119.46	92,355.72	\$ 111,022.32

Table 5: Fleet Sector Fuel Usage and Cost

Next Steps:

As the electrical grid in Nova Scotia transitions to more renewable energy sources, the electrification of the Town Fleet will offer extensive greenhouse gas emission reductions. The range for electric vehicles continues to improve with advancements in battery technology, and these vehicles require less maintenance as a result of fewer moving parts compared to a traditional combustion engine.

The addition of new policies and updates to existing policies and procedures will be necessary to ensure procurement considers fuel economy and proper vehicle sizing. Updates to the tender process will need to include an evaluation of the environmental sustainability, potential electrification, fuel economy standards, determining the appropriate vehicle sizing to carry out necessary work duties, and the expected lifespan of the vehicle. Furthermore, the implementation of a town vehicle anti-idling policy can help reduce emissions, and improve air quality.

Streetlights

Overview:

The streetlights and traffic signals section accounts for GHG emissions that result from energy use for streetlights and traffic signals and all other outdoor public lighting including parks and trails.

In the 2018 fiscal year, the Town of New Glasgow's Street and Traffic Lights accounted for 8.9 percent of the Town's total corporate GHG emissions. The emissions from this sector of the GHG inventory totaled 266 tCO₂e. Total estimated energy usage equals 1423 GJ, and a cost of \$63,132.53.

When comparing corporate inventories from 2003, 2011, and 2018, emissions have trended downward. In 2003 the emissions produced by the streetlights and traffic signals were 564 tCO₂e, decreasing to 339 tCO₂e in 2011 and now 266 tCO₂e in 2018. The Town has benefitted from significant cost savings as a result of the LED upgrades to streetlights. In 2003 it cost the Town of New Glasgow \$167,310 to power the Streetlights and Traffic Signals. In 2011 it cost the Town \$216,330, while in 2018 the cost is significantly lower than in both 2003 and 2011, totaling \$63,133.

Data Sources:

The data for streetlights and traffic signals was obtained through invoices from Nova Scotia Power, under the 16 accounts featured in Table 6. The unmetered accounts' kWh usage was calculated using the following equation provided by ICLEI Canada: Annual kWh = Number of streetlights* Wattage of LED streetlights* Annual operating hours per year. Table 6 provides the total kWhs for each Nova Scotia Power Streetlight or Traffic Signal account and the corresponding cost. Credits applied to accounts were ignored for the purpose of this inventory to maintain accurate and consistent reporting.

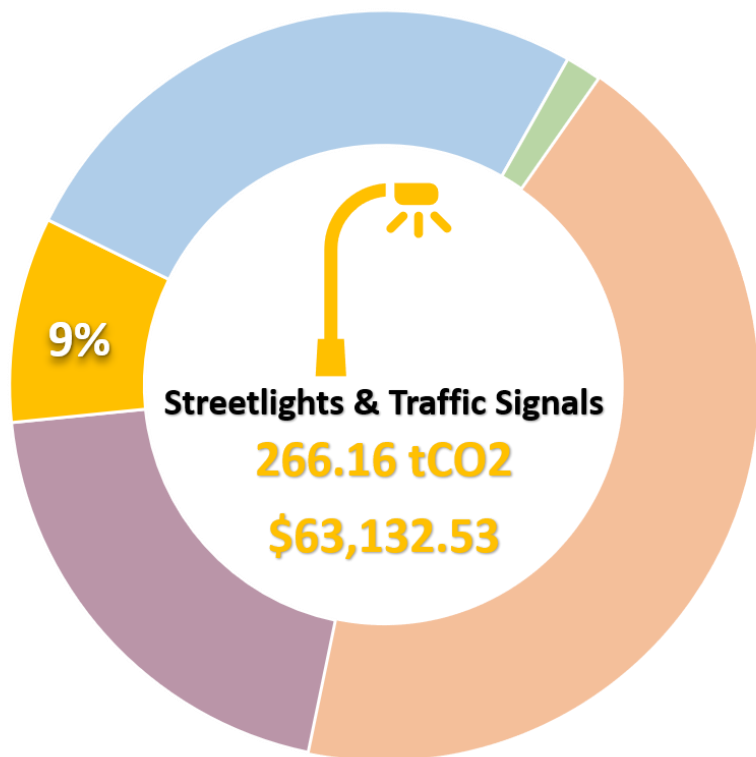


Figure 11: Streetlight Sector Emissions (% tCO₂e)



Table 6: Streetlights & Traffic Signals Electricity Usage and Cost

 2018/19 Fiscal Year	Electricity (kWh)	Total Cost (\$)
Downtown Decorative Lights	5,193.87	\$1,248.51
Samson Trail Lighting	15,196.13	\$2,655.47
Forest Hill (Connors) Subdivision - Street Lights	2,532.04	\$626.57
Street Lights- Big Bill	299,536.59	\$49,070.33
Terra Cotta Dr-Street Lights	788.51	\$130.29
Stewart St Memorial Monument	861.77	\$158.01
S.W. Field/8 Lights around track	5,928.94	\$958.86
Lights Parking Ground (Downtown Free Parking)	3,205.77	\$563.92
Traffic Lights	39,314.88	\$2,936.43
Vale Rd - Africentric Park	1,688.28	\$477.54
George St - Carmicheal Park	6,540.38	\$1,169.41
Duff Cemetery - Samson Trail	2,324.79	\$501.38
Murdock Park	421.80	\$248.64
Southend Playground- Sutherland St	2,293.08	\$586.88
Riverside/MacLean St Train Trestle	578.37	\$192.92
PW equipment parking area	8,632.84	\$1,607.35
Lights Total	395,038.04	\$ 63,132.53

Water & Wastewater

Overview

The Water and Wastewater sector includes all infrastructure for water and wastewater related services. This sector includes the water treatment facility, pumping and lift stations, reservoirs and other infrastructure related to the treatment and delivery of water and transport of wastewater. There are a total of four pump stations operating in the conveyance of water, and one lift station and sewage station as part of wastewater management. The total costs calculated through the inventory equal \$168,798.90.

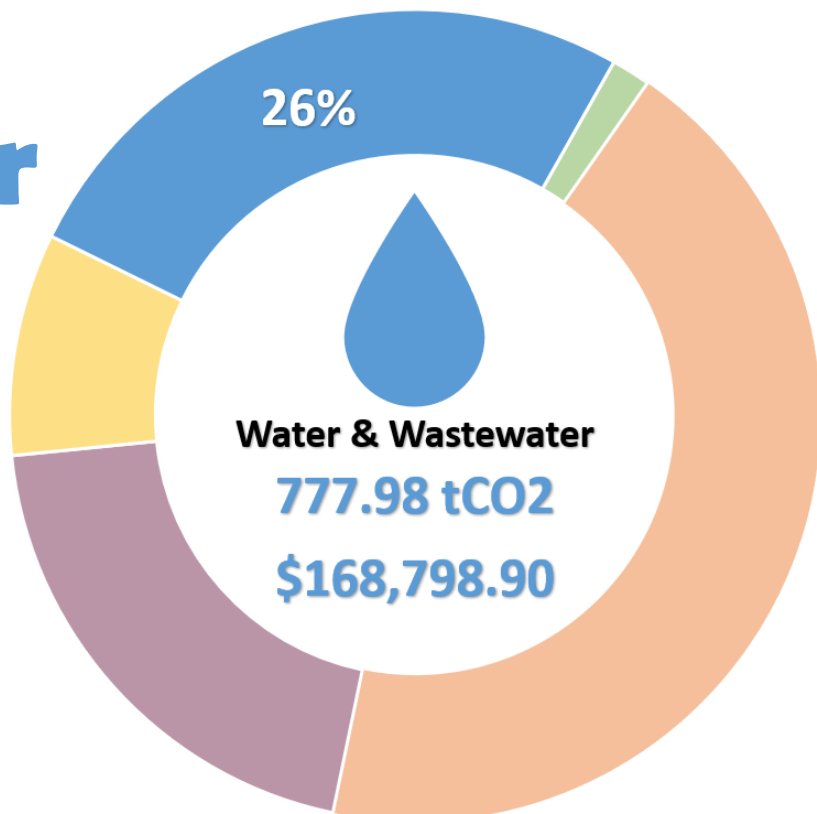


Figure 12 : Water & Wastewater Sector Emissions (% tCO₂e)

The Water and Wastewater sector represents 26% of greenhouse gas emissions from the corporate inventory. The Water Treatment Plant at Forbes Lake represents the majority of these emissions, 507.6 tCO₂e of the 777.98 total tCO₂e resulting from water and wastewater. The treatment plant also carries the highest cost of all the water and wastewater related infrastructure, \$108,679.27.



2018/19 Fiscal Year	Electricity (kWh)	Cost (\$)	Diesel (L)	Cost (\$)	Total Cost (\$)
Water Treatment Plant	629735	\$ 82,931.57	425.2	\$ 507.56	\$ 108,679.27
Plymouth Pump Station	18722.26	\$ 3,238.39			\$ 3,238.39
East River Road Pump	1119.23	\$ 5,684.38			\$ 5,684.38
May Street Lift Station	293.03	\$ 228.36			\$ 228.36
Munroe Ave Reservoir Building	121469.6	\$ 15,152.28	269	\$ 302.54	\$ 15,454.82
Arch Street Pump	153013.9	\$ 21,995.33	293.1	\$ 325.60	\$ 22,320.93
Reservoir St Pump Station	102589.5	\$ 12,582.04	150.9	\$ 169.72	\$ 12,751.76
335 MacDonald St/ERR Water Trough	937.97	\$ 336.98			\$ 336.98
Goodman's & Sewage Stn	225.56	\$ 104.01			\$ 104.01
Total	1,028,106	\$ 142,253.34	1138.2	\$ 1305.42	

Table 7: Water & Wastewater Energy Usage and Cost

Data Sources:

Electricity data was gathered from Nova Scotia Power bills for all corresponding water related infrastructure. There are a total of 9 accounts under NSPI, totaling 1,028,106 kWhs of electricity. The water trough feature was included in the water section for ease of reporting.

Invoices from MacGillvray Fuels were reviewed to determine total usage (L) and annual cost (\$) where applicable, for fuel oil and diesel. Diesel is used for backup generators at the treatment plant, Munroe Avenue reservoir building, and the Arch and Reservoir Street pump stations.

The following page provides a further breakdown of energy usage from the Water Treatment Plant including total fuel oil usage, and wind turbine generation, and comparisons with 2003 and 2011 inventory data.

2018/19 Fiscal Year	Electricity		Fuel Oil		Diesel	
	Total Use (kWh)	Total Cost (\$)	Total Use (L)	Total Cost (\$)	Total Use (L)	Total Cost (\$)
Water Treatment	629735	\$82,931.57	29728.4	\$25,240.14	425.2	\$507.56

OVERVIEW

The Water Treatment Plant is counted in the Water & Wastewater sector of the Corporate Inventory as it directly relates to drinking water supply service. As a facility, the treatment plant is the most energy intensive building operated by the Town. Total emissions equal 507.6 tonnes of CO2 equivalent.

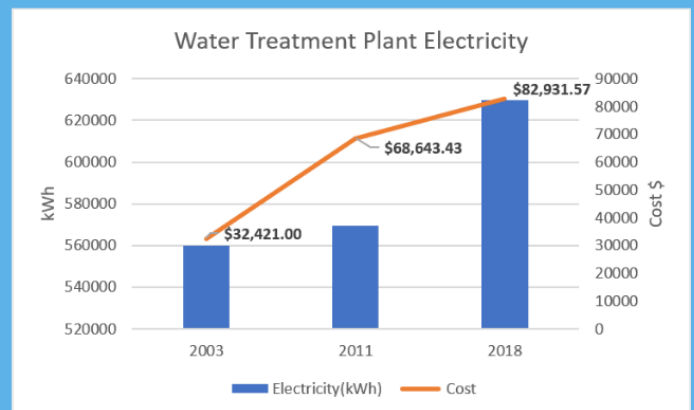
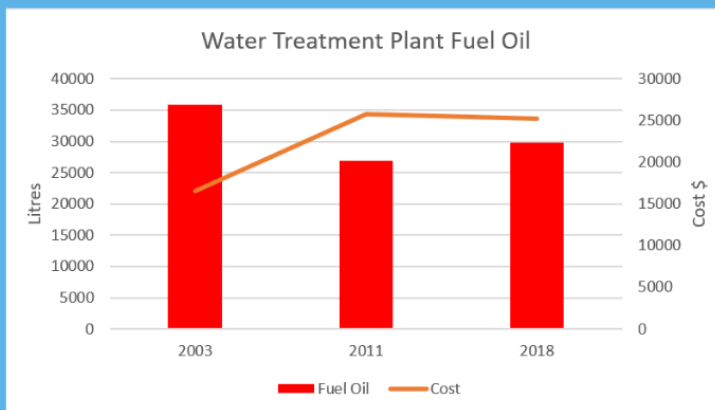
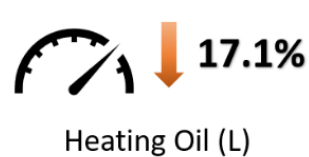
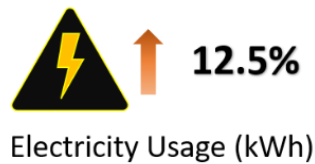
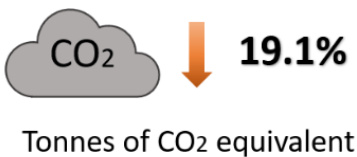
ANNUAL EXPENDITURE
\$ 168,798.90



WIND TURBINE

In 2018-19 the Water Treatment Plant wind turbine generated 46900 kWhs of electricity, approximately 7.5% of total electricity usage. This renewable energy generation reduces emissions by 31.6 tCO2e

2003 - 2018 COMPARISON



Solid Waste

The corporate solid waste sector measures the total tonnage of non-divertable waste from Town buildings, trails, parks, and public receptacles. All waste generated by the Town of New Glasgow is transported to the Mount William Landfill Facility before being transferred to Guysborough County Landfill.

Waste pickup from town facilities is a contracted service through Green For Life (GFL), Scotty MacNeil, and Barb and Dave Trucking. The emissions generated from the waste trucks are not counted in the inventory.

Emissions are calculated using the total tonnes of garbage and the composition of this waste (% organic material). Waste that is diverted, including organics and recycling is excluded from the emissions calculation. Organic materials in the garbage end up in landfills where conditions aren't suitable to proper breakdown resulting in the release of Methane, a highly potent greenhouse gas.

Data Sources

This sector is broken down into six waste sections. Green For Life services the Library/Fire Station, Water Treatment Plant, Town Barn and Engineering Office. The tonnage for these facilities was calculated using data from GFL. For most buildings, the GFL contract began part way through the 18/19 fiscal year. The annual tonnage was calculated using the average weight per pick up multiplied by the pick up frequency rate of the particular building. The Library/Fire Station also includes waste from Town Hall. The Town Barn includes waste from community centres, public receptacles, trails, and parks.

The independent waste contracts do not provide total weight. The total weight for Glasgow Square and the Police Station was estimated using the measurements of the waste bins, pick up frequency, and an industry standard weight per square metre. The Glasgow Square data was divided by 2 to account for 50% of the bin being recyclable materials.

Next Steps:

To reduce waste and improve the Town waste diversion rate, policies should be implement to restrict single use items such as water bottles, straws, takeout containers, Styrofoam, etc. In order to better understand our waste diversion, a series of waste audits can be undertaken to determine compliance. Contracted waste services involve single bin disposal with sorting occurring at the facility. Mandating composting and proper sorting within town buildings can help achieve better waste diversion rates, lowering emissions.

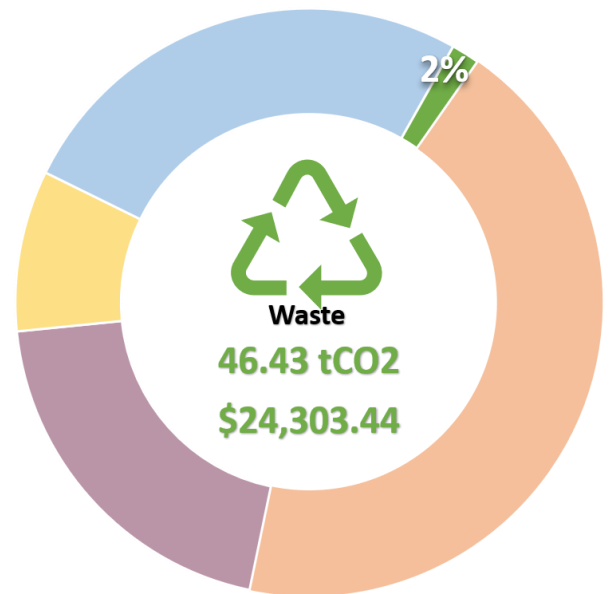


Figure 14: Solid Waste Sector Emissions (% tCO2e)

2018/19 Fiscal Year	Tonnes	Estimated Cost (\$)
Lib/Fire Department/ Town Hall	7.10	\$4,232.00
Water Treatment Plant	2.57	\$805.00
Town Barn	25.86	\$11,356.25
Police Station	1.24	\$2,136.00
Glasgow Square	4.50	\$5,330.00
Engineering Office / Public	1.79	\$444.19
Total:	43.06	\$24,303.44

Table 8: Tonnes of Waste and Cost



Next Steps in New Glasgow Climate Action



Figure 15: Next Step—PCP Five-Milestone Framework

In order to manage the Town’s greenhouse gas emissions, we must first understand our energy usage by measuring and reporting. These measurements enable the Town to identify energy and emission intensive buildings and activities. This information can inform policy and decision making to support effective efficiency improvements to save money, better manage assets and reduce energy usage.

The next milestone in the PCP five-milestone framework is setting an emissions reduction target for the town as a corporation and the community as a whole. A number of cities and towns across Canada are aiming for corporate carbon neutrality

by 2040 and community carbon neutrality by 2050. For short term targets, municipalities' are setting targets anywhere between 30-50% reductions by 2030 from 2005 baseline emissions. Corporate emission reduction targets tend to be more ambitious than community targets. The emissions the Town of New Glasgow produces through the provision of municipal services are within our direct control, and thus reductions are easier to implement and monitor in comparison to community level efforts.

Nationally the federal government has committed to reducing emissions by 30% from 2005 levels by 2030. Provincially, the Government of Nova Scotia is working towards a reduction of 53% from 2005 levels by 2030. It is recommended that the Town set both short and long term goals (2030, 2040, 2050) to assist with progress monitoring.

The Town of New Glasgow Climate Change Steering Committee will determine the Corporate Reduction Target and present the recommendation to Council. The Community level target will be determined through extensive public consultation. This target will also be presented to Council for approval.

To reach our emissions reduction targets, the Town of New Glasgow will be developing and implementing a Local Action Plan. This plan will outline initiatives to support corporate and community emission reductions for each of the inventory sectors. Achieving ambitious corporate reductions will require action from all town departments. The plan will include both short and long term actions in each of the sectors, and an implementation schedule to ensure timely adoption of new initiatives, as well as ongoing monitoring and progress reporting. Many of the actions will focus on reducing energy consumption, improving energy efficiency, fuel switching and the implementation of local renewable energy systems to power our buildings.



53% BELOW 2005 LEVELS BY 2030, NET ZERO BY 2050



30% BELOW 2005 LEVELS BY 2030



REQUIRES THE TOWN OF NEW GLASGOW SET AMBITIOUS EMISSION REDUCTION TARGET IN LINE WITH NATIONAL OBJECTIVE



New Glasgow
flourish